DYNAMIC TRIADS:

SERVICE INNOVATION WITHIN A SUPPLY NETWORK

Presented By

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Submitted in total fulfilment of the requirements for the degree of

Doctor of Philosophy

Adam Smith Business School

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November 2013

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All the names of companies and people directly involved in the research, used in this thesis, are pseudonyms.

Abstract

This thesis explores supply network structures, from the perspective of service innovation, over a period of five years (2005-2010). The initiating actor in the network, a financial institution, could be regarded as being the source, or at least the catalyst, for network interactions linked to service innovation. Research underpinning this thesis investigates the nature of network interactions. Of particular interest are interactions that co-created opportunities at the point of knowledge exchange, which in turn led to innovative value propositions.

The services sector generates over 70% of Gross Domestic Product (GDP) in developed economies and over 50% in developing ones. Nonetheless, most innovation-related research has focussed on goods rather than services (Paton and McLaughlin, 2008). In studies of services the focus of attention is generally the enabling Information and Communications Technology (ICT) provision. This focus, however, reinforces a goods-dominant view of innovation; namely, that services follow advances in knowledge associated to tangible goods - the ICT. Moreover, most such studies have focused their analysis at the dyad level.

Literature reviewed led to a greater understanding of how a service innovation takes places within a supply network, what enables such an innovation, and what characteristics can be associated to a particular level of analysis. Answers contribute to theory building in the field of Supply Chain Management (SCM) field (Madhavan et al., 2004, Wu and Choi, 2005, Dubois and Fredriksson, 2008, Choi and Wu, 2009a, 2009b, Li and Choi, 2009, Wu et al., 2010), by evidencing that dynamic triads within a network are the key to fostering service innovation.

Research was exploratory, embracing an inductive theory-building methodology based on a qualitative approach. Altogether, 42 semi-structured interviews were conducted, transcribed and analysed; and 265 documents (hardcopies, electronic files, e-mails and web sites) were examined. Research was undertaken in three stages: initial exploration, in-depth research and findings validation. The method led to an iterative dialogue between data collection and analysis, supported by NVivo, which allowed pattern identification and category coding (labelling).

Three issues highlight changes in the triads observed: a focal dyad, roles played by participating actors, and network interactions among actors. Findings helped develop a proposal for the de Vries (2006) service system model—used in literature on services—to include a set of customers, a set of suppliers, a set of buyers and a set of outcomes interacting through their respective competencies and technologies. This model has already been used in service literature, and the enriched model proposed by the researcher is one he argues can strengthen SCM literature.

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Preface

The author considers research findings from this thesis will impact both academia and practice, by contributing to on-going debates on and approaches to Supply Chain Management, Strategy, Service Science, and Service Innovation. Spanning a period of five years, the study was triggered by events described below. Pursuing a PhD provided and enticing opportunity to probe a topic that appeared highly significant and was of passionate.

In 2008, at a time the author led executive education courses in Colombia, interest was sparked in tapping supply chains as vehicles for diffusing innovation. An issue at hand in Colombia was how to diffuse economic wellbeing by leveraging state-owned resources and associated supply networks; in the country's relatively uncertain economic and financial context, such initiatives were deemed essential as they held the promise of stability and growth.

The author had first-hand consulting experience with firms implementing socio-economic initiatives. He noted that successful outcomes of such initiatives were often service related, thus prompting his interest in service science, particularly the on-going debate on a paradigm shift: a service-dominant logic view of the world, and the possibility of understanding innovation as part of a co-creative value process. His knowledge of such fields as business strategy, supply chain management, logistics and operations, suggested that service-focused research in Supply Chain Management was fairly limited; and that research on innovation, in particular, had been focused on goods rather than services. Most research in Service Innovation seemed to have dealt with dyads, rather than networks. These notions inspired the original research proposal and led to the selection of Professor Robbie Paton as my supervisor.

Readers will hopefully find value in this thesis, which deals with the potentially rewarding issue of service innovation within a supply network. The network employed for research was developed by two service organisations: a bank and a university; participating in the network were several enterprises and actors, all with differing service/product offerings, cultures and capabilities. The actors provided 'stories', insights and lessons upon which the research was based. The author's stance moved from a positivistic objective mind-set to a more subjective constructivist one, which better reflected social realities: people, time and space. Given the author's

engineering background, he found this qualitative experience both challenging and rewarding.

The author hopes the content and academic outputs emerging from this thesis will prove to be of interest to practitioners and policy-makers, as well as academics: to practitioners in search of network sourced co-created value; to policy makers who seek a better understanding of the importance of creating the space, systems and processes that support connectivity, service innovation and value generation; and to the academic communities concerned with Supply Chain Strategy and Service Innovation by encouraging them to look beyond bilateral interactions and stimulate a dialogue between the two communities.

Javier Yáñez-Arenas
Glasgow, Scotland
November 2013

Acknowledgements

This work would not have been possible without the support of those who provided all manner of support and advice throughout my years of research, and to whom I express my most grateful appreciation.

Above all, I would like to thank God, in the name of Jesus Christ, my Lord and Saviour. He gave me the strength and the opportunity to take on this endeavour at a late stage in life. The time we, as a family, spent in Scotland was a blessing; and the experiences I shared and people I met helped shape my research and enriched our stay.

First, heartfelt thanks to my supervisor Robert A. Paton. Beyond guiding me on how to address my research interests, he generously helped me fulfil my doctoral experience. Despite my delays in completing some of the assigned tasks, he kept encouraging me to remain focused on my task. Without his patience and help I would not be submitting this thesis. Robbie went far beyond the call of duty, dedicating endless time and reacting very quickly to my work in process.

Additionally, I had the unusual privilege of boasting two excellent and supportive second supervisors. My initial second supervisor, Robert MacIntosh posed questions that more than once challenged limits in my thinking. He was of great help in shifting my focus from a positivistic paradigm towards a more constructivist stance needed for this research. Once he became a subject of my research, a second supervisor had to be designated. Ignacio Canales lent me generous support and advice at times of methodological struggle. All three supervisors were invaluable to the completion of this journey.

I also want to thank my family, my loving wife Andrea and my two sons Daniel and Alejandro, who never left my side even as they asked when would I ever finish. They missed the time we enjoy together, but lent unrelenting support by carrying out their duties, being patient, and allowing me to spend days, weeks and months away from

Author's declaration

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Signature _____

Printed name: **Javier Yáñez-Arenas**

November 30th, 2013

Chapter 1

Introduction: Innovation, Networks and Services

"For time is the greatest innovator, and if time of course alter things to the worse, and wisdom and counsel shall not alter them to the better, what shall be the end?"

Francis Bacon (1625/1910, p.93, Essay of Innovations)

In today's world, most employment and wealth in developed countries is derived from services (Spohrer et al., 2008, Gallouj and Djellal, 2010b). Innovation, particularly in products, has been recognised as a key factor in developing competitive advantage and in bringing better returns to firms when compared to other ventures (Banbury and Mitchell, 1995, Valéry, 1999); this knowledge has been further explored, showing that innovation is important for maintaining a sustainable competitive advantage (Mors, 2010). Service innovations, although not studied as much as product innovations, are also important contributors to value creation in developed economies (Tether, 2003, DTI, 2007). In the mid-1990s academics, and practitioners argued that competition had shifted from rival firms to value chains and networks (Lorenzoni and Baden-Fuller, 1995). Accordingly, interest in understanding business networks has grown (Todeva, 2006). Nevertheless, opportunities exist to enhance services within business networks through value co-creation (Ostrom et al., 2010); especially when a supply network, a subset of a business network, is targeted for research.

1.1   The 21st Century

In recent decades, the service sector has increased its relative importance in developed economies and become a focus for direct foreign investment (Bouquet et al., 2004). Similarly, in developing countries, the services share of Gross Domestic Product (GDP) is rising. Even China, considered the world's factory, has a service sector responsible for over 40% of its GDP (Young, 2008, p.11). In both developed and developing economies, United Nations has reported service sector growth as a percentage of GDP. Table 1.1 shows data for 1990, 2000, 2006 and 2008 (UN, 2008, p.408, UN, 2009, p.432)

	1990	2000	2006	2008
Developing economies	49.6	52.6	50.8	50.0
Developed economies	65.3	71.3	72.9	73.0

Table 1.1: Percentage of GDP generated by the service sector
Source: Developed by the author based on figures from UNCTAD Handbooks of Statistics 2008, 2009

In terms of employment, The Economist (Buttonwood, 2011) showed that Britain's employment in services has grown steadily.

Figure 1-1: Britain's employment trend
Source: Buttonwood, The Economist, Sep 19, 2011

Also, the United Nations International Labour Office (ILO) (ILO, 2011a) reports world employment is led by services. Although employment in agriculture still dominates in, for example, South Asia, South East Asia and Pacific, and Sub-Saharan Africa, steady growth has occurred in services. Trends shown in Figure 1-2 are expected to continue.
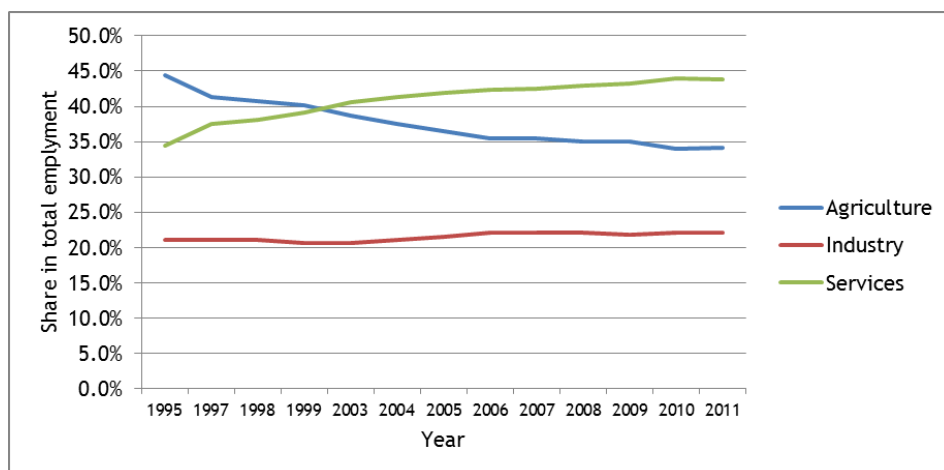
Figure 1-2: World's employment by sector 1995-2011
Source: Author's development based on ILO, Trends econometric models 2003-2012

19.

Following the 2008 financial and economic slowdown, manufacturing firms sought to become leaner and improve their value propositions through innovation (KPMG, 2012). Automation in manufacturing leads to a drop in employment; in turn strengthening the services sector and likely buttressing trends shown in Figures 1-1 and 1-2.

Accordingly, research on services should become more relevant. Efforts to optimize services by developing models and tools (Borst et al., 2004, Apte and Mason, 2006) could help with resource allocation and/or queuing. This work has followed a goods-dominant logic (GDL), whereby authors have focused mainly on the "tangible part" used in delivering services. Under a service-dominant logic (SDL), the focus would centre on the process of service and value creation (Vargo and Lusch, 2004a, Vargo et al., 2006, Lusch and Vargo, 2006b). A change in approach suggests Lusch and Vargo's work under a "new" logic represents a paradigm shift proposal.

The proposal set forth by the above authors draws on Vargo et al.'s (2006) statement affirming that followers of Adam Smith's economic thought have used his goods-driven postulates (Smith, 1784, - II,iii,2). This perspective generally underlies current economic models pursuing operations optimization by increasing labour productivity, as they deal exclusively with firms producing goods (Lusch, 2011).

Based on these premises, recorded statistics (ILO, 2004, Gordon, 2010, ILO, 2011b) show that, in most countries, productivity has improved when measured as GDP per hour worked or GDP per person employed.

Following the 2008-2009 financial crisis, when productivity declined, productivity indicators soon noted recovery (ONS, 2011). More recently, blog analysts have reported labour productivity figures for developed economies and China. See Figure 1-3.

Labour Productivity

Labour productivity and an estimate of its pre-crisis trend
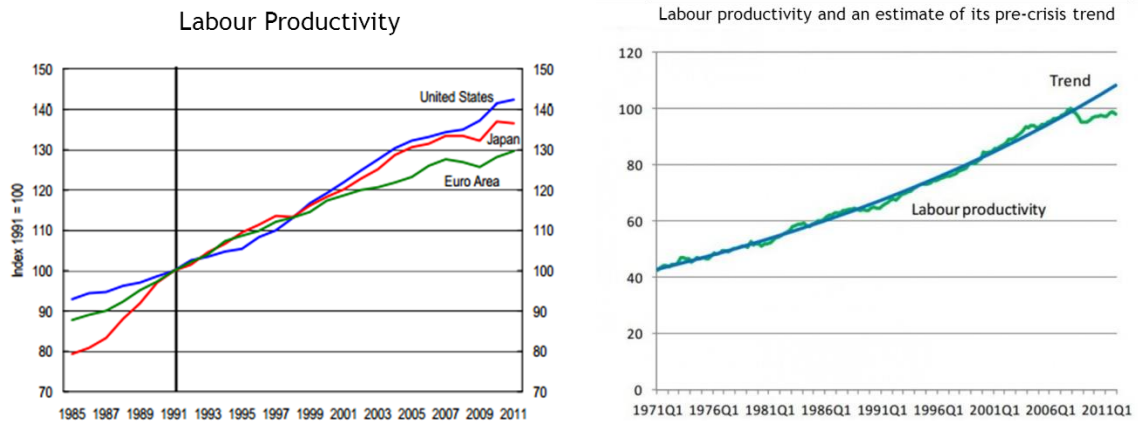
Annual Average Wages and Labour Productivity*
in China (USD, 2000-10)

Labour Productivity

Average Wages

USD 5,823
CAGR 16.24%

USD 4,270
CAGR 16.95%

Source: China National Bureau of Statistics. * Note: Labour productivity=GDP/No. of employees.
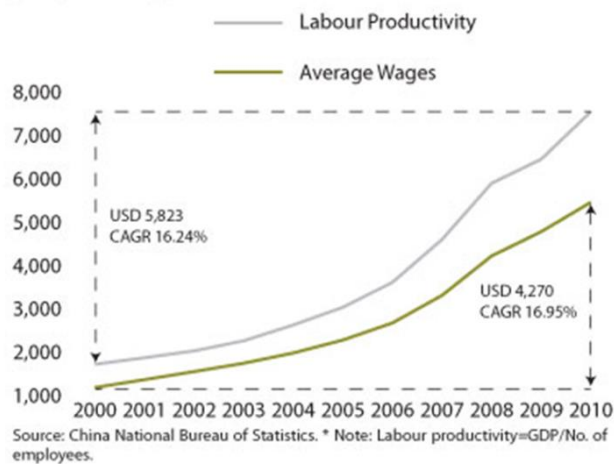
Figure 1-3: Labour Productivity Figures
Sources: FT Blogs[1],[2] and The China Analyst[3]

Although these graphs confirm the trend noted by the ILO, at least three questions can be raised: first, what has transpired in developing economies? Second, if skilled workers are laid off during the crisis and are not re-hired subsequently, does this cause labour productivity to slip? And third, if product outputs are left in the chain instead of being used to create value, what does that mean in terms of how productive the job was?

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[1] Mackenzie, K., 2012, August 13, Labour Productivity vs Demographics, *Financial Times Blog* - http://ftalphaville.ft.com/blog/2012/08/13/1115701/labour-productivity-vs-demographics/ - accessed August 20, 2012

[2] Jones, C., 2012, May 24, MPC's Miles: the case for more easing, *Financial Times Blog* - http://blogs.ft.com/money-supply/2012/05/24/mpcs-miles-the-case-for-more-easing/# - accessed August 20, 2012

[3] van Wyk, B., 2011, September, China Sourcing Strategy: A New Approach to Procurement, *The China Analyst*, http://www.thebeijingaxis.com/tca/editions/the-china-analyst-sep-2011/95 - accessed August 20, 2012

Furthermore, whereas productivity data show what has been happening with manufacturing labour, productivity in services may be hidden. Although little explored, there is growing recognition that value creation taking place once a firm produces something, it becomes an input to a process within a business network (Lusch, 2011). Such recognition may help to change the way researchers analyse productivity trends. In that sense, work undertaken by SCM researchers in analysing how value is created and productivity is raised, could shed light on services productivity issues. Accordingly, this research is focused on enhancing the understanding of innovation processes within a supply network, which is a subset of business networks interacting within the services sector. Specifically, this research will contribute to eliciting how triads within a supply network are key to fostering service innovation when they are dynamic and the actors involved seek benefits for others within the supply network.

1.2   Introduction to the three lenses used in this research

For most of the 20th century, innovation studies were focused on products rather than services (Tidd and Hull, 2010); indeed, Miles (2000) attributes services a 'cinderella status'. Nonetheless, services have been studied for over half a century; first by marketing scholars (Levitt, 1972, Bateson, 1979, Shostack, 1982) and by the late 80s and 90s, in fields such as strategy, operations and general management (Chase and Garvin, 1989, Habib and Victor, 1991). Similarly, studies of business networks have almost paralleled those of services. Specifically, supply networks research that can be traced back to the mid-70s is focused on supplier-customer relationships (Håkansson et al., 2009); these works have been led by Sweden's IMP group and, for the most part, limited to supply networks dealing with goods.

The three aforementioned topics—innovation, networks and services—can be interlinked to explore processes associated to service innovation within supply networks from a multidisciplinary perspective. Certain underpinnings for each topic offer a rationale for interlinking. First, since Schumpeter's works (1939, 1943), it has been said that innovation offers an opportunity for prosperity during economic cycles. Second, scholars hold that networks play a critical role in innovation and knowledge transfer (Christopherson et al., 2008). And third, the noteworthy growth

of services during the current century (Spohrer et al., 2008) could be interpreted as a call to enhance them.

These topics—innovation, networks and services—are used in this research as lenses to focus on, filter and differentiate information, phenomena and events. Specifically, these lenses contribute to narrowing the scope of analysis drawn from disciplines such as strategy, knowledge management, economics and marketing. By narrowing the scope, research boundaries are laid out to understand a service innovation, thus shedding light on how things happen within a supply network; which is the research intent.

Viewed from a different angle, each lens produces a complementary perspective, a delimited and relevant literature to be explored, and a comprehensive understanding to be developed.
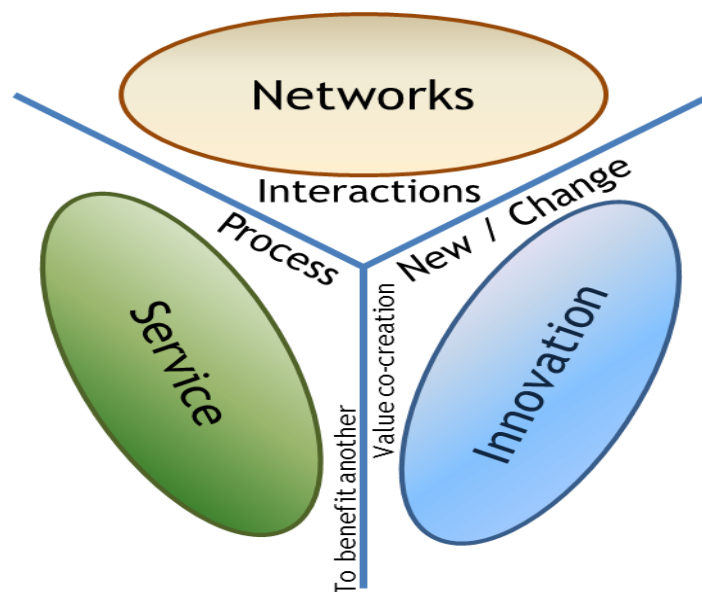
Figure 1-4: Research lenses
Source: Author

The lenses are used to review literature from relevant academic fields: service innovation (SI), supply chain management (SCM) and service science (SS). The latter is the newest of the three fields; Chesbrough and Spohrer (2006) presented arguments for such a discipline and built on initiatives labelled Services Sciences Management and Engineering – SSME (Spohrer and Riecken, 2006). The origin of those initiatives has been "traced back to researchers at IBM and associated schools and

centres" (Paton and McLaughlin, 2008, p.78). More recently, service science has been defined as "an interdisciplinary approach to study, improve, create, and innovate in service" (Maglio et al., 2010, p.1). The three lenses are also employed to analyse works in complementary communities, such as economics, strategy, industrial marketing and purchasing (IMP), knowledge management (KM), and information and communications technology (ICT).

The following subsections present a brief overview of each lens, the literature reviewed, and its role in highlighting Figure 1-4: innovation helps identify issues on value co-creation and newness/change; networks show the role of interactions in the process; and services reveal how others benefit, and how what is studied is a process rather than an output.

1.2.1 Innovation

Research on innovation largely addresses goods and manufacturing (Sundbo, 1997) in order to improve productivity, quality and capabilities that better satisfy user needs; but the last two decades have witnessed a rise in works aimed at understanding the innovation process in services (Edvardsson et al., 2007, Gallouj and Savona, 2009). Gaps are nonetheless evident, as shown in the literature review.

Baregheh, Rowley and Sambrook (2009) collected as many as sixty definitions of innovation published from 1934 to 2008, relating to several disciplines (business and management, economics, organisation studies, innovation and entrepreneurship, and technology, science and engineering). One definition, interestingly enough proposed by a scholar researching services, was deemed particularly useful for this research (Baregheh et al., 2009, p.1334):

> "Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace."

Concurrently, Paswan, D'Souza and Zolfagharian (2009) developed a typology for services innovation that does not separate goods and services. Their proposal framed the discussion about service innovation in the S-D logic holistic perspective, and offers the typology framework shown in Figure 1-5.

24.
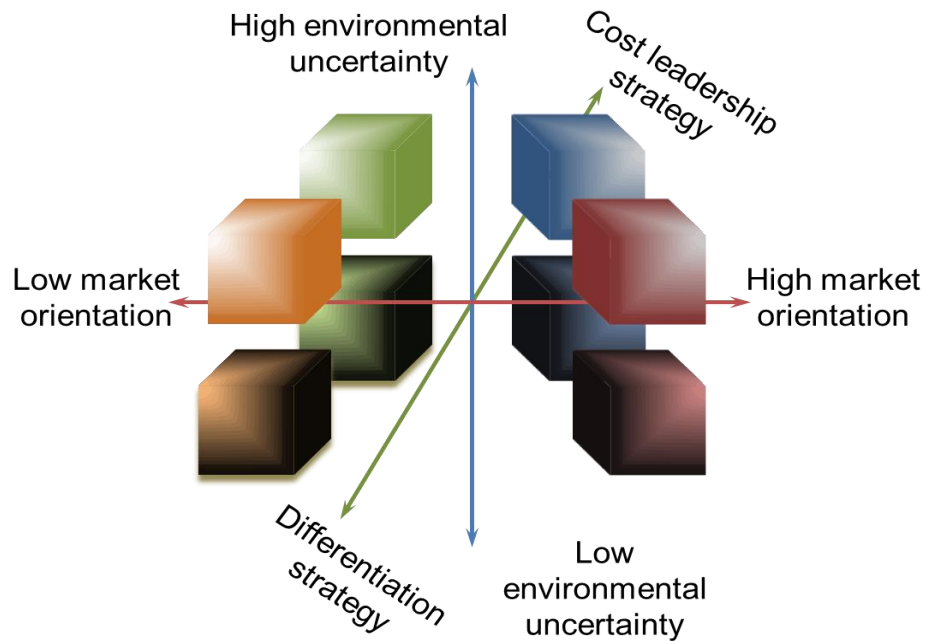
Figure 1-5: Service innovation typology framework
Source: Adapted by the author from (Paswan et al., 2009)

This framework proposes a 3-D space in which the firm's strategy, its market orientation and its environmental uncertainty represent three axes governing the type of service innovation taking place. Paswan et al. acknowledge that previous innovation typologies were rooted in the perception that services and goods are different. Research for this thesis suggests the distinction between goods and services is vanishing; that all 21st century businesses and economies are based on services (Vargo and Lusch, 2004a), which become "the basis of all social and economic exchange" (Moussa and Touzani, 2010, p.192). Accordingly, Paswan et al.'s (2009) typology framework is used in this research as part of the proposed innovation lens.

A general definition such as that by Baregheh et al. (2009) can be applied to goods, services and process innovation, yet is still firm-centred. Given its focus on a supply network, this thesis requires a more specific definition for innovation. Accordingly, service innovation is defined as an interactive (Gallouj and Djellal, 2010a) contextual process by means of which changes in market relations take place (Miles, 2005) and new business opportunities are successfully exploited (DTI, 2007, Paton and McLaughlin, 2008). This definition overcomes the debate on differences between

goods and services, including possible differences between goods innovation and services innovation (Sundbo, 2007).

The innovation lens concept highlights the notion of newness and change presented by both Paton and McLaughlin (2008) and Baregheh et al. (2009), as well as the perspective of value co-creation introduced by Spohrer and Maglio (2008). In terms of literature reviewed (Chapter 2), and limitations of works studied, this lens acts as a filter to select works on evolutionary economics (Gallouj and Savona, 2009) and entrepreneurship (Schumpeter, 1943, Flikkema et al., 2007), together with works related to strategy; for the latter, the lens leads to a better identification of works related to open innovation, the role of leadership, and business models fostering innovation (Normann, 2000, Tether, 2005, Laursen and Salter, 2006, Teece, 2010, Chesbrough, 2011). Lastly, the lens helps identify works related to the role ICT has played in service innovation (Miles, 2005, Gago and Rubalcaba, 2007). This lens also shows how little Operations Management (OM) scholars (Ettlie and Rosenthal, 2011) have contributed to service innovation. In sum, under this lens perspectives from different disciplines converge, thus providing a clearer image that should help the researcher in service innovation analysis.

1.2.2 Networks

Since the 1970s, scholars from several business and management related perspectives have explored interactions within networks (Jarillo, 1988). However, work at the supply network level from SCM researchers remains scarce (Autry and Griffis, 2008, Li and Choi, 2009, Giannakis, 2011a). Works focusing on strategy have centred on the firm (Porter, 1996), even when the purpose of exploring cooperative relationships is to identify a means to develop a firm's competitive advantage. For example, collaborative relationships, such as partnerships and strategic alliances, have been recognised as drivers of competitive advantage (Jarillo, 1988, Goerzen, 2007, Cheung et al., 2011), rather than as interactions to co-create value and distribute benefits within a business network, or within a supply network subset.

Scholars who consistently base their works on business networks include the aforementioned IMP group. Håkansson, Ford, Gadde, Snehota and Waluszewski (2009) mention that when starting their research on business networks, in 1976, they chose relationship as the unit of analysis. Thereafter, IMP studies have privileged the

analysis of interactions among members of a business network. Specifically, IMP researchers consider such interactions (Håkansson and Snehota, 2006a) to understand, among other research objectives, the business landscape, its evolution, the nature of management and the implications for policy makers (Håkansson et al., 2009). What they find valid for the whole—the business network—can be extended to a subset, a supply network.

Network is a term which for years has been used by many fields; physics, engineering, broadcasting, communications, computing and utilities employ the term to refer to "objects" connected to one another, allowing "elements" to "circulate" among these objects/entities. For instance, an early reference to a communications network was a proposal, by Marconi's Wireless Telegraph Company, to connect the British Empire using radio (G.F.S., 1920). More recently, the term social network has expanded its meaning to include virtual communities (Romm et al., 1997). How the term is used in this research must hence be clarified.

This research is focused on a subset of business networks, specifically a service supply network. Accordingly, when drawing on literature from such fields as ICT and social networking (Hassan, 2009), or citing certain services delivered through or supported by computer and communications networks not covered by this research, use of the term will be duly noted.

Gummesson and Polese (2009), building on previous works by Håkansson and Snehota (1995, 2006a, 2006b), stressed that "… nothing happens in isolation" (Barabási 2002 cited in Gummesson and Polese, 2009, p.337). Such an argument supports the idea that, rather than just consider dyadic interactions, any given field benefits by embracing a network approach; everyone (individuals and organisations) interacts with others within a network of relationships, regardless of what a network means to them. By way of illustration, Gummesson and Polese (2009, p.337) used quotations that "span hundreds of years and include folk tradition, novelists, poets, clergy and researchers in marketing, physics and sociology". SCM scholars and researchers could only enrich the field by doing likewise; by embracing a network perspective, as suggested by Choi and Wu (2009a), future contributions to SCM may go beyond the traditional linear and sequential process linked to the chain concept.

Business network definitions vary, depending on structure, actors, and business or research objectives. A definition that embraces features that complement the innovation and services lenses follows (Todeva, 2006, p.15):

> "Business networks are sets of repetitive transactions based on structural and relational formations with dynamic boundaries comprising interconnected elements (actors, resources and activities)."

This definition acknowledges that network analysis may entail levels of interactions among members of the business network and highlights the role of the interactions among those members. Another definition is: "A network consists of the tangible and intangible investments that comprise the connected relationships between more than two businesses" (Håkansson et al., 2009, p.236). Both definitions privilege a world viewed from a G-D logic perspective, not a services standpoint. Accordingly, the definition to be used must be adjusted.

Håkansson et al. (2009, p.41) propose a model of the interaction process that includes time and space dimensions (see Figure 1-6). They stress that in the midst of the interactions, heterogeneous resources can be exploited to create value; and that a resource may change by means of its use "and in the combination with others in an evolving resource constellation" (p.43).

Figure 1-6 presents the aforementioned model and shows a snapshot of a current interaction within a supply network. At the core of the network portrayed is a buyer (B) interacting with a main supplier (S); both are linked with several suppliers (s) and customers (c). Certain interactions are strong (solid lines), while others are weak (dashes); some are bidirectional, and others are unidirectional. The idea is to suggest that interactions may evolve over time and space and, therefore, both the network and relationships within it are captured in snapshots. Moreover, shadowed current interactions show the business network includes more relationships than those presented, and extends beyond the supply network.
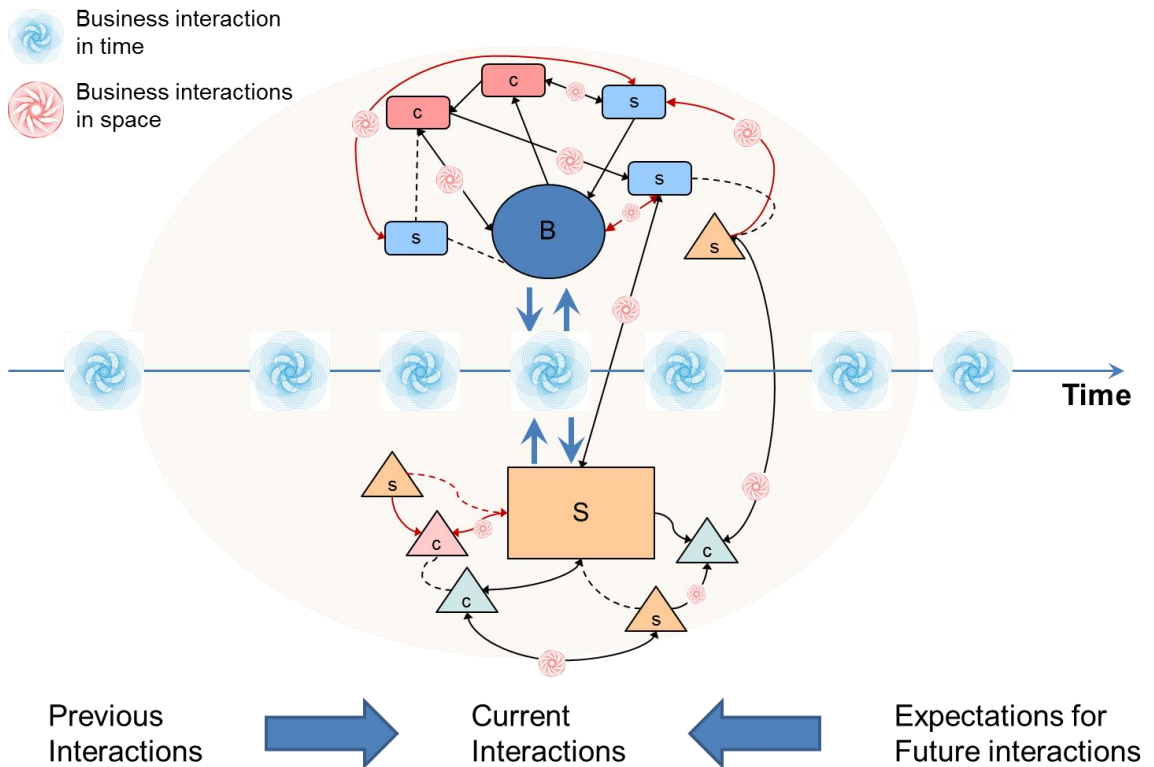
Figure 1-6: Business interaction model within a business network - time and space
Source: Author's development based on (Håkansson et al., 2009)

In describing a business network, Håkansson et al. (2009) and the IMP group do not include the service domain; they start with what is observed and applied in manufacturing, extend it to services, and address what had been noted by Spohrer (2011), who argues that ecology better describes a service system, emphasising "that populations of entities come and go"(p.200) or change over time.

For this research, a supply network is defined as a subset of a business network with blurred borders, because relationships go beyond a supplier(s)-buyer(s) direct interactions: a system in which interactions among supply network actors may take place at multiple levels and multiple dimensions; are dynamic in nature while developing, performing and delivering services; and where network actors may change their roles while interactions are still occurring.

The above definition is the core of the network lens, thus providing this research a business interactions angle (Ford et al., 2003). It also features a complementary perspective, allowing for interactions beyond dyadic relationships, and building on

knowledge of triads (Choi and Wu, 2009a, 2009b). Also, it highlights the process of value co-creation by more than two network actors, allowing value distribution across the whole network and beyond.

The lens offered by the above definition uncovers research within large bodies of literature, including knowledge management and strategy (Dyer and Singh, 1998, Desouza et al., 2003, Inkpen and Tsang, 2005, Haas and Hansen, 2007). Chapter 2 covers the relevant literature.

1.2.3 Services

The word "services" is usually thought of as merely being the plural of "service", but Lusch and Vargo (2006b, p.282) made a distinction between the two concepts: "the singular 'service' indicates a process of doing something for someone and the plural 'services' implies units of output" — a clarification that builds on the introduction of the service-dominant logic (Vargo and Lusch, 2004a). In this thesis, however, both words service and services are used in relation to a process or processes, unless a clarification is made when referring to works from authors using the word to designate an intangible good or unit of output.

Academics in marketing have discussed service, mostly establishing differences between goods and services, and transferring knowledge from the goods domain to the service domain (Levitt, 1972, Bateson, 1979, Bitner, 1992, Grönroos, 2000, Lovelock and Gummesson, 2004). In operations management (OM), a field related to SCM, academics have privileged the idea of a world divided between goods and services (Ellram, 1991, Hayes, 2002), presumably to encourage operational efficiencies (Corrêa et al., 2007). Within these two disciplines, the service concept has been portrayed largely in terms of its features (Edvardsson et al., 2005, Fitzsimmons and Fitzsimmons, 2006) or by comparisons vis-à-vis goods.

A definition for service accepted by specialists in the previous two fields is proposed by Grönroos (2000, p.46):

> "A service is a process consisting of a series of more or less intangible activities that normally, but not necessarily always, takes place in interactions between the customer and service employees and/or physical resources or goods and/or

systems of the service provider, which are provided as solutions to customer problems."

A key issue in the above definition relates to intangibility. As already noted, the SDL debate (Vargo and Lusch, 2004a, p.2) defines "services as the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself". Also, the set of assumptions proposed and labelled as the rental/access paradigm has been alluded to by Lovelock and Gummesson (2004).

Moreover, Lovelock and Gummesson (2004) questioned general acceptance of the four "unique" services' characteristics that were portrayed in marketing textbooks. Among other works, they cited Kerin, Berkowitz, Hartley and Rudelius (2003) for showing that IHIP (intangibility, heterogeneity, inseparability and perishability) characteristics did not necessarily apply to every service, and for lack of empirical research to support their acceptance. They also noted that in two literature reviews undertaken in 1985 and 1993, the "absence of ownership" (Lovelock and Gummesson, 2004, p.23) was overlooked as a key service characteristic. This rental/access paradigm implies, among other issues, that "time plays a central role in most services and that services offer opportunities for resource sharing" (p.35-36).

These two works challenged accepted ideas and allowed the author to fully grasp the "service perspective" (Edvardsson et al., 2005), and designate services as a research lens. In this thesis, service is an interactive process which varies in complexity, co-creating value for the system as a whole, for those directly involved, or for others in or outside a supply network.

The services lens brings the processes angle to the research and opens the perspective of benefiting others (Maglio and Spohrer, 2008). Until recently, SCM academics paid little attention to services (Stock et al., 2010); when the concept has been addressed, following the prevailing GDL in the field, it has largely focused on services as intangible goods (Ellram et al., 2007, Li and Choi, 2009). On the other hand, both SCM and OM researchers have thoroughly studied and modelled processes such as those in manufacturing, transportation, distribution and production. Their aim, nonetheless, when approaching these and other processes, has been to

optimize, reduce costs, improve performance and obtain higher quality (Giannakis, 2011b). Although the study of processes is not new in the field, emphasising the service domain and value creation stands to enrich the OM and SCM fields.

In other fields, some research has been undertaken to find ways of transferring what has been developed for goods to the services arena (Tether, 2005, Hipp, 2010, Chesbrough, 2011). For instance, tools that were developed for mass-production environments have been applied to service companies that look to enhance their efficiency while satisfying customers (Bowen and Youngdahl, 1998). Unfortunately, this effort towards standardisation fails to take advantage of the possibility of offering individual solutions. The researcher considers that by following this trend, businesses could become trapped in the mind-set of economies of scale, deterred from moving into the evolving world of mass-customization (Pine, 1992) and individual value solutions.

Lenses described, along with services, are discussed in Chapter 2 (Literature Review).

1.3   Research drivers and methodological approach

The three lenses just introduced also represent main conceptual drivers behind this research. Drivers for the research question posed are:

- Services are dominating the world's economies (Gallouj and Djellal, 2010b).

- Although the innovation-performance relationship depends on the context (Rosenbusch et al., 2011), its effects are positive on firms' performance. However, most studies on innovation are focused on manufactures (Sundbo, 1997). Moreover, the few efforts made in studying innovation in services are predominantly linked to a goods-dominant logic, wherein services are non-material 'products'.

- SCM literature lacks more research on services (Stock et al., 2010)

Although the aim of this research is to contribute to SCM literature, the methodology employed to address research questions is also an attempt to strengthen works which

moved away from a positivistic tradition (Ellram, 1996, Mello and Flint, 2009, Barratt et al., 2011). Most SCM research has followed a positivistic paradigm (McCarthy and Golicic, 2005), wherein reality exists and can be observed objectively. However, the question(s) proposed for this research lead to a qualitative study, where realities are socially constructed, pushing this research into the paradigm of social-constructionism; where making sense of stories told by people within the supply network investigated are central to the process (Easterby-Smith et al., 2008).

People form relationships within a business network (Todeva, 2006) and interact through both business and innovation processes. Hence those who participate in a supply network define relationship boundaries as well as the characteristics of interactions taking place. Accordingly, the philosophical stand for this research is positioned in the social-constructionism paradigm, where "reality is determined by the people" (Easterby-Smith et al., 2008, p.59) and by meanings they give to their experiences.

Within this paradigm, the research follows a relativistic ontology (Shankar and Patterson, 2001); reality is jointly built by the interviewer and members of the supply network (the interviewees) investigated (Kaufmann and Denk, 2011). That reality is the story created by a participant through interaction, questions raised and responses given to the researcher. Each story and set of stories are then analysed to propose ideas about why certain situations (events, processes, decisions, etc.) occurred. During and after the interviewee-interviewer interaction, the researcher is challenged to be aware of both his role and participants' roles in building the story regarding the complexity of a service innovation process (Corbin and Strauss, 2008). Concurrently, the researcher must reflect on the consequences / outputs observed or constructed. Again, the challenge is to be critical of the reality constructed with the participants, as well as of realities that were previously constructed among participants (Kelle, 2005).

Accordingly, this research lies within a social-constructionism paradigm and a subjectivist and interpretivist epistemology (Pervan, 1998, Floyd and Wooldridge, 1999). Following such epistemology, the researcher elucidates meanings from the actors (members of the supply network) and searches out theoretical propositions and alternative explanations, which could yield elements from both the observations

and theory reviewed. A recent work introducing a framework to describe service research (Tronvoll et al., 2011) points out four epistemology "paradigms", of which two are of particular interest to this research; the dialogic emphasises "an understanding of processes and relationships over time" (p.573), and the hermeneutic emphasises "a social rather than economic or exchange of service interactions" (p.574). These views are akin to the approach taken in this research.

To operationalize the philosophical statements, either case-study or inductive theory building methods could be employed Case-study methodology is used to answer such questions as how, why, what and how much (Yin, 2009); build theory (Eisenhardt, 1989); and research supply chains and operations (Ellram, 1996, McCarthy and Golicic, 2005, Koulikoff-Souviron and Harrison, 2005, Barratt et al., 2011). For reasons that follow, the author considers it necessary to employ inductive theory building and take into account some elements of grounded theory.

Reasons why an inductive theory building approach is deemed better include: first, theoretical issues are derived from the data that is gathered and analysed through the research process (Bryman, 2008, p.541); second, the methodology is associated to theoretical sampling (Ritchie and Lewis, 2008, p.80), meaning that it will be clear when to stop gathering data; third, the conditions of the phenomenon studied (a service innovation) lead to a 'snow-ball approach' in which "the researcher is not sampling persons but concepts" (Corbin and Strauss, 2008, p.144); and fourth, both the sampling and the research go where the analysis leads. Moreover, at hand is an interpretative process that elicits fresh understandings about how "actors construct meaning out of inter-subjective experiences" (Suddaby, 2006, p.634). Finally, the approach proposed facilitates an iterative process that encourages a dialogue between data collection and analysis.

In addition, to strengthen the analysis, the researcher uses a few critical discourse analysis (CDA) techniques (Baltacioglu et al., 2007) as a particular approach that helps avoid taking things for granted, be self-reflective and focus on text analysis and argumentation (Wodak, 2006, Kendall, 2007). In this research "the term 'discourse' is frequently used synonymously with 'text,' meaning authentic, everyday linguistic communication" (Wodak, 2006, p.597). It also helps to address rival explanations (Yin, 2009), which could better link the data to theoretical propositions.

1.3.1 Supply networks and their dominant logic

To advance in the research intent as stated, information must be collected from people within a supply network where a service innovation (the unit of analysis) can be found.

The lenses introduced in section 1.2 are used to classify supply networks; such a classification is based on the predominant perspective that nuclear firms, within a business network, have of services. Three situations are foreseen by the researcher: first, research in service innovation has been focused on organisations that belong to the service sector; therefore, what has been studied is innovation within service 'firms' (den Hertog, 2000). Generally, such firms have a GDL mind-set despite belonging to the service sector.

The second situation is the transformation of manufacturing firms into service providers (Maglio and Spohrer, 2008). Studies of the process of servitisation undertaken in recent decades show that despite transformation, firms maintain their manufacturing activity but change their business model (Baines et al., 2009). In this situation, a firm's mind-set is to share postulates from both GDL and SDL.

Lastly, the third situation is exemplified by firms, such as IBM, which have fully embraced the SDL mind-set and are even promoting the SS discipline (Glushko, 2008). Academics belonging to one or both fields (SDL and/or SS) hold that everything is service; therefore, organisations either use goods or services to deliver services and, value propositions are co-created among members of a service system.

Therefore, based on a supply network's nuclear firm perspective towards services, three categories of firms are elicited: at one extreme, a firm or network with an almost 100% GDL mind-set, where those involved in the supply network have little awareness of the SDL mind-set debate. In the middle, an organisation or network in transition; it shares elements of both the GDL and SDL mind-sets, and experiences tensions generated by the differences between the two logics. The other extreme features a firm or network that tends to show a 100% SDL mind-set by fully

embracing the service science discourse. The three mind-set categories are presented in Figure 1-7.
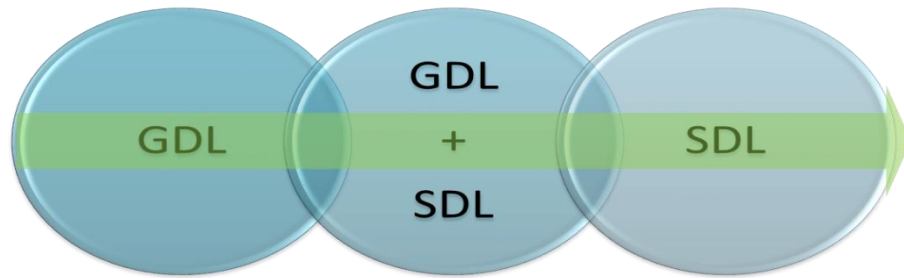
Figure 1-7: Mind-set categories towards service
Source: Author's development

1.3.2 General approach to field research

Field research was undertaken in three stages. First, five focal firms from different supply networks were contacted, chiefly to identify at least one service innovation that qualified for analysis within their respective supply networks. Each focal firm had progressed to a different point in terms of level of engagement with the SDL approach.

The second stage aimed to select one service innovation in a given supply network. The researcher decided to choose a service innovation anchored to GDL, insofar as it appears that most supply networks are still in the GDL phase. Also, supply networks chosen were those, as noted by Giannakis (2011a, p.1810), "services production involves the collaboration of several actors … to co-produce value in complex value chains or networks". Once a supply network was selected, 36 semi-structured interviews were conducted both face-to-face and by phone, following review of documents provided by interviewees.

NVivo 9[4] was used as a tool to help manage the high volume of information, and as an instrument to code (label) interview responses (Riach, 2007). Nonetheless, the tool's capabilities enabled the researcher to cluster texts, explore label density, gauge relations between concepts, and build word trees using raw data, which yielded useful hints in building theoretical bridges between the SCM and SI fields.

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[4] NVivo is software that supports qualitative and mixed methods research. It allows a researcher to collect, organise and analyse content from interviews and other data sources.

The third stage involved reviewing results of the analysis with six actors drawn from the supply network studied, together with one interviewee from the first stage, to discuss the findings and, based on their respective experiences, validate whether they made sense.

1.3.3 Overview of the supply network selected

A financial organisation and a higher education institution served as focal nodes (nuclear firms / core firms) for supply networks on which this research is centred, in which a service innovation was studied. The former, a UK-based medium-large bank in terms of total assets[5], dominated by a GDL mind-set, had 2010 assets of about £50 billion. The second focal firm, a UK university, is ranked among the country's top 25[6], with over 20,000[7] students enrolled in 2010. Other network members involved in this research include people not affiliated to any specific organisation, executives from private small- and medium-size enterprises (SMEs), and public agency officials; each featured different backgrounds, levels of involvement in the service innovation analysed, and positions within the focal organisations or within the firms that participated in the supply network.
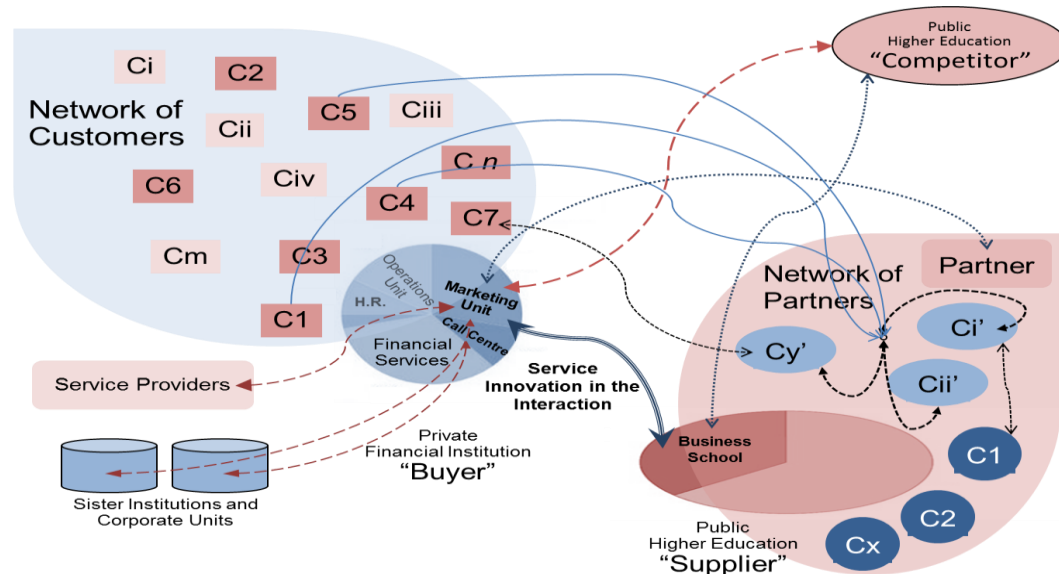
Figure 1-8: Supply network studied
Source: Author's development

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[5] Bankscope – List of 698 banks operations in UK https://bankscope2.bvdep.com/version-20111027/List.serv?context=5DBZ7683RD78F70&_cid=55 - accessed November 3, 2011

[6] Ranking of Universities in the UK - http://www.university-list.net/uk/rank/univ-0000.htm - accessed November 3, 2011

[7] HESA Statistics - 2009/10 students by Institution at http://www.hesa.ac.uk/index.php?option=com_content&task=view&id=1897&Itemid=239 - accessed November 3, 2011

Figure 1-8 presents the supply network studied. The two focal firms are the "buyer" and the "supplier". Several of the buyer's business units were involved at the time the service innovation took place, with the marketing unit serving as main point of contact. On the supplier's side, the main link for the service innovation studied was the university's business school. Each focal firm is part of a network of customers (Ci and Cj') and/or business partners, with some members engaged in the process of delivering and using the service, or in some way involved either directly or through focal firms. Those engaged in processes related to the service innovation also included a competitor to the "supplier", sister financial institutions, corporate units, and other service providers.

Narratives gathered covered a period of five years from initial exploratory conversations, in 2005, to interactions held in late 2010. Admittedly, relationships among members of the supply network have since continued, but are not included as part of this thesis. As represented in Figure 1-8, some interactions reach beyond the direct supply network of the focal firms, and some are even global in nature.

Chapter 3 details research methodology, and Chapter 4 includes discussion and definition of the data collection process.

1.4 Thesis roadmap

Figure 1-9 shows the thesis roadmap, followed by an overview of each chapter's content, as noted in previous sections of this introduction.
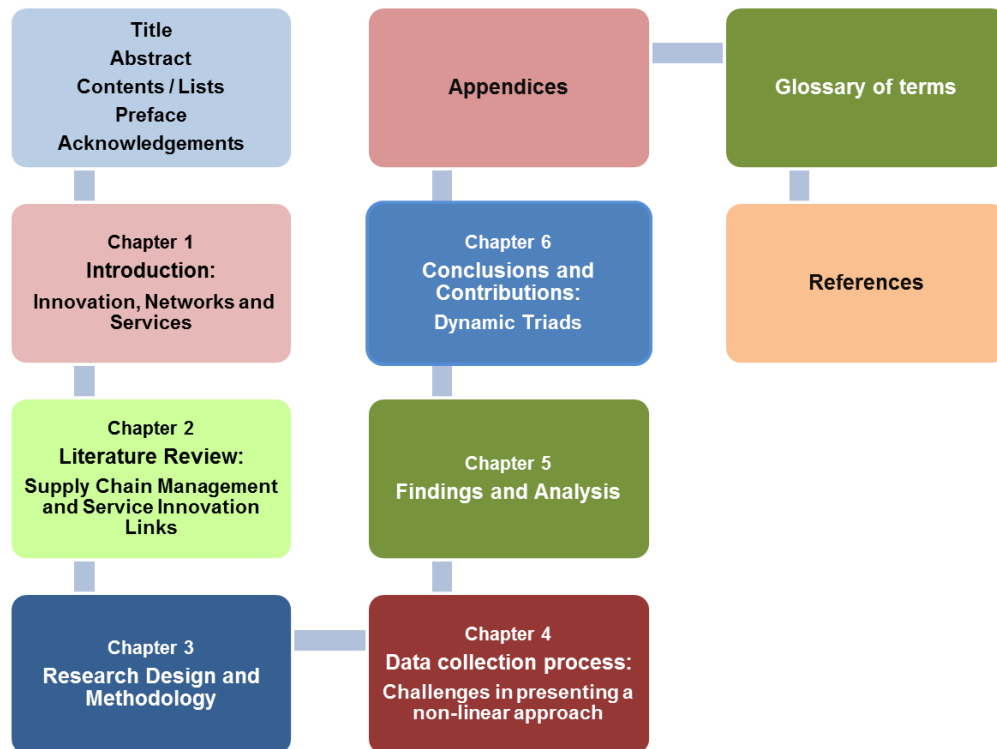
Figure 1-9: Thesis roadmap
Source: Author's development

At the outset, the document presents the Table of Contents and List of Figures and Tables, together with the Abstract and Acknowledgements.

Chapter 1 presents three topics—innovation, networks and services— lenses through which most of the research completed for this thesis was 'filtered'.

Chapter 2 summarises the state of the art on relevant topics found in the literature review, and takes note of existing knowledge gaps. Most works reviewed appear in journals, by scholars belonging to the following three fields: Supply Chain Management, Service Innovation, or Service Science. Some publications in fields such as strategy, marketing, economics, ICT, industrial marketing and purchasing, and knowledge management, were covered to delimit the scope of the thesis. Invariably, the main condition was to undertake analysis at the network level, keeping a close relationship with services and the associated innovation process.

Once knowledge gaps were identified, research design and choices related to methodology were addressed, in Chapter 3. The most accepted philosophical approach to research among SCM scholars has been a positivistic paradigm.

Accordingly, this chapter presents reasons why the research follows a social-constructionism paradigm.

Chapter 4 presents the data collection process. Primary data was collected through semi-structured interviews and secondary data from documents provided by interviewees. This chapter also describes challenges emerging from 'discourses' or stories shared by the interviewees.

Chapter 5 presents data analysis and findings. Data analysis not always sequential, as initial estimates were undertaken as soon as results began to emerge, thus implying an iterative and reflexive process.

Chapter 6 presents conclusions and the theoretical contributions, articulating that beyond the buyer-supplier-supplier triad, other triads within a supply network are involved in a service innovation process, and may affect certain network interactions. Also discussed are issues related to constructs, such as time, space and trust. Finally, research limitations are noted and recommendations made for future research. Some recommendations are directed to practitioners, who may exploit opportunities that an SDL mind-set (looking to benefit others) brings when a service innovation process is pursued within a supply network.

Three additional sections are included. Appendix 1 shows literature review searching expressions / process; Appendix 2 shows the semi-structured interview guide; Appendix 3 shows the consent form used with the interviewees; Appendix 4 shows the model used as letter of invitation to participate in the research; Appendix 5 shows the list of participants (interviewees) on this research; Appendix 6 shows guiding questions for interviews; Appendix 7 shows the specific model of letter of invitation used in stage one; Appendix 8 shows the codes (labels) generated in the analysis stage; Appendix 9 shows the letter to participants for validation of findings during stage three; Appendix 10 shows samples of tables and matrix arrangements used for clustering, analysis and synthesis of the data; and Appendix 11 shows samples of intermediate analysis with raw data, NVivo queries and matrix arrangements; in sum, a set of Appendices to show complementary materials to assure the robustness and quality of the research. A glossary of terms is included to assist some readers. A references section details the sources of information used to support the thesis rationale.

1.5   Summary

This chapter has presented the rationale behind research undertaken for this thesis. Services are a predominant economic driver in the 21st century; accordingly service sector performance must improve to enhance economic growth (Wölfl, 2005). Also, the chapter introduces three topics—innovation, networks and services—as the lenses used in this research to examine the literature, the data collected, and the innovation phenomenon. Additionally, the chapter shows that this research follows a social-constructionism paradigm as its methodological position, in contrast to the positivistic strand shared by most SCM scholars. A brief overview is presented by way of justification for this, building on the nature of the main research question. Literature supporting this research is also presented when introducing the lenses.

The chapter provides a succinct view of the supply network in which this research takes place. The thesis roadmap describes certain elements addressed in the chapters on findings and conclusions. These include such constructs as time, space and trust, in order to better understand a service innovation process at the network level, build theoretical bridges between the fields of supply chain management (SCM) and service innovation (SI), and provide management practitioners with insights into a service-dominant logic (SDL) perspective for their endeavours.

A theoretical gap in the understanding of service innovation at a network level is identified, and SDL in SCM issues related to services in supply networks are further developed. Based on this gap, the first research question posed is: how does service innovation take place in a supply network?

The following chapter reviews pertinent literature in supply chain management, service innovation and service science, as well as certain issues in literature on economics, industrial marketing, strategy, information and communications technology, operations management, and knowledge management.

Chapter 2

Literature Review: Supply Chain Management
and Service Innovation Links

"Have you journeyed to the springs of the sea or walked in the recesses of the deep?"
The Bible (NIV) - Book of of Job, Chapter 38, verse 16

2.1   Overview

As mentioned in the introductory chapter, three lenses were used to review literature and the information assembled. The three lenses lend a multidisciplinary perspective to the research process. SCM researchers have already pointed to the importance of multidisciplinary approaches (New, 1997, Chen and Paulraj, 2004, Christopher et al., 2011). They identify the significant considerations; nonetheless, consider three limitations: first, most work by SCM academics has focused on goods, not services; second, in most instances the level of analysis has been the firm or the dyad, rather than the network; and third, the proposed combination of three lenses — innovation, networks and services — has not yet been used to explore service innovations.

This literature review conveys what was perceived, borrowed and contested by the researcher from previous works in a number of disciplines. Section 2.2 is organised thematically. In addition to reviewing literature on SCM, the three lenses are used to examine SI and SS. Each body of literature is presented separately; however, at some points the reader will find crossovers between fields. Once the three main fields are covered, a final thematic sub-section defines borderlines for this research, drawn by reviewing literature in disciplines such as economics, industrial marketing, ICT, strategy, knowledge management and procurement. The overall aim of this review is to shed light on the general topic of service innovation within supply networks, identifying gaps that lead to research questions.

Figure 2-1 shows an overview of the rationale behind the process followed in this literature review. As noted in Chapter 1, the three lenses helped the researcher focus on issues that frame the main conceptual lines.
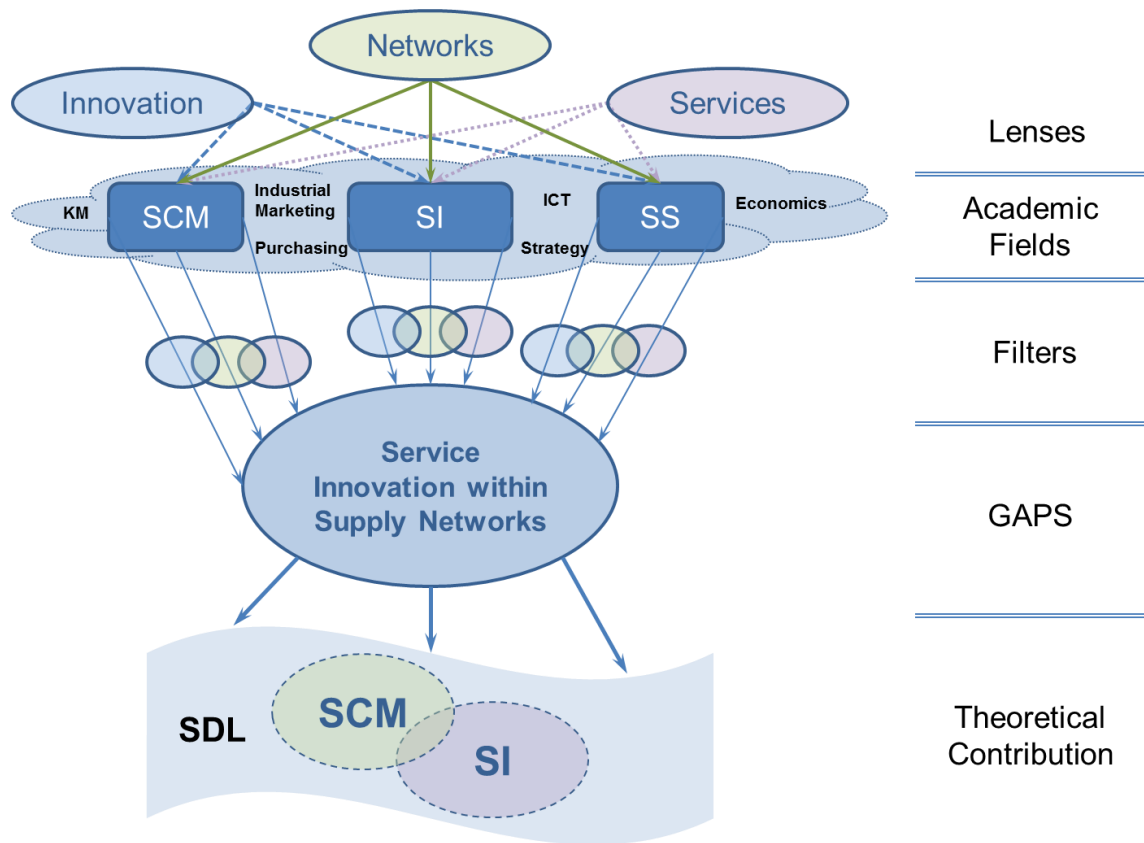
Figure 2-1: Literature Review Overview
Source: Author's development

After using the lenses to focus on relevant literature in order to identify gaps in current knowledge, the research was undertaken. Findings offer theoretical contributions framed by the SDL debate. Research contributions are directed at the SCM community in order to encourage a dialogue between SCM and SI academics, which may enhance a cross-disciplinary learning experience and trigger opportunities for further research on services.

As mentioned in Chapter 1, this study follows a social constructionism paradigm. Work done on this paradigm has shown that research processes are iterative, whereas in the positivistic view of the world they are likely to be more sequential. Accordingly, most literature review was undertaken at the beginning of the research process in order to, first, become thoroughly familiar with the topic and bodies of knowledge pertinent to this research; and second, find gaps in the literature and formulate research questions addressed to those gaps (Hart, 2008). However, the "literature [was] treated as part of the data analysed in an iterative comparison process" (Kaufmann and Denk, 2011). Therefore, some publications referenced in

this chapter were identified and reviewed in later stages, either during data collection or analysis.

The author decided to bring together all the relevant literature for this thesis into the current chapter. Presenting a complete review provides the reader with a comprehensive picture of the state of the art in the fields reviewed. On the other, it may give the reader the impression that a thorough and comprehensive review of the literature was completed before identifying theoretical gaps and taking further research steps. However, some of the literature reviewed emerged as a result of the analysis and theory resulting from the study itself. Orthodox positivistic researchers, who generally follow sequential processes of enquiry, may question such an approach — better understood by constructivist researchers already involved in qualitative iterative processes where data and analysis interact.

Early literature search included works on suppliers' development programmes, as the researcher felt it might feature content on service innovations. Some cases and studies were identified (Cousins, 2002, Benito et al., 2003, Hipkin and Naudé, 2006, Hartmann et al., 2008) establishing that the main points were to stress the importance of the relationships and understand the processes through which those relationships were built, developed and controlled.

A number of these studies pointed to the need to identify the key elements—within the relationships—that could be duplicated by other companies to foster value creation in which suppliers, customers and even competitors could participate. Studies examined address issues from organisational design to cluster analysis, and from long-term relationships to partnerships. Such initial "findings" from the literature prompted the author to appreciate the complexity of the topic and the need to focus and narrow down the scope of the research.

Appendix 1 provides a complete list of search expressions (e.g. key words, searching strings, journals, authors, etc.). Presenting such a list serves two purposes: first, provide an idea of how broad was the initial scope foreseen by the researcher; and second, show steps followed by the researcher in order to prioritize a long list.

Search expressions highlighted in the appendix allowed the researcher to gain focus, and made the review feasible and relevant to this thesis.

The searching process apprised the researcher with differences in scope, level of development, and theoretical foundations among disciplines scanned, particularly when considering the literature in terms of the specific focus of this research: service innovation within supply networks.

2.2   Thematic literature review

Although a thematic analysis of the literature is presented in many literature reviews, and is suggested as a way to identify trends and gaps (Hart, 2009), the author was surprised by the small number of works found when searching for the string "thematic literature review"; only 120 publications in all selected fields were reported by Google Scholar. Most publications were related to the health sector, a few to education and the social sciences, and only two related to engineering. When searching in specialized academic databases, the results were not much different: only 9 publications were found in Wiley On-line, all related to nursing; in Science Direct, 8; in Emerald, 3; and in EBSCO, 8. Accordingly, it appears to the author that although a thematic approach to present and discuss the relevant literature has been used, it is not designated as such.

Among relevant publications reviewed, only Burgess (2007) deliberately used such a thematic approach. In his work with others (Burgess et al., 2006), New (1997) is cited as an author who "provides a thematic overview of the SCM literature" (Burgess et al., 2006, p.704). Although New is critical in providing alternative and multidisciplinary approaches to research supply chain management, the researcher does not agree with the assertion made by in Burgess et al. (2006) as respects a thematic overview. Most literature reviews cover themes, but the analysis is not necessarily thematic.

Burgess' (2007) aim is to address sociological dimensions in his review of innovation and SCM literature. In that sense, the work organises literature in themes, such as definitions, typologies, models, theories and the role of particular issues

(globalisation, IT, context and work place design), and movements. Consider one of his statements:

> "(SCM) appears to be a practitioner-led movement. … SCM seems to be more at the phase of developing knowledge about the concepts within itself than the extent of the relationship of such concepts to each other. SCM embraces and adapts a broad range of concepts." (p.53)

The following sub-sections show that the other two main fields for this research — service science and service innovation— are also emerging bodies of knowledge, as described by Burgess (2007). In both SS and SI, the concepts covered are also in developing stage. The researcher considers that, to cover particular themes within each field, it helps the reader if the literature review is organised by field. Such themes are used in the analysis and embedded in the logic to identify gaps in the disciplines considered for this research.

Among challenges faced in developing this literature review were: first, combining three main fields of knowledge to find gaps in order to formulate a research question. Multidisciplinary approaches have been recognised as valuable (New, 1997); but most academic works in related fields are self-contained in a particular discipline. Second, despite the independence of each field, there was risk of finding duplicate ideas; hence it was crucial to avoid unnecessary repetitions in order to address the third challenge: dentifying common ground among the disciplines studied.

2.2.1 Supply Chain Management Literature

Several articles (Lambert and Cooper, 2000, Mills et al., 2004, Ling and Li, 2007) mention the term Supply Chain Management (SCM) was first introduced by Keith Oliver in 1982 (Kransdorff, 1982). Since then, and particularly in the late 1980s and the 1990s (Croom et al., 2000), supply chains became an important topic of discussion in developing opportunity for competitive advantage (The Georgia Tech Supply Chain & Logistics Institute, 2008). Managerial interest in the topic has meant that SCM researchers publish in both specialised and general management publications and journals. This review covers sources dedicated to SCM and Operations Management and Logistics. Journals reviewed and initial search terms are depicted in Table 2.1. The journals were selected from the list given by ISI Web of Knowledge – Journal Citation Report – Social Sciences Editions.

	SCM journals	Logistics journals	OM journals	Other journals
Journals	• *Journal of Purchasing and Supply Management* • *Journal of Supply Chain Management* • *Supply Chain Management Review* • *Supply Chain Management: An International Journal* • *European Journal of Purchasing & Supply Management*	• *International Journal of Logistics Management* • *International Journal of Physical Distribution and Logistics Management* • *International Journal of Logistics Research and Applications* • *Journal of Business Logistics*	• *International Journal of Operations and Production Management* • *International Journal of Production Research* • *Journal of Operations Management*	• *Any*
Search terms	"innovation", "collaboration", "network", "service", "supply chain", "supply network", "dyad", "triad"	"innovation", "collaboration", "network", "service", "supply chain", "supply network", "dyad", "triad"	"innovation", "collaboration", "network", "service", "supply chain", "supply network", "dyad", "triad"	+ "value chain", "clusters", "value constellation", "business relationships"
Terms not included	"commodities", "modelling", "inventory", "optimization", "routing", "scheduling"	"commodities", "modelling", "inventory", "optimization", "routing", "scheduling"	"commodities", "modelling", "inventory", "optimization", "routing", "scheduling"	

Table 2.1: SCM papers identification
Source: Author´s development based on (Busse and Wallenburg, 2011)

When examining the literature, titles and abstracts were considered to identify those in which the researchers combine issues related to innovation, networks and services, and those in which different levels of analysis were explored: dyads, triads, chains and networks.

2.2.1.1.   SCM brief history and definition

In the 21st century, the definition of SCM is still a matter of controversy; over 150 definitions appear in the literature (Stock et al., 2010). Nonetheless, there are some concurrent themes dominated by the G-D logic approach (Lusch, 2011). As mentioned earlier, several researchers consider the term SCM dates from 1982. However, others hold the origin comes from the Institute for Supply Management established in 1915, where SCM is used almost as a synonym for purchasing, and linked to a process that pertains to suppliers (Larson and Halldorsson, 2002). Still others hold the term originated in the closely related field of Operations Management (OM) (Choi and Wacker, 2011).

Regardless of the term's origin, supply chains, as noted earlier, became an important topic of discussion among managers, especially in the late 1980s and in the 1990s (Croom et al., 2000), given possibilities for developing a firm's competitive advantage (Croom et al., 2000, Hult et al., 2007, The Georgia Tech Supply Chain & Logistics Institute, 2008). One reason for this is that few companies continue to be vertically integrated, giving way to the chain as an alternative organisational form (Croom et al., 2000, Stock et al., 2010). Thus, firms and organisations have looked to their supply networks, as a whole, and to "individuals" (firms, organisations, and people) within the network, to find ways of enhancing performance, improving customer satisfaction, and maintaining or increasing profitability.

Most SCM-related articles and textbooks focus on the source, flow and control of materials (Larson and Halldorsson, 2002), addressing internal flows (Harland, 1996) or searching for the possibility of synchronising supply, demand and innovation processes (Cecere et al., 2004). These three broad perspectives are also mostly focused on the movement of goods and, in the best-case scenario, when addressing services they are portrayed as intangible goods. Such emphasis agrees with the synthesis made by Croom et al. (2000) on SCM definitions that have been proposed in the literature. On one hand, the variety of definitions shows their multidisciplinary origin; and on the other, lack of consensus suggests conceptual frameworks for SCM theory development could be viewed as weak (p.69).

Figure 2-2 synthesises findings by Stock *et al.* (2010), who hold the 166 definitions analysed were unique. Although no other definition is proposed, Stock *et al.* (2010) consider the most frequently cited definition is that offered by the Council of Supply Chain Management Professionals (CSCMP) on its website:

> "Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies."[8]

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[8] CSCMP, 2012, **CSCMP's Definition of Supply Chain Management,** http://cscmp.org/aboutcscmp/definitions.asp, accessed September 25, 2012

THEMES	Sub-Themes	Frequency	% of Total
Flows	Material/Physical, Information	117	69%
Networks of Relationships	Internal, External	120	71%
Benefits — Adds Value		82	48%
Benefits — Creates Efficiencies		61	36%
Benefits — Customer Satisfaction		47	28%
Constituent / component Parts		133	78%
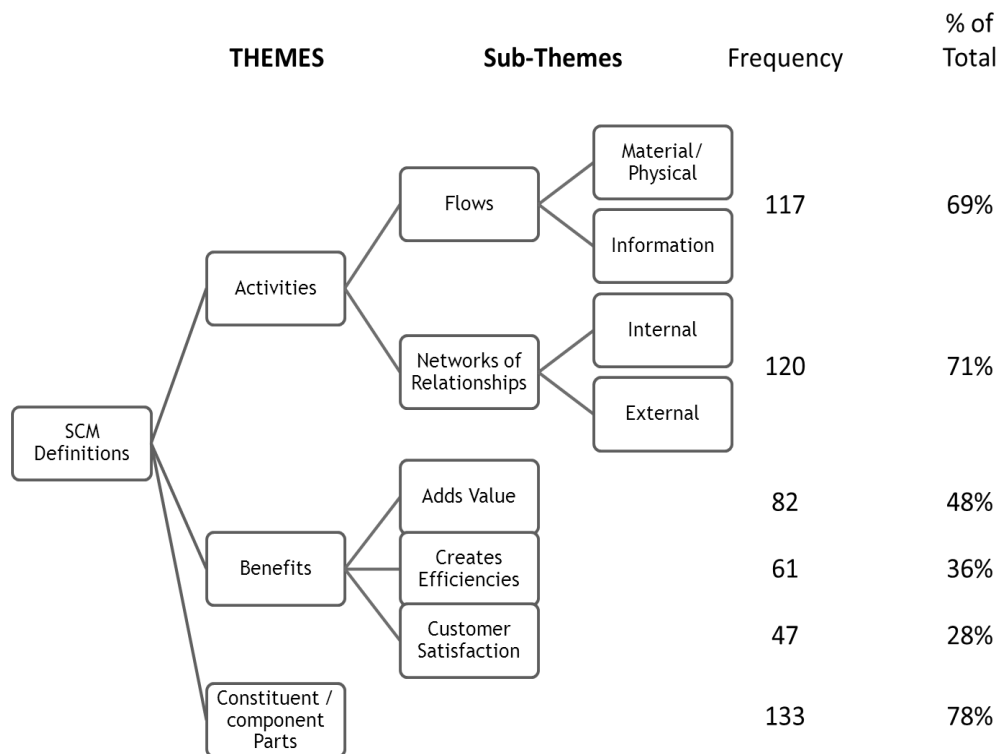
Figure 2-2: Frequency of SCM definition themes and sub-themes (free nodes).
Source: Author´s development based on (Stock et al., 2010, p.34)

As shown in previous paragraphs, despite differences in the origin of SCM and the broad perspectives covered in the definitions, what is clear is that the focus is on goods rather than services. Even the CSCMP definition, although it mentions service providers, follows a goods' logic — especially when considering the following statement also on the same website:

> "(SCM) includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance, and information technology."[9]

2.2.1.2.   SCM a goods dominant field: an opportunity to research services

In addition to what can be inferred from the definitions, some articles reviewed reflect that there are tensions between the following issues: the arguments used to differentiate goods and services (Corrêa et al., 2007); the appropriateness of using knowledge generated for manufacturing and goods in the service domain (Chase and Garvin, 1989); and the relevance of innovation in both worlds (Miles, 2000, Chesbrough, 2003, Markides, 2006, Kim et al., 2006, Paton and McLaughlin, 2008).

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[9]   Ibid

Nonetheless, some authors agree that to date, few researchers have focused their work on analysing services within supply chains, and an even smaller number have explored services supply chains (Stock et al., 2010, Lusch, 2011). Traditionally, academics and practitioners have considered services as something instrumental to the movement of goods transformed and distributed (Stock et al., 2010). Given the links between SCM and OM, it is reasonable to infer that OM literature, focused from the start on goods (Chase and Apte, 2007, Heineke and Davis, 2007), may have influenced some SCM researchers.

Press articles, economic analysts and some academic publications have pointed out the predominance of services in the 21st century (Heineke and Davis, 2007). Accordingly, as noted by Stock *et al.* (2010), within the SCM framework, the field of services represents a research opportunity.

Chase and Apte (2007) describe the history of research on service operations and note that "the penetration of service operations studies in OM journals [had] remained surprisingly low" (p.384). These authors suggest there are research opportunities to explore the "big ideas" (p.376) they identify some of which could also be of interest to SCM researchers. Similarly, researchers exploring services in supply chains concentrate mainly on the upstream section of the chain, studying outsourcing activities and relationships (Handfield et al., 2000, Scannell et al., 2000, Holcomb and Hitt, 2007, Li and Choi, 2009). Also, several among them still centre their studies on goods' outsourcing rather than the associated services. This research has a broader approach towards services; it goes beyond operations to look at services as processes through which value propositions are developed through co-creative interactions among members of a supply network.

Although work on services by SCM scholars is limited, the few existing works serve as foundations for the current research. An early paper was inspired by the work of Levitt (1972); Bowen and Youngdahl (1998) defended the concept of the production line and noted that Levitt's approach, even after a quarter century, was still applicable to a lean service. Their main idea is that applying mass-production concepts to services allows firms to improve their performance. They recognise that time has caused the boundaries of manufacturing and services to blur; but they also

point out that an industrial paradigm has emerged, known as mass-customization, which refers to a perspective originally proposed by Pine (1992).

Almost concurrently, New (1997) noted that a core idea of mass-customization is "allowing consumers to base their purchasing decisions … on criteria such as instant availability" (p.18). Suggesting active customer involvement impacts how SCM is perceived. Customer involvement reflects and shapes modernity, for they are no longer passive actors; similarly, SCM is a discipline that spawns changes aligned with roles customers play.

In the late 1980s, following the operations tradition, the original work on the service factory concept was proposed (Chase and Erikson, 1988, Chase and Garvin, 1989), blending goods and services marketing with goods production. The concept itself shows that the underlying goods logic led the authors to refer to services as 'intangible goods' that can be manufactured. At the outset of the 21st century, a suggestion to extend the model by including global supply chains was introduced (Youngdahl and Loomba, 2000). In extending the model, the flow of information was the core enabler to the argument; consequently, ICT plays the principal role in achieving higher levels of performance and customer intimacy.

Later, Giannakis (2001) addressed the issue of inter-organisational relationships and proposed a framework to conceptualise SCM in the service sector based on concepts from literature on SCM and Service Management. He agreed with what was stated by Bowen and Youngdahl (1998), and mentioned the trend observed within manufacturing firms towards servitisation — a concept further developed by Neely (2007). Giannakis (2001) focused attention on a strategic perspective, arguing that the objectives for SCM in services are directly related to the level of the strategy addressed. In that sense, he introduced what has been called the "3S framework", further developed in following years (Giannakis and Croom, 2004). The framework emphasises three strategic dimensions as SCM objectives: one related to physical structure at the corporate level, addressing a "synthesis" of the network; a second objective at the business level, wherein the authors argued about the "synergy" of human interaction relationships within the supply chain; and third, at the operations level, where "synchronisation" is critical to coordinate and control processes. The

objectives mentioned are aligned with the different types of services presented by the authors (mass services, service shops, and professional services) and characterised by the notion of intangibility. Nonetheless, the framework is still focused on goods, and suggested as a research path: "exploring the mediation influences of relationship characteristics on materials flow" (p.35), which will enrich SCM as a discipline. Such a path falls short of the services' domain.

Clearly, paths followed by different researchers have evolved over time, and moved from an almost pure application of production models toward exploring fields such as strategy and organisation theory. However, for the researcher, at the beginning of the 21st century, the way in which service was treated was still closer to the world of goods than to the world of processes. Moreover, some researchers placed too much importance on the role of ICT in reaching objectives associated to value creation in a supply chain.

Ellram, Tate and Billington (2004), seem to present a turning point; SCM literature starts to embrace the S-D logic by acknowledging its propositions (Vargo and Lusch, 2004a, 2004b). Ellram *et al*.'s (2004) article compares three product-based models used in industry to manage supply chains: H-P (Hewlett Packard), SCOR (Supply Chain Operations Reference) and GSCF (Global Supply Chain Forum). The main critique to this work is that it is still a firm-centred analysis; despite mentioning the marketing debate over the service logic, the idea behind value is, again, firm-centred rather than the outcome of a co-creation process in which other actors are involved. However, the researcher agrees with the statement that "[t]he GSCF model appears to provide the best fit for application to the services supply chain" (Ellram et al., 2004, p.24). More recently, management consulting is explored using the SCOR framework as a reference model to manage service supply chains (Giannakis, 2011b). Giannakis concludes that the main purpose of his article is to develop a tool that helps to standardise services, and finds limitations in the SCOR framework when used to study services. A key element in his proposal is to link strategic, tactical and operational activities, as well as split them through the re-interpretation of capacity/inventory. However, Giannakis holds the challenge is to look at a service offering as a tangible product, to better apply the SCOR framework.

Additional works from OM researchers in following years include the S-D logic in their framework of analysis when extending beyond the firm's boundaries. There are even calls to leave behind OM assumptions that are still at the core of SCM literature and embrace a network approach that highlights the inter-organisational dimension (Spring and Araujo, 2009), as explored by Giannakis (2001). Such a dimension allows everyone in the network — "suppliers, complementors and customers to prosper through collaboration" (Spring and Araujo, 2009, p.459).

The work of Corrêa *et al.* (2007) also contributes to opening new perspectives to services in SCM literature by highlighting features of the value package. This proposition bundles services and goods as a starting point to design operations systems that take into account the intensity of interaction between people involved (Corrêa et al., 2007). Unfortunately, in works undertaken by Giannakis (2001), Corrêa *et al.* (2007) and Spring and Araujo (2009), interactions are still at the dyadic level even when considering the importance of the network structure; and these works also view services as products rather than processes. Also, studies in operations research, logistics, supply chain management and industrial engineering that develop models at the network level, often consider people as entities of a complex system waiting in queues, rather than as individuals who can learn, adapt and change over time (IfM and IBM, 2008).

In 2009, (Lin et al., 2009) presented a conceptual framework for effective and efficient management of a service supply chain, built on the GSCF model (Lambert and Cooper, 2000) that, given its process orientation, had already been identified as key to services. However, Lin *et al.*'s (2009) understanding of the term network and its application are related to IT rather than to social interactions among people within the business network or supply network. Therefore, the model is a valuable proposition for services depending on IT infrastructure (e.g., mobile phones) or even for those in which IT has become the backbone (certain banking offerings). For other services, further development is required.

Several recent works have attempted to bring together two constructs: services and networks. For instance, a worthy approach to the idea of co-creation of value is presented in a conceptual paper that takes the logistics service as a context in which

the S-D logic could be applied (Yazdanparast et al., 2010). Nonetheless, despite stating that this subset of services "span the boundaries between goods suppliers, service providers and customers" (p.375) the conceptual development based on a literature review does not reach the network level.

Additional examples in health services (de Vries and Huijsman, 2011) and in consulting firms (Giannakis, 2011b) fall short of addressing the network level, although both recognise that collaboration and trust play critical roles in services — as does the building of relationships among members of a business network. As mentioned earlier, Giannakis (2011a) analyses the level of intangibility of the service and the outcome and, in his (2011b) paper, suggests the service offering should be treated as a tangible product that can be leased for a period of time. In addition, Randall, Pohlen and Hanna (2010) noted the potential benefits of using S-D logic in investigating supply chain phenomena; nonetheless, though emphasising the co-creation process, they did not investigate the network, but rather the dyadic relationships between a contractor (the supplier) and government employees (the customer) participating in a variety of Department of Defence (DoD) air and land programmes. Randall et al. (2010) did mention the supplier network, and how to align it with the customer's objectives; but the purpose of their research was to explore performance-based logistics programmes, not the supply network.

According to Lusch (2011), the S-D logic brings to the SCM discussion the concept of network as a service ecosystem characterised by largely loose linkages in a temporal and spatial structure to "co-produce service offerings, exchange service offerings and co-create value" (p.15). When considering the service offering under the S-D logic, the new frame for SCM is not adverse to goods or tangible matters; instead, its scope expands and refocuses on all processes taking place among all network members.

The previous paragraphs show how SCM scholars, although focused on the flow of goods and information, have also addressed the service world. However, most of the work they have presented shows results of studies in which services have been considered intangible goods or processes directly involved with the flow of goods. Accordingly, in SCM there is a gap to investigate services in which supply network

members might be or are already engaged, following the S-D logic and their understanding of service.

2.2.1.3. SCM works on optimization, productivity and efficiency

Similarly, the prominence given to study goods supply chains has led SCM researchers to place emphasis on "improving the efficiency and competitive advantage of manufacturers by taking advantage of the immediate supplier's capability and technology" (Tan, 2001, p.40). Perhaps, one reason for such emphasis stems from specific tactical objectives through which firms focus on attaining improvements in terms of cost reduction, inventory turnover, market timing and rate of fulfilment (Laseter and Oliver, 2003) – in sum, on improving performance (de Vries and Huijsman, 2011).

By studying performance indicators, it is possible to state that efforts were focused on products, either goods (tangibles) or services (intangibles), or even the complete package in which goods, information and services were bundled together for marketing purposes (Lawless, 1991). Even works in OM have studied manufacturing and distribution processes in order to optimize them, but little has been done to analyse a service as a process. It seems to the researcher that a change in mind-set is required.

2.2.1.4. Firms and value chains enhance collaboration with ICT

In the 1990s, works in SCM addressed efforts to render chains more efficient. These works also began to stress the importance of collaboration among members of the chain (Kolluru and Meredith, 2001). In the 90s, Co-opetition, the title of the book by Bradenburger and Nalebuff (1996), became a concept that combined the traditional competition mind-set with the cooperation approach. Collaboration among supply chain members was enhanced by newly developed information technologies.

Among solutions appearing in the 1990s, several specific information systems were used to support supply chain operations, including Enterprise Resource Planning (ERP), Electronic Data Interchange (EDI), Electronic Product Code (EPC) and Supply Chain Analytics (SCA) (Russell, 2007). These IT solutions allowed information sharing,

and generated a culture of focusing on supply chains. Some firms upgraded their purchasing, supply management and logistics functions from a tactical and operative role to a holistic and strategic approach, commonly referred to as SCM (Tan, 2001). The use of these systems supported what some authors had already noted, and which was then presented by Russell (2007, p.58):

> "Supply chains ride on the back of information systems, they include manufacturing operations, they interface with marketing and finance, and they involve such concepts as strategic sourcing, business process connectivity, risk sharing, and supplier involvement in new product development."

Accepting ICT as a key element for developing SCM, researchers illustrated its effects by means of company cases where the use of technology enhanced collaborative relationships among supply chain members. For instance, the Wal-Mart case has been used as an example to show the potentialities a chain has for behaving almost "as a single firm with near real-time information…" (Russell, 2007, p.58), when using appropriate IT systems to integrate the firm and its suppliers, once those systems communicate effectively with each other. Also, the expectation that support provided by ICT systems would interconnect different areas within a firm and eliminate silos, companies decided to heavily invest in IT (Laseter and Oliver, 2003). Nevertheless, ICT systems have not fulfilled this expectation; often, silos are still present. Beyond technological connectivity, however, relationships built between members of the supply network and their interactions lie at the core of benefits obtained.

2.2.1.5.   SCM, a field for network research

SCM academics have already pointed to research opportunities in studying the value creation process at network level. For instance, fifteen years ago, Lambert, Cooper and Pagh (1998), introduced the network structure as one of three key elements in a proposed SCM framework; but their argument still had a linear perspective from initial suppliers to end customers. Some years later, Harland, Jurong, Johnsen and Lamming (2004) proposed a conceptual model to understand supply networks. They built upon works from different fields, and synthesised literature related to nine networking activities; albeit stressing that knowledge capture (one of the activities on their list) through inter-organisational learning is a key to innovation, their list of networking activities did not explicitly include innovation, a topic of particular interest in this research. In a comprehensive literature review of SCM, Giunipero,

Hooker, Joseph-Matthews, Yoon and Brudvig (2008), noted that more research was required to understand multiple links to a focal firm, rather than just the dyadic relationship.

Marketing scholars addressed some research related to SCM in the late 1990s (Joshi, 1998), although focused on the imbalanced relationship between a powerful supplier and a buyer - almost stating the impossibility of going beyond opportunistic behaviours. Early in this century, a practitioner-oriented article stressed the importance of building strong relationships with customers in order to win their loyalty (Cook et al., 2001). Central to their argument was a holistic SCM view and the possibility of multiple points of contact between a supplier and a buyer. However, the idea of a network with different kinds of interactions and relationships remains missing in the literature. The emphasis has been on cost reduction; although the relationships are leveraged, responsibility for delivering value is placed on the, not at network level.

Networks have been identified as the closer representation for complex systems of entities interacting when doing business (Todeva, 2006, Battini et al., 2007); but in SCM, their study has been largely limited to linear chains (Kemppainen and Vepsäläinen, 2003), dyads (Chen and Paulraj, 2004) or in very few instances, to the network's minimum unit, the triad (Choi and Wu, 2009a). Other researchers, anchored in the G-D logic, have worked on developing a supply chain network analysis to increase efficiency and reduce complexity (Battini et al., 2007). They were able to reach these goals once flows of goods and interaction costs were used in a tool applied to ecosystem ecology.

Another point is that the aforementioned efforts to increase productivity, efficiency and optimization, were handled by simplifying the supply network. In other words, works focused on dealing only with the part of the network that a firm may control, the dyadic interaction (Anderson et al., 1994). Among those dyads, research deals either with the dyad with a supplier, if looking up-stream, or the dyad with a customer, when looking downstream. Accordingly, a disconnection appears between what is recognised as key in the SCM framework (Lambert et al., 1998, Harland et

al., 2004), the network itself, and what is undertaken in practice by researchers. As declared, a network is a more complex system of interactions.

SCM works, especially during the 1980s and 90s, focused on the chain rather than the network. Perhaps as a natural development, new paths have been pursued since the beginning of the 21st century. One of these paths includes organisation theory in supply chain research (Miles and Snow, 2007); another addresses both the network concept and relationships issues (Humphries et al., 2007, Ireland and Webb, 2007, Lazzarini et al., 2008, Choi and Wu, 2009b, Li and Choi, 2009, Villena et al., 2011). This research, focused on supply networks, explores service innovation, a topic that has been largely overlooked in SCM literature.

The context in which SCM takes place involves interacting, working, or at least engaging in relationships with other organisations (Burgess, 2007). However, the number or characteristics of those relationships vary by focal firm, by industry, and by location. As shown in Figure 2-2, Stock *et al.* (2010) stated that in 71% of the SCM definitions they used, "networks of relationships" (p.41) was a component of the activity sub-themes they identified. Among activities they mentioned are management and coordination of members. However, a limitation of their study is its linear focus on relationships, and the value added idea following a goods dominant logic. As mentioned above, over the past ten years, several studies have reflected interest in studying interactions among supply chain members at the network level (Lamming et al., 2000, Harland et al., 2001, Harland et al., 2004, Choi and Wu, 2009a, Capó-Vicedo et al., 2011, Galaskiewicz, 2011).

To cover these studies, this research focuses its attention, first, on Harland *et al.* (2004), who built on their previous work as a research team; and second, on papers related to social networks. Given the role people play under the social-constructionism paradigm used in this research, interactions among people in either a business network or a supply network may feature similarities to certain interactions taking place in a social network context.

To begin with, the paper by Harland *et al*. (2004) is based on the most widely accepted G-D logic, in which services are treated as intangible products rather than processes. The companies surveyed and cases used relate to manufacturers. No significant attention is paid to services taking place within the network. Also, the argument through which a "model for the creation and operation of supply networks" (p.1) is proposed and tested, is still centred on the focal firm strategy. Moreover, when studying the network strategy they used "the physical flow of a particular product" (Lamming et al., 2000, p.682) as the unit of analysis, rather than the interactions. Yet part of the Harland et al. (2004) literature review acknowledges works by the IMP group, where the relationship is the unit of analysis (Håkansson et al., 2009). Unfortunately, Harland *et al*. (2004) did not take a further step in this direction, even as they proposed a model that provides a valuable identification of activities within the network for both the creation and operation stages. Their work also serves to introduce contextual variables that influence enablers and constraints to the activities identified.

Papers related to social networks highlight their dynamic nature, noting that "networks should be studied over time and not as stagnant structures" (Galaskiewicz, 2011, p.4). One such paper is focused on knowledge management (Capó-Vicedo et al., 2011), while is centred on types of social relationships (Galaskiewicz, 2011). Both stress network benefits and highlight certain characteristics that relationships should feature. Trust is a key construct for network effectiveness, and helps explain why a smart network can simultaneously feature both strong and weak ties. However, Molina-Morales and Martínez-Fernández (2009) had already challenged that close and stable relationships can only have positive effects on the network, particularly on innovation processes. They suggest that an inverted U-shaped curve better describes the relation between trust and innovation, and go beyond other papers in exploring the meanings of trust, as it was explored by Morgan and Hunt (1994).

Additionally, the idea that time plays a role in relationships is suggested when the evolution of relationship interactions are described; relationships start with communication, then trust is generated and, lastly, opportunistic behaviours are eliminated or minimized (Hanf and Dautzenberg, 2006). Relationships move from formal mechanisms represented in elaborate contracts, to more informal and relaxed means of interaction. Everything becomes related to the social capital created by the

network (Zheng, 2008). Part of this is tacit knowledge and know-how accumulated as an outcome of social relationships among network members (Capó-Vicedo et al., 2011).

In an effort to bring together supply chain management and social networks, Afrazeh and Zarinozv (2010) propose a framework in which knowledge sharing by human beings lies at the core of the process; they also hold that informal networks "played a critical role in getting important work done in organisations" (p.229). The authors add that they tested their framework by conducting a four-questionnaire survey, distributed to all of supply chain partners belonging to an auto parts chain in Iran. However, there is no evidence in their publication on steps taken (besides describing three general phases) and/or number of people involved in the test. A more rigorous approach to identify what is found on the ground in relation to knowledge sharing could be undertaken. A part of their framework that may be useful for this research is shown in Figure 2-3.
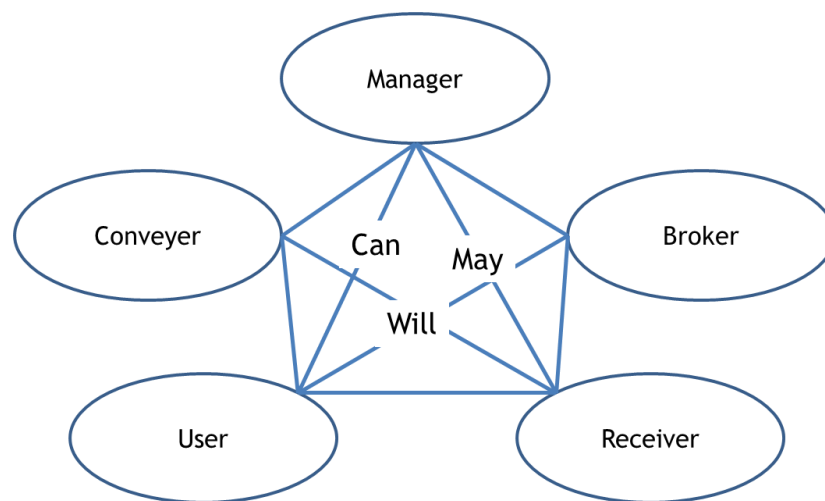
Figure 2-3: Human roles in knowledge sharing
Source: Author´s development based on (Afrazeh and Zarinozv, 2010)

Afrazeh and Zarinozv (2010) define five roles and three factors they classify as human resources. It seems to the researcher that in a supply network, such roles may co-exist with usually assigned roles based on trade relationships (supplier, buyer, customer, partner or competitor). This dual perspective on actors' roles within a supply network may shed light on assessing a process that involves a service innovation.

SCM literature dealing with networks is still being developed. Acknowledgement is made of the importance of inter-organisational relationships, collaboration, cooperation, commitment, open sharing of information and coordination (Zylbersztajn and Farina, 1999, Hanf and Dautzenberg, 2006, Derrouiche et al., 2008), but the analysis remains predominantly linear. Studies have highlighted the importance of organisational processes (de Vries and Huijsman, 2011) and their links to issues of collaboration and trust. Nonetheless, very little cross work has been undertaken vis-à-vis previous research by the IMP group (Håkansson and Ford, 2002, Håkansson and Snehota, 2006b, Todeva, 2006, Håkansson et al., 2009, Gadde et al., 2010). For instance, Lusch (2011), noted that "a view is emerging that is refocusing SCM on partnerships, relationships, networks, value creation and value constellations" — a view that could serve as a potential trigger for cross work between SCM and IMP group developments. The interactive network orientation is already recognised in marketing as a substitute for the predominant dyadic perspective (Vargo and Lusch, 2011). In pricing, IMP group contributions have also been seen as a source that may enlarge the scope of research by considering the relationships and network perspective (Formentini et al., 2011). Therefore, there are gaps for future research when the unit of analysis in a supply network is the relationship rather that the focal firm. Nonetheless, the focal firm's role has been seen as critical in the chain management process (Hanf and Dautzenberg, 2006); such a role could shed light upon characteristics of interactions within a network.

2.2.1.6.   Studies on triads

Triads are defined as "subsets of three network actors and the possible ties among them" (Madhavan et al., 2004, p.918), noting that although triads are important in studying networks—because they are located between the dyad and are more complex—such structures have received little attention among SCM researchers. Choi *et al*. (2009a) went further, defining the triad as "the smallest unit of a network arrangement where it is possible to examine how a node affects another node and how a link affects another link" (p.263). They also note that although most of the work in SCM has been on dyads, the "dyads are inadequate in capturing the interactive nature inherent in a network" (p.265).

Among studies addressing a network, those on triads have been focused on the buyer-supplier-supplier triad (Choi and Wu, 2009a, 2009b); and those extending the studies to the buyer-supplier-buyer's customer triad have been focused on outsourcing processes (Li and Choi, 2009). This triad can express reciprocal interdependencies to foster innovation between buyer and supplier as well as buyer and customer (Hanf and Dautzenberg, 2006). However, other interactions and other triads within a network have not yet been studied.

Peng *et al.* (2010) is an empirical study on triads, exploring different types of triadic structures within a particular supply network. The six[10] structures used in their study were introduced by Gulati and Gargiulo (1999). Peng *et al.* acknowledge that when the term network appears in the SCM agenda, the discussion moves "into more strategic areas" (Mills et al., 2004, p.1014). The focus of their argument in managing triads is the focal firm (the "ego") and how a firm's position within a superior network structure facilitates three aspects: first, a central position provides access to resources and information, and leads to greater efficiencies; second, should the firm bridge structural holes, it will have an advantage in social capital as an information arbitrage; and, third, in bridging its position, the firm will have a better response to the environment thanks to a broader perspective of the options available. This third aspect, in particular, may foster innovation. Despite what has been described, it seems to the researcher that Peng *et al.*'s (2010) analysis is still more at the tactical level than at the strategic level. Nevertheless, their findings support the two propositions offered: "The types of triad structures affect cooperative performance; and, in different types of triad structures, different management mechanisms administered by the company affect cooperative performance" (p.402).

Given the issues raised in the above discussion of networks and triads, it follows that there is a need to better understand multiple links at multiple levels in SCM chains and networks, rather than just dyads or inter-firm relationships (Giunipero et al.,

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[10] "In a symmetric network, a focal organisation, or "ego," can be involved in six different triads with two other organisations, or "alters." These triads are T1, in which all three parties are disconnected—also known as the "null triad"; T2, in which ego is connected to only one of two disconnected alters; T3, in which ego is connected to two disconnected alters; T4, in which ego faces two connected alters but has no connection to either; T5, in which ego is connected to one of two connected alters; and T6, in which all three actors are connected." (Gulati & Gargiulo, 1999, p.1456)

2008). Therefore, this research aims to build on the work by Choi and others (Madhavan et al., 2004, Wu and Choi, 2005, Dubois and Fredriksson, 2008, Choi and Wu, 2009a, 2009b, Li and Choi, 2009, Wu et al., 2010) in order to contribute to overcoming gaps such as investigating other triads within supply networks, and analysing triads from a S-D logic. However, it has been noted that firms are deliberately involved in delivering value by building both dyads and networks through strong alliances without leaving aside processes of vertical and horizontal integration (Giunipero et al., 2008).

Technology related issues, not innovation, have driven the agenda of SCM literature. Although innovation is considered a driver of economic growth (Schumpeter, 1943, Giannakis, 2011b) that is generally associated with goods, some researchers have pointed out that innovation within services has lagged behind (Gallouj and Savona, 2009) what transpires in the goods world. SCM researchers have also proposed methods to enhance firms' competitiveness (Hsu, 2005) but their contributions to the services' domain have been limited (Giannakis, 2011b). The following section presents literature related to service innovation, an area not amply covered by SCM scholars.

2.2.2 Service Innovation Literature

A review of works on service innovation suggests what appear to be two separate paths. On one hand, works by Faïz Gallouj and other, mainly European researchers are interlinked and compiled in a handbook (Gallouj and Djellal, 2010a). Some address managerial issues (Sundbo, 1997, den Hertog et al., 2010, Hipp, 2010); but most view innovation from a macro perspective (Gallouj and Windrum, 2009, Howells, 2010) by stressing economic impacts (Cainelli et al., 2004), policy making (Djellal and Gallouj, 2001, Vence and González, 2002, Rubalcaba and Gallego, 2008), and an understanding of the nature of innovations (Miles, 2008, Windrum and García-Goñi, 2008). To add clarity to the discussion below, this path is referred to as the European approach.

On the other hand, featuring a less coherent structure is a path with works in marketing, management and operations; researchers, mainly from the US, present findings in a more discipline-based style (Rust and Miu, 2006, Bitner et al., 2008,

Chesbrough, 2011). Again, to bring clarity to the discussion ahead, this perspective is referred to as the American approach.

Beyond this "artificial" distinction based on location, the literature on service innovation has grown steadily over the past few decades. Figure 2-4 shows the trend in number of papers related to service innovation found in the ScienceDirect database.
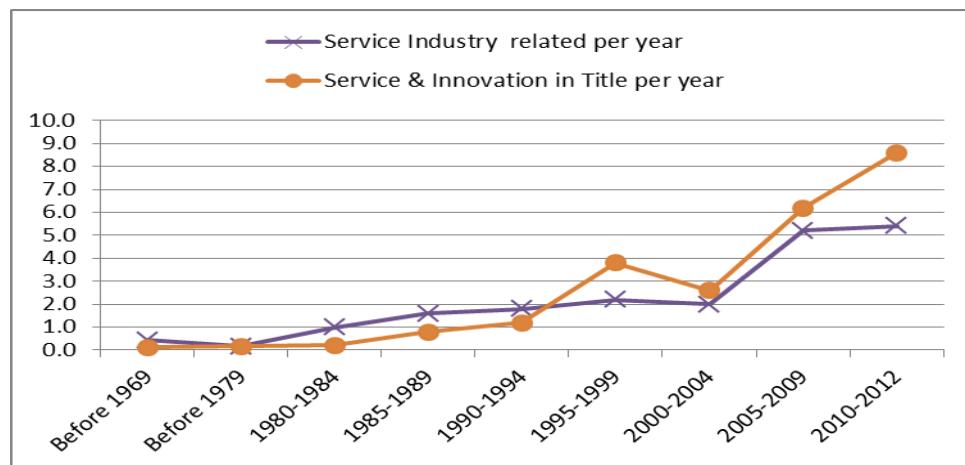
Figure 2-4: Service Innovation Articles per year in Journals reported on the ScienceDirect Database
Source: Author´s development

Figure 2-4 reflects how the SI discipline is still in development stage. Seven hundred and forty two articles were identified in ScienceDirect when searching for the words "service" and "innovation" in title, abstract or key words of publications in sources relating to business, management and accounting. Of these, ninetynine were directly related to service industries or firms, and 120 featured the two words in the article's title. Averages are used in Figure 2-4 to show an upward trend in number of publications on SI issues. 68.6% of all articles date from January 2000; of these, 63.6% are directly related to service firms, and 72.5% have the words service and innovation in their titles. These figures show that during the last decade, the topic has caught the attention of researchers in different disciplines. Most articles appearing in the database were somehow related to innovations based on changes in technology.

Kindström, Kowalkowski, & Sandberg (2012) state, "service innovation is a broad concept that encompasses a considerable number of distinct dimensions" (p.2). One dimension is related to processes (Kindström and Kowalkowski, 2009), a concept aligned with service as understood in this research; this does not mean that the approach for this research is one-dimensional, as it includes several levels and actors within a supply network.

2.2.2.1.   European approach to service innovation

An early European approach work addressing service innovation is Barras (1986), who focuses on information technology and how it plays a prominent role in service industries innovation. These innovation processes are linked with what was called the Fifth Kondratiev[11] or new services, based on the information technology revolution (p.169). In that sense, Barras showed a direct connection to previous works on economic cycles or waves, and their implications in both innovation and technological revolutions (Schumpeter, 1939, Dosi, 1982, van Duijn, 1983); nonetheless, there is still room for a better understanding of how non-technology service innovations occur in service firms and other industries. In reviewing Barras' theoretical proposal, Gallouj (1997) notes: "it is less a theory of innovation in services than a theory of the diffusion to services of technological innovations originating in industry" (p.418) — a statement that supports both the richness of Barras' work and its limitations.

European efforts to understand how service innovations take place have led to identifying at least three sub-approaches: first, a traditional perspective, governed by the idea that innovation is dominated by suppliers and characterised by the use of technology (Miozzo and Soete, 2001, Miozzo and Ramirez, 2003, Miozzo and Grimshaw, 2005); second, the so-called 'Lille school', which holds the nature of services innovation differs from that in manufacturing (Sundbo, 1997, Djellal and Gallouj, 2001, Gallouj, 2002); and third, a perspective according to which sources different from technology are explored and sectors are compared in an attempt to explain diversity in the field (Tether, 2003). Nevertheless, the three sub-approaches

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[11] Nikolai Kondratiev, a Russian economist, wrote in his book *The Major Economic Cycles* (1925) about long sinusoidal cycles (waves) in the economy. Joseph Schumpeter in 1935 named those cycles Kondratiev waves. The name is also written Kondratieff.

are not divergent and in some respects are interlinked. The following paragraphs
review some of the works, without separating sub-approaches.

Miles (2000) notes that despite the growth of services in the global economy,
economics treats services as a marginal issue; but it would appear this perception has
changed over the last decade. A recent working paper has shown that economics is
one of the disciplines contributing most to the emerging service innovation field
(Siddike et al., 2013); and additional evidence of this change is slowly but surely
offered by Gallouj and Djellal (2010a). At the end of the 20th century the main issue
at hand centred on how innovation takes place within service firms; since then, a
growing number of publications suggest services are now less marginal—not just for
economists but for researchers in general—and additional questions are being
explored. However, a driving question that emerged years ago and still remains
relevant "is not just whether services are innovative, but also whether (certain)
services are critical for innovation in manufacturing and other industries" (Miles,
2000, p.381). This question takes the discussion beyond an approach characterised by
exploring innovation within service firms, and helps examine a service as a process
that affects value propositions.

Miles (2000, 2005, 2008) also points to "the role the knowledge-intensive business
services (KIBS)[12] play in facilitating innovation" (2000, p.381); he recognises greater
understanding is required of interactions between a service supplier and a client.
However, Miles focuses chiefly on the dyad rather than on multidirectional
relationships within business networks or supply networks. Along the same lines, den
Hertog (2000) highlights how KIBS —defined as indicated in the footnote by (Miles et
al., 1995)— are co-producers of innovation. He states that SI is a process useful also
for manufacturing firms to differentiate products, and that interactions among
members of a business network "can shape innovations" (p.505); just as services
provided by a firm may influence customers' innovation processes, client feedback
may as well influence firms' service propositions. Den Hertog noted that many

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[12] "Firms characterised by relying heavily upon professional knowledge, being primary
sources of information and knowledge, using kowledge to produce intermediary services,
being of competitive importance, and supplied primarily to business. Some are traditional
professional services - others are new technology based services" (Miles et al., 1995,
p.Executive Summary II).

knowledge flows—both tangible and intangible—are present between a service provider and client firms, mentioning as many as twenty-five without seeking to provide a thorough list. Most flows identified are complex in nature and include several interactions, processes and moments through which knowledge flows.

Other studies (Hipp and Grupp, 2005, Karmarkar, 2010, Sampson, 2010) focus on identifying differences between innovation in services and manufacturing, or differences among service firms, in order to better understand service innovation. The European Innobarometer Survey concluded that there is no uniqueness to innovation in services as compared to that in manufacturing, albeit recognising some modes of innovation may be more commonly found in one or the other (Tether, 2005). As to differences between service firms, there are variations in behaviours expressed in sources of innovation, level of engagement in R&D activities, cooperation towards innovation, and objectives pursued by the innovation (Tether, 2003); the significance of differences found varies, but are not the object of analysis for this research.

Regardless of differences mentioned, research on service innovation has stressed the importance, predominant role and constant interaction that technologies have in innovation processes related to services. The theory of technological paradigms and trajectories (Dosi, 1982) established that the characteristics of services are a result of interaction between the technical characteristics of processes and products (Saviotti and Metcalfe, 1984). Moreover, the idea of characteristics interacting stems from a challenge to the utility function used in consumer theory. Lancaster (1966) proposed a new set of assumptions, including "the good, per se, does not give utility to the consumer" (p.134); what provides utility are the service characteristics embodied in both goods and services. This early work by Lancaster is aligned with some of the arguments presented in the S-D logic debate (Lusch and Vargo, 2008). A main premise of S-D logic defenders is that value co-creation involves competencies emerging from the interaction of both providers and customers.

Based on Dosi's (1982) theory of technological paradigms and trajectories

Process characteristics

Technical characteristics

Service characteristics

Physical - product technologies
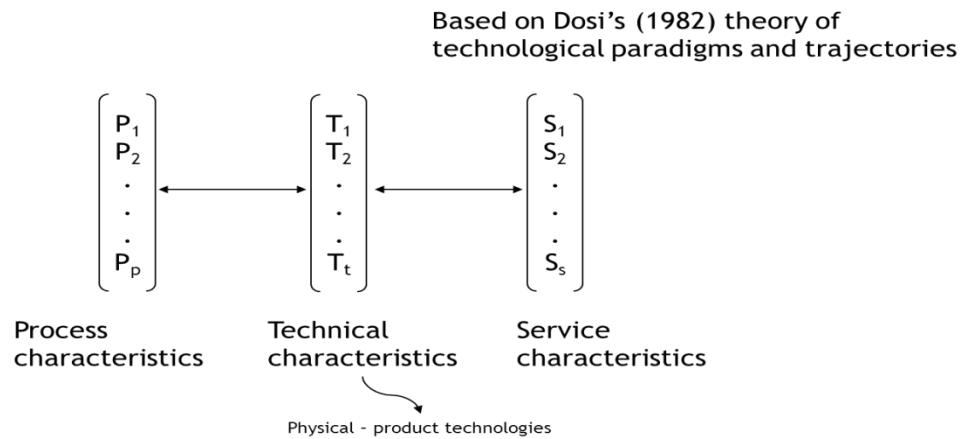
Figure 2-5: Vectors of characteristics that generate services
Source: Author's development based on (Saviotti and Metcalfe, 1984)

Gallouj and Weinstein (1997) enrich the model of interacting characteristics developed by Saviotti and Metcalfe (1984) shown in Figure 2-5. They propose a link between the client's competencies and the technical characteristics of the provider. Their model represents services and goods by vectors of characteristics and competencies: "a vector of outcome characteristics, a vector of the provider's competencies, a vector of the provider's technical characteristics and a vector of the client's competencies" (de Vries, 2006, p.1038).

Producer competences

$(PC_1..PC_q)$
provider competencies

$(CC_1.. CC_q)$
client competencies

User competences

$(O_1.. O_q)$
outcome characteristics

Service characteristics

Technical characteristics

$(PT_1..PT_q)$
provider technology

Self-service
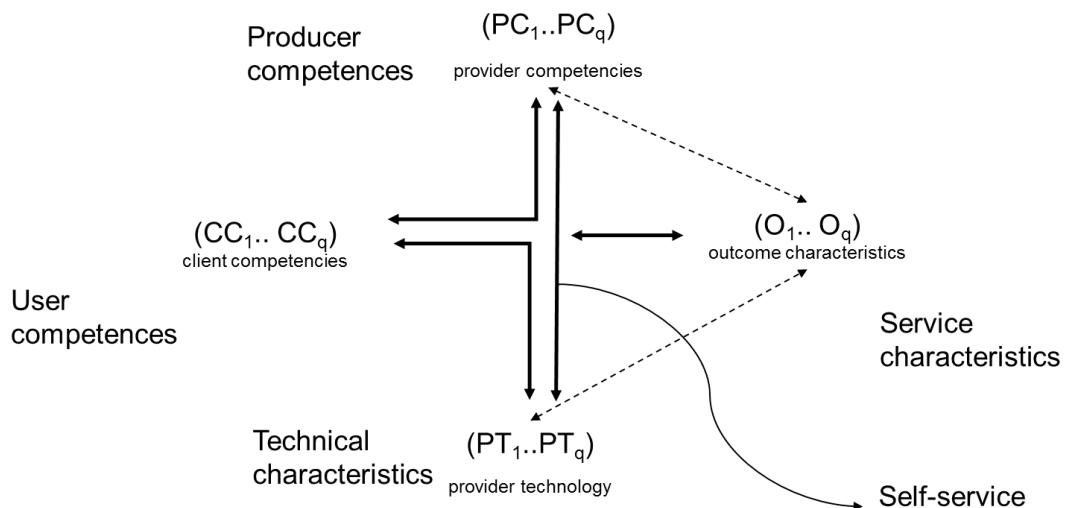
Figure 2-6: Gallouj and Weinstein model describing a service
Source: Author's development based on (Gallouj and Weinstein, 1997)

Based on the model shown in Figure 2-6, Gallouj and Weinstein (1997) propose six types of innovation: radical (new set of vectors), improvement (changes in certain elements of the vectors), incremental (a new characteristic is added, eliminated or

substituted), ad hoc (significant change in the vector of competencies), recombinative (different association or dissociation of service and technical characteristics) and formalisation (one or more characteristics are formatted or standardised) (Gallouj and Weinstein, 1997, Sundbo and Gallouj, 2000, Gallouj and Savona, 2009).

Each type of innovation signalled implies certain changes in one or more vectors. Self-service, which entails direct customer participation in producing the service, is explicitly mentioned. In every case studied, Gallouj and Weinstein (1997) focused on the characteristics of the innovation rather than on the processes taking place to reach a 'new' stable stage. Almost a decade later, de Vries (2006) suggested that interactions could also take place between the customer's and the providers' technologies, and that the customer's competencies could interact with its own technology. The new vector supports the idea of spreading the interactions or combinations of competencies and technology across a network of organisations rather than on dyadic interactions. The models proposed by both Gallouj and Weintein (1997) and de Vries (2006) explicitly consider that clients are co-producers of services. However, they remain, in a sense, locked in the G-D logic, considering tangible and intangible goods that are the object of the innovation rather than the processes.

Windrum and García-Goñi (2008) built on the above models to develop the framework for researching a complex public system, such as health services. A critical analysis of the evolution of the models shows the underlying theories, the changes introduced by each new model, and the complexity of arrangements among entities involved (Windrum and García-Goñi, 2008).

On one hand, Gallouj and Weinstein (1997) replaced the vector of process characteristics by a vector of the provider's competencies, distinguished an intangible service from a physically mediated one, and included the B2B relationships in providing a service. On the other hand, de Vries introduced changes in concepts. For instance, the vector of technical characteristics for the product is renamed the technology of the provider vector, which gives a more comprehensive perspective to the previous model. De Vries communicates more clearly what Gallouj and Weinstein explain in their work, in terms of the vector going beyond the technical

characteristics of the product (good or service); and proposes a new technology vector on the customer side, allowing for an interaction between technologies (supplier-customer) and between the customer's technology and competencies vectors. In addition, de Vries opens the model to the possibility of multiple providers rather than just one, as orginally presented by Gallouj and Weinstein Figure 2-7 shows how the model evolved.
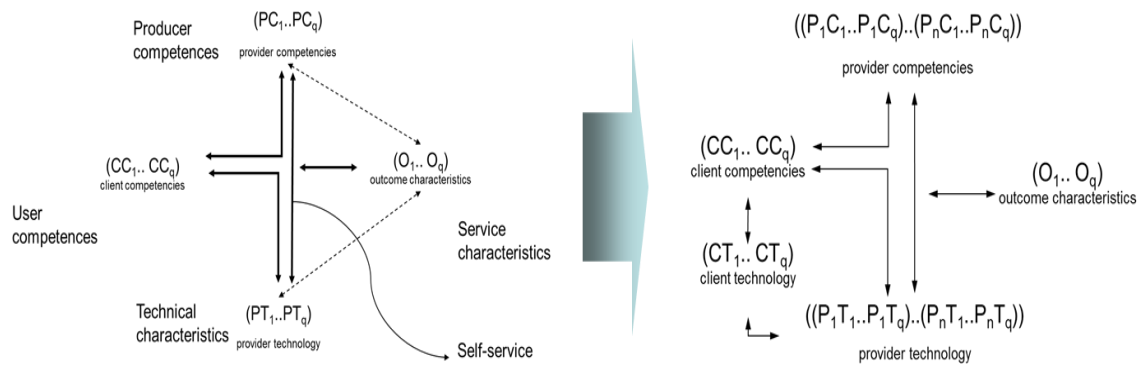
Figure 2-7: Evolution of the characteristics and competencies model from (Gallouj and Weinstein, 1997) to (de Vries, 2006)
Source: Adapted and modified by the author

In Figure 2-8, the author adapts the model developed by Windrum *et al.* (2008), making it possible to trace the vector concepts introduced by Saviotti *et al.* (1984), Gallouj and Weinstein (1997), and de Vries (2006), in order to show service interactions and innovations leveraging provider and user competencies.
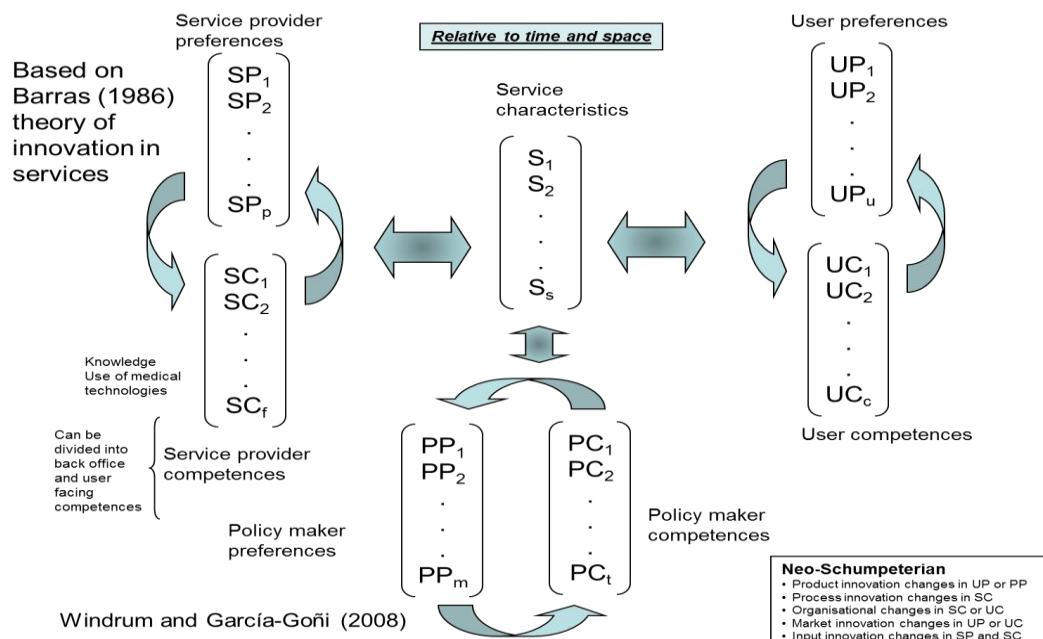
Figure 2-8: Model showing service interactions and innovations leveraging provider and user competencies
Source: Adapted and modified by the author based on (Windrum and García-Goñi, 2008)

The following differences in the models introduced hold special relevance for this thesis. First, the Windrum and García-Goñi (2008) proposal makes it clearer that the service characteristics are an outcome of the interaction and co-creation of both provider and user. Second, it features policy makers as actors who influence both the service characteristics and the interactions between provider and user. As synthesised in the bottom right-hand box of Figure 2-8, the neo-Schumpeterian approach allows for considering different kinds of innovation, from product to process, from organisation to market as well as innovations on the input side. Another element shown is that innovations seem to advance by stages, starting with improvements that lead to higher efficiencies, continuing with changes in the organisation and ending with new products.

The downside of the model is that it seems to go one step back; de Vries (2006) had already opened the model to include multiple suppliers, while this 2008 model applies to just one provider. In fact, in relation to the user, Windrum and García-Goñi (2008, p.664) state: "An important simplifying assumption that we make here is that all staff within the hospital share a common preference set. In practice, there may be more than one distinct preference set." Therefore, the authors openly suggested the need to include multiple actors on the user front, which could lead to a network structure.

The researcher agrees with the statement "a technological innovation is the medium through which multiple agents communicate their preferences and competencies" (p.655); but in practice, the interaction between suppliers' technologies and customers' technologies may go beyond communications. SCM literature presents several examples showing different interactions between technologies (Angeles and Nath, 2001, Schoenherr, 2008, Karimi et al., 2009). Accordingly, the researcher considers that keeping the technology vector helps the analysis provide the appropriate weight to the technology involved in co-creating services – a vector that Windrum and García-Goñi are not presenting in their model.

The aforementioned researchers, mainly following the Lille School, acknowledge the innovation process features a higher degree of complexity, organisational and process innovations are interlinked within services, and their approach may not necessarily fit all services (Windrum and García-Goñi, 2008, p.664). Also recognised are several studies on service innovation that follow a manufacturing perspective, meaning they rely on G-D logics. Nonetheless, the studies also note that the interacting technology is not limited to ICT, and that a supply network is involved, mainly on the providers side (de Vries, 2006). Aligned with this statement, de Jong and den Hertog (2010) identify three phases of innovation within service industries triggered by information technologies: back office improvements, economies of scope, and open networks. They stress the importance of networks in creating and capturing value, particularly in terms of the interdependencies among actors and power shifted to customers.

Almost by way of synthesis, Gallouj and Savona (2009), in a review of innovation in service, note that conceptualization in the field has been dominated and "nurtured by sceptical neo-industrial scholars" (p.151), who argue in terms of productivity measurements developed in G-D logics rather than in terms of value creation.

Despite critiques made of the Lille School approach, gaps identified and research opportunities spotted, by 2009 this work also became aligned with the S-D logic. First, they define the service as a process (Gallouj and Savona, 2009) as others have stated (Grönroos, 2000, Edvardsson et al., 2005), and as people close to the S-D logic have also argued (Vargo et al., 2008, Lusch et al., 2010). Second, Gallouj *et al.* also consider "the act of consuming as the act of satisfying a need" (Gallouj and Savona, 2009, p.163) which agrees with the ideas presented by Lusch and Vargo (2008) to the effect that value realisation emerges from interactions with customers' competencies.

According to Gallouj and Savona (2009), the literature offers three main approaches to innovation in services: technologist or assimilation, service-oriented or differentiation, and integrative or synthesizing. Among these approaches, the latter reflects the trend towards convergence between goods and services, leading in turn to a new definition of product; this integrative approach is aligned with the idea that everything is service (Glushko and Tabas, 2008), a convergence that denotes passing

from service economies to economies based on service relationships (p.162). This statement stresses the importance of interactions and the combination or re-combination of resources among actors within a supply network in order to co-create value for the system (Vargo et al., 2008).

In addition, it has been argued and proven that when a Schumpeterian perspective is used to review studies based on surveys of services, the integrative approach is more robust, whereas the conceptualisation of the service-oriented perspective needs to be strengthened (Drejer, 2004). Another point to highlight from the work of Gallouj and Savona (2009), fundamental for this thesis, is the recognition that innovation is a process and not just the result of a process; and from de Vries (2006, de Vries and Huijsman, 2011) that the conceptualisation proposed includes both the possibility of a network-shaped structure and the presence of public entities among the actors involved.

Among other Lille School studies, one proposed a customer-employee interaction for a service-innovation model (Liu and Chen, 2007), in which customers provide information and employees then create value for both. Another perspective (van der Have et al., 2008) is that in the services field, innovation is multidimensional and may cover products (service concepts), processes, and the organisation(s) (service systems). Under this perspective van der Have *et al*. (2008), introduced the term "renewal" to describe three dimensions of innovation: target, nature, and radicalness. However, these authors analyse innovation as an outcome of the innovation process while in this thesis the focus is on the process, rather than the outcome. They also stated benefits are first for the "producer", second for direct customers; they did not address a value proposition for the system as a whole.

2.2.2.2.   American approach to Service Innovation

The so-called American approach to SI research offers a slightly different perspective from the European; the author suggests this approach is less structured, in part because the individuals and teams of researchers seem to have weaker ties between them. They are aware of each other's work, but paths appear to diverge more than in the so-called European approach. In addition, several of the American approach scholars are currently closer and deliberately show they may be embracing the S-D

logic debate in the SS field (Bitner and Brown, 2006, Michel et al., 2008). Most of them have a marketing background, and it would appear that within the "American approach" service innovation becomes almost part of the service marketing subfield.

A practitioner-oriented article by Smith (2008) helps provide a framework for the literature review that follows. Smith focused on technological innovation, and how the innovation concept has evolved from isolated experiences based on individual observations to practices that follow theoretical models and principles supported by R&D structures within industries and universities. However, he acknowledges the following points: the formal study of innovation is just fifty years old; whereas in the past, the approach was towards standardisation to improve efficiencies, in the future, at the core of pursuing innovation is the recognition of unique skills and knowledge, together with the nature of the social system. Like many other authors, Smith also recognised Schumpeter's creative destruction, which he described as "the march of invention, innovation, and change across the face of society and business" (p.60).

Both American and European scholars consider innovation experience and knowledge developed in manufacturing based on the G-D logic, but the former group has often been closer to management disciplines such as marketing and operations. A common topic, previously linked with firms seeking to recover competitive advantage is quality. A series of works pointed to the service quality construct as an innovation output that can be measured (Zsidisin et al., 2000, Panesar and Markeset, 2008).

Some SI scholars who already embraced the S-D logic took note of both research strengths and weaknesses. For instance, Möller, Rajala and Westerlund (2008) show how an SI overemphasis on the service production process from the perspective of a single actor has led to a degree of myopia; i.e., contending that, from a network perspective, proposals overlook the possibility, in dyadic interactions, for creating value for the two parties involved in the service, or for all those involved in a more complex system. As previously noted, the predominant view is intra-organisational. Some may argue that, in discussing value creation, the Resource Based View (RBV) provides a valid theoretical framework; but RBV is firm-centric and requires to be

expanded in order to include how resources could be transformed into customer offerings (Möller et al., 2008, p.32).

Practitioners search out instruments to overcome the challenges of service design, assessment and improvement. Seminal works on service blueprinting (Shostack, 1982, 1984, 1987) were initially offered as a technique to help practitioners in dealing with these challenges, even as the technique has evolved to include the process of innovation (Bitner et al., 2008). Like other developments related to service(s), this too was promoted from the marketing field. Bitner et al. emphasise that service blueprints provide a customer-focus, and the customer experience is taken into account in the design stage. In sum, they hold that "service blueprinting is a technique that allows presenting, in a graphic way, activities, relationships and interdependencies of a service process; and stresses the human-to-human and human-to-technology interfaces" (p.70). However, as often happens, a typical process diagram presupposes some kind of sequence in activities and interactions, begging the question: what if the activities and/or interactions are not sequential?

Certain European approach works discuss the similarities and differences between service innovation and product innovation. One study by several researchers points to three differences: the role that people, especially providers, play through being part of the customer experience; the required physical presence of the customer; and the absence of a tangible product to carry a brand (Berry et al., 2006). Based on these differences a two-by-two matrix is proposed to classify service innovations according to the markets each serves (Berry et al., 2006, p.59).

Service examples from widely known firms illustrate the type of service represented by each cell. One dimension is type of benefit (a new way of delivering or a new core benefit) and the other, type of service (must be consumed when produced or not). This classification generates four cells and the authors give a number of examples: cell one, when consumption or use is separate from production and the benefit is core, it is called a flexible solution (e.g., FedEx); cell two, when the type of service is separate from production but benefit to the 'buyer' is in delivery, it is known as a controllable convenience (e.g., Google); cell three, when the benefit is core and the service inseparable, it is labelled comfortable gains (i.e. Cirque du Soleil); and cell

four, the benefit is in delivery and the service inseparable, named respectful access (e.g., Southwest Airlines).

Although most works undertaken in both Europe and America still focus on the firm a few mention interactions with customers or other members of the business network. However, very little mention is made of research in service innovation where analysis is at network level. Henry W. Chesbrough (2003, 2004) wrote two provocative articles recommending manufacturing companies to "open" their internal R&D capabilities and engage in a dialogue, in a model of open innovation that allows ideas and projects to flow from firm to market and from surroundings to firm at different stages of the development process. The model was initially suggested for high-tech industries, but has since been well received by other industries although it demands a different mind-set. Required is an approach that shows willingness to engage customers, suppliers, partners, complementors and even competitors in the flow of information, ideas, projects, etc.

In a subsequent article (Chesbrough, 2011), the author mentions a meeting with a senior vice-president of research at a global information and technology company that has moved away from manufacturing to services but still has thousands of researchers on hand working on goods, gadgets and technologies. Chesbrough proposed a service value web, as shown in Figure 2-9, through which he challenged the idea of adding value through sequential steps in the value chain, proposing a more interactive model where tacit knowledge is shared, together with other resources. However, his argument still falls short in terms of interactions at network level and how these influence the service innovation process.
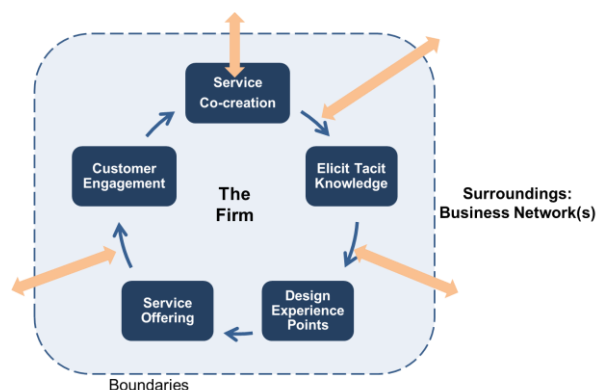
Figure 2-9: A service value web
Source: Adapted and modified by the author based on (Chesbrough, 2011)

Despite some level of divergence in the European and American approaches, they *do* converge in fundamental issues. The next sub-section covers some of those theoretical elements that are crucial for this research.

2.2.2.3.   Service innovation for this research

Service innovations feature two characteristics. First, despite a customer centric perspective, the entire role of innovation stands on the firm's shoulders; and second, classifications leave unanswered the question regarding what a service innovation is. Nevertheless, classifications help clarify the field in which this research could take place. As noted earlier, most innovation-related work is related to goods; therefore, some service innovation classifications transpose findings from innovation in the goods domain to the services domain. One limitation is that classifications keep the intangible nature of the service as a "special kind of good" rather than dealing with it as a process. Table 2.2 presents a summary of innovativeness classifications, beginning with one focused on goods innovation developed in 1982 by Booz, Allen and Hamilton.

Goods' Typology	Service(s)' Innovation Typology							
Booz, Allen and Hamilton (1982)	Gadrey et al. (1995)	Debackere et al. (1998)	Avlontis et al. (2001)	Hollenstein (2003)	Oke (2007)	Correcher et al. (2009)	Castro et al. (2011)	Nicolajsen et al. (2011)
New to the world	Innovations in service products	Breakthrough projects (fundamental changes to existing products)	New to the market	In-put oriented	Radical	Based on ICTs	Product innovation (goods or services)	Customer as resource
New in the eyes of customer			New to the company			Used of technologies for service		
New product lines	Architectural innovations (bundling-unbundling of existing service products)	Platform projects (new product lines)	New delivery process	Out-put oriented	"Me-too"	Modes of service production	Process innovation (methods, logistics or support activities)	Customer as co-creator
Products that represent new challenges to the firm			Service modifications			Types of services		
Additions to existing product lines	Modifications of service products	Derivative projects (incremental changes)	Service line extensions	Market-oriented	Incremental	Human capital competencies	Organisational innovation (management systems, work organisation, relationships with others)	Customer as user
Improvement and revisions to existing products			Service repositionings			Based on cooperation		
Reposition existing products that are targeted to new segments	Innovations in processes and organization for existing service					Modes of service delivery	Commercial innovation (product design and packaging, sales and distribution)	
Cost reductions, new products that offer similar performance at a lower cost						Organizational structure		

Table 2.2: Types of Service Innovation
Source: Adapted, complemented and updated by the author, based on (Alam, 2006b)

Works included in Table 2.2 straddle both the European and American approaches, and aim to clarify what is understood by service innovation, identify whether "something" was or was not a service innovation, and given their similarities and differences, group such services into categories for further investigation. Contributions and limitations of works reviewed below are considered in light of the purpose of this research, which stresses the link between service innovation and network arrangements.

Recent works presented in the table use different elements to classify innovations. Nicolajsen and Scupola (2011) base their classification on the role/involvement of customers, thus providing a fresh dimension to the process of innovation aligned with the S-D logic – especially when the customer is a co-creator. Their work focuses on radical innovations (Gallouj and Weinstein, 1997, Oke, 2007) and is limited to consultancy services firms. Within that framework, they show how a customer's role changes over time, and how different customers may play different roles during their involvement in the service innovation. However, their work is at the dyadic level and does not analyse a network structure.

An integrative approach (Gallouj and Savona, 2009), focused on comparing innovations in manufacturing and services, is employed by de Castro *et al.* (2011). This classification shows types of service innovations based on product, process, organisation and commercial interactions. However, their approach is still firm-centred. Albeit other actors are involved in both, the third and fourth types, their involvement in the innovation process is not clearly presented. It would appear as if others are considered as recipients of the firm's innovation. Corrocher *et al.* (2009) offers a classification emphasising the role technologies have on service innovation processes. Even though it is mentioned that some innovations stem from cooperation with other entities, value is created at the firm level by means of dyadic interactions.

Classifications summarised in Table 2.2 are mostly focused on outputs perceived by the market or customers. A possible explanation is that the researchers hold common views on goods innovation logics. For instance, Hollenstein (2003), researching Swiss companies within clusters, proposed three macro categories of indicators of

innovations; the three categories contain seventeen indicators, grouped by orientation: inputs, outputs or market. For both inputs and outputs, the perspective is firm-centric; the third indicator measures market response to the innovations launched by the firms. Accordingly, it is reasonable to imply that these classifications are also based on G-D logic. Similarly, Oke (2007) uses a traditional approach focused on what the market receives as a firm's output. However, he introduces the "me-too" type of innovation, i.e., the output is new to the firm but not the industry.

Four of the classifications were presented by Alam (2006b), who compared service innovation categories undertaken earlier, and built on the 1982 work by Booz, Allen and Hamilton, "New products management for the 1980s", as a template to match service innovation categories with those used for goods innovation. Works by Alam (2006a, 2006b, 2010) draw on a marketing background, and are focused on the process and stages of developing new services as well as how cultural dimensions influence B2B interactions; hence it could be expected that his findings would be closer to the network level. Nonetheless, they remain in the realm of firms. His discussion suggests innovations are simply modifications of services delivered by other firms or in other markets (Gadrey et al., 1995, Avlonitis et al., 2001). Also, Gadrey *et al*. (1995) signalled that industrial innovation could be closer to the ways innovation in services take place. These examples show how classification of service innovations has been dominated by the logic used to classify goods innovations. Alam (2006b) draws on European authors—even a Lille professor as is Gadrey—but classifications are not consistent with others labelled by the researcher as corresponding to the European approach.

Two other classifications employ a different approach: Gallouj and Weinstein (1997) introduced six classifications: radical innovation, improvement innovation, incremental innovation, ad hoc innovation, re-combinative innovation and formalization of innovation; and (Tronvoll et al., 2011), based on the characteristics and role of technology, proposed three categories: product innovation, process innovation and transfer innovation.

Both sets of categories are still centred on the firm. Perhaps, companies are trapped in an apparent dichotomy, where a competition mind-set vies with collaboration;

where G-D logic locks them into a rationale aimed at eliminating competitors, as opposed to a collaboration mode creating value with others, for everyone. Moreover, companies seem to be working at a tactical, not a strategic level (Tan, 2001, Laseter and Oliver, 2003), where information silos are still in place or at best "…companies have resolved the functional conflicts by making compromises rather than breaking constraints" (Laseter and Oliver, 2003, p.3). Nevertheless, it has been accepted that "we need to overcome the silos of departments and disciplines if we are going to generate the innovation needed in a services economy" (Chesbrough, 2005, p.17). Thus, "service innovations have the potential to impact service productivity, service quality, and rates of growth and return for service systems" (Spohrer and Maglio, 2008, p.244).

Furthermore, service innovations are potentially better reached through collaborative efforts among supply network members (Lusch et al., 2006). All these issues show gaps in the literature in relation to the need for further research on service innovation at network level, rather than having a traditional firm-centred or dyadic level approach. Also, the gaps show the importance of focusing on the process rather than output.

2.2.3 Service Science Management Engineering – SSME Literature

Considering the research paradigm framing this thesis, it should be noted that the idea of a service economy is subject to varying viewpoints. For one, the point made about the significance of services in 21st Century economies has been challenged. Jansson (2009) holds that data on services has been distorted, as analysis has been focused largely on employment and nature of the work undertaken, instead of output and household consumption; based on the latter metrics, he estimated a goods to services ratio in Sweden of 63:37, remaining stable for the past 30 years. His point is well supported when addressing the situation in high-tax welfare states, such as Sweden, in which it is possible that "a good quarter of the total consumption is constituted by tax-financed private goods, that is, services usually characterized as 'merit goods' " (p.185). Even if this argument could be extended to a wider set of countries, and services are not as dominant as generally thought, interactions between different actors within a business network or a supply network could

provide the foundations of processes through which innovations are fostered or hindered.

The previous sections have shown that despite growing research on services, gaps in the current understanding of innovation in services still abound in SCM and SI. Following is a review of work viewed as relevant for this research in SSME or service science (SS). The researcher examines these works through the three lenses employed earlier: innovation, networks, and services. The aim is to explore SS literature in search of knowledge that may contribute to enrich the SCM field.

Some SS related works go beyond the issues of service, service firms or services, instead addressing those charged with providing the service. Since 2006, several efforts have been made to foster development of so-called T-shaped professionals (IfM and IBM, 2008, Spohrer et al., 2010); professionals with in-depth, specialised knowledge of a particular subject, skilled at working in that field, but with a broad understanding of other disciplines that enable them to effectively interact with people from other fields. They tend to have social skills, be active listeners and learners, and be willing to question and abandon previous knowledge based on solid evidence. They recognise the current world has changed, and that serving is the activity of someone who is creating value for the system.

For this research, a key issue that lies at the foundation of the S-D logic proposed by Lusch and Vargo (Vargo and Lusch, 2004a, 2006, Lusch and Vargo, 2008, Lusch et al., 2010) is that innovation is the source of value co-creation processes. Although S-D logic could be applied to multiple fields, initial work by the aforementioned authors suggested a logic shift in marketing. Following 2004, they addressed fields that are close enough to marketing, like SCM, proposing that S-D logic could act as a framework to integrate SCM practices (Lusch et al., 2010). In their argument, service, meaning "doing something for and with another (the beneficiary of the service)" (p.19), is the source of value creation. This explains why supply chains or networks service offerings allow interactions among multiple actors within the chain (providers, customers, distributors) and among multiple members of a network, where value is co-created.

In addition, what was argued by Normann and Ramírez (1998, Normann, 2000) in relation to reconfiguring business processes, liquefying information resources and moving towards value constellations, gains particular meaning when discussing innovation — especially, service innovation. However, when SCM literature addresses innovation, it is mostly related to new technologies such as RFID, or to changes fostered by ICTs that render possible processes such as e-business, e-procurement, etc. and/or, the adoption of information technology to link and manage systems across actors of the chain, e.g., ERP, CRM, SRM, etc. (Handfield et al., 2000, Angeles and Nath, 2001, Chatterjee et al., 2006, Chieh-Yu, 2006, Ettlie and Pavlou, 2006, Schoenherr, 2008, Karimi et al., 2009, Bardhan et al., 2010, Lau et al., 2010, Wang et al., 2010, Whang, 2010). Among the few authors addressing the issue of innovation in supply networks through inter-organisational processes is the review presented by Bunduchi and Smart (2010). Nevertheless, they still focused on information systems and cost associated to innovations.

In times of turmoil, when limited resources are more critical, there is evidence that supply chains could serve as engines to foster innovation beyond technology, of the kind that may drive organisational improvements leading to sustainable development (Isaksson et al., 2010). This work opened a new dimension related to services, although empirical evidence stems from two manufacturing supply chains/networks: the cement-housing industry and the communications-mobile phones industry. Both industries are analysed using systems thinking, and the perspective could be enriched with the S-D logic framework. In addition, supply chains may become catalyst for collaborative innovation (Hagel III and Brown, 2011).

2.2.3.1.   Service Science and the issue of innovation

A topic that lies at the core of many discussions among scholars from the service science discipline is service innovation, which combines technology, business models, social-organisational and demand innovation to either improve or create new service systems (IfM and IBM, 2008). Initiatives synthesised in the document cited include e-commerce, loyalty programmes, compound interest saving accounts, credit cards and mobile phones (p.17). Some of these examples entail innovations in tangible goods, whereas others do not; some could be based on changes in processes at either or

both the front and back office, differing from previous processes in terms of customer and/or supplier interaction.

In a similar vein, Ettlie and Rosenthal (2011) found that "many new service businesses innovate to exploit opportunities associated with the application of the latest communications and information technologies" (p.286); and that "service firms are more likely than manufacturing firms to break with tradition when developing new offerings" (p.288), in particular when innovative ideas originate from customers. They conclude that although their work provides preliminary results, it seems there are three types of service innovation: "pure service innovation; combined new process and new service innovation; and pure process improvement innovations in service providers" (p.296).

Accordingly, SS literature brings out the role a customer or customers play in relation to service innovation (Sampson, 2010). In some cases, it is expected that a customer become a designer or a producer of the service demanded — a kind of involvement often described as co-designer or co-producer. Both terms are different from co-creating, given the understanding that value co-creation is essentially value-in-use. Lusch and Vargo (2006b, p.284) state:

> "The second component of co-creation is what might more correctly be called co-production. It involves the participation in the creation of the core offering itself. It can occur through shared inventiveness, co-design, or shared production of related goods, and can occur with customers and any other partners in the value network."

For Lusch and Vargo, both co-design and co-production are more closely related to the G-D logic than to the S-D logic. When a customer or other actor of the supply network is involved in the design and/or production stages, they are not necessarily creating value for themselves or for the system. Although the process can be rated in a higher rank, it is still in the value added domain rather than in the realm of value co-creation. Goods and those services that may still be classified as 'intangible goods' are, as presented in the fundamental premises of S-D logic, FP3[13] "distribution mechanisms for service provision[s]" (Vargo and Lusch, 2008, p.7).

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[13] FP3: Foundational premise number 3

Furthermore, Russo-Spena and Mele (2012, p.535) identified five "Co-s" for innovation as different phases of the innovation process: co-identification, co-evaluation, co-design, co-test, and co-launch. They conclude that "innovation emerges through the implementation of multiple resources in a shared context" (p.544). Chen *et al*. (2011) also states that "the partners who see value in co-production will be more willing to participate and contribute toward bettering the service innovation practice" (p.1343).

The issue to be stressed is that innovation in SS and S-D logic is more closely related to the arguments of open innovation (Chesbrough, 2011)—in which many actors participate and enrich the process—and to those related to network arrangements (Michel et al., 2008), whereby customers, employees, suppliers and even competitors jointly co-create value when a service is delivered or used.

2.2.3.2.   Service Science and the issue of networks

As presented by Michel *et al*. (2008), the S-D logic perspective enriches the more traditional and accepted G-D logic in at least two respects: first, market exchanges are not restricted to dyads but to many actors; and second, the linear value chain is expanded to "complex value constellations" (p.63) that are aligned with arguments cited earlier by Normann and Ramírez (1998). Michel *et al*. (2008) stresses that what is created in these circumstances is a network of operative resources acting upon other resources to create value or benefit (Vargo and Lusch, 2004a).

The network concept is used broadly. Gummesson (2006, 2010), whose marketing and services background is impressive, discussed many-to-many marketing, introducing some of the key issues concerned with complexity in the system that go beyond the traditional one-to-one dyadic approach. For Gummesson (2010, p.632) "service is neither an activity, nor a process, nor a chain; it consists of value-creating networks. Clearly, research to better understand services and innovation on services need a network approach.

2.2.3.3.   Service Science and value co-creation

As noted when addressing SCM literature, most research has a linear approach. Therefore, what is usually established in a process is the value added from activity to activity, or from step to step. Service science, in contrast, has value co-creation as its primary object of study (Spohrer and Maglio, 2010). These authors argue that the interaction among service system entities is the source for value co-creation phenomena, and that service innovations are at the end of "value co-creation mechanisms used by service systems entities" (p.158).

For this research, debate addressed to SSME and S-D logic is considered as the framework for exploring concepts developed in other fields. Particularly, value co-creation may be considered when studying interactions among the different actors of a supply network. Mele *et al.* (2010) explores how actors of a network acting within the S-D logic through resource integration co-create value, and deems such a process an innovation. These authors hold that "framing innovation within S-D logic and SS moves the locus of innovation from product to value" (p.75).

2.2.4 Literature in other fields to set research boundaries

The business and management world has been engaged, almost since the economic propositions of Adam Smith in terms of increasing worker productivity, in making and moving things. Productivity has been a topic of research and development in the G-D logic. Nevertheless, what is valid in manufacturing and logistics, is not as clear for knowledge and service workers (Drucker, 1991); however, a hint given by Drucker is to ask and allow both customers and employees to teach or share what they know, and, in particular, what they do right (p.77-78). This need of increasing productivity is one of the aspects underpinning innovation in services; but it requires reviewing and developing different measurements for service productivity (Grönroos and Ojasalo, 2004) as well as seeking both internal and external efficiencies that could come from learning encounters among business network members.

Several topics have been addressed in strategy literature, which define boundaries suited to the object of this research. Strategy scholars have assessed innovation and networks in exploring the resource-based view of the firm, its core competencies,

business models and/or business strategies, and alliances. Most strategy-related work has focused on attempting to understand and propose ways for a firm to develop sustainable competitive advantage. For instance, Teece (2010) affirms that a business, a firm, is conceptualized by means of its business model, which determines how the firm captures value or creates value propositions; it shows a firm-centric proposal, and suggests that innovation may come from developing a different business model. Teece also states that literature on strategy, economics and organisations mentions the issue but does not analyse it in any depth.

Researchers have considered alliances as sources of new capabilities and fountainheads of innovation. Nonetheless, their work has been limited in at least four aspects: missing the network composition, obtaining conflicting results when considering the network structure, relying on the benefits' presumption of structural holes, and ignoring the novelty of knowledge generated by the innovations studied (Phelps, 2010). A theoretical approach that has heavily influenced strategy literature is the resource-based view of the firm (RBV), largely/often used to study outsourcing processes. Several authors have noted how this theoretical approach complements explanations of phenomena that have been studied using transaction costs theory (Espino-Rodríguez and Padrón-Robaina, 2006) — especially in terms of effects on the remaining resources. Such an approach helps us to foresee multiple interactions among a network's members and the resources involved.

In marketing, the issue of services has been addressed to the extent that a subfield was created in the mid-80s. Since then, services' marketing has gained recognition and made valuable contributions to marketing theory. Recently, service innovation, relationships and interactions with customers have served as a cornerstone to co-create value, especially in terms of branding (Halliday and Trott, 2010). These researchers see customers as a resource that leads to a relational competence in order to become innovative; however, in their conceptual proposal it is not clear how the network of customers, suppliers, employees and competitors could interact, beyond a collection of dyadic relationships.

The network concept has been used in the field of industrial marketing for more than twenty years (Håkansson and Snehota, 1995, Cova et al., 2010). Thanks to the concept, remarkable contributions to understanding some of the complexities in business networks have been made (Todeva, 2006, Håkansson and Waluszewski, 2007, Håkansson et al., 2009). As becomes evident when exploring specific works on supply networks, some researchers appear reluctant to use the term network in order to avoid misunderstandings. Indeed, the term "network" has many meanings: "network – one word but many meanings" (Håkansson et al., 2009, p.236). To shed some light upon the discussion, intermediate forms of network are described based on five different perspectives: territory, industry, alliance, communal and kinship (Cova et al., 2010), where the purpose is "to identify and describe forms identified between dyad and network" (p.880); forms mentioned are: district, milieu, cluster, channel, system, constellation, cartel, clique, club, community, guanxi, cast, order, congregation, fraternity, tribe, clan and family. Several scholars agree that network analysis, even with different approaches (Thorelli, 1986, Håkansson, 1987, Powell, 1987), remains affected by confusion in terms of what network actually means.

(Holma et al., 2009, Holma, 2010) have in recent years focused attention on triads and the way co-operation facilitates interactions in a business network. In the same vein, (Harrison et al., 2012) explores how the roles of actors within a triad change. Also, a UK group studied the role ties between dyads play in dynamics within the network (Mariotti and Delbridge, 2012). Similarly, the IMP group takes a further step in the study of relationships within networks to explore how the pattern of interactions fosters innovative behaviours, thus contributing to economic development (Håkansson and Waluszewski, 2013).

Other researchers have noted that access to knowledge differs from how effective is its detection, assimilation or transfer to the firm (Hamel, 1991, Phelps, 2010). However, their research is focused on goods rather than on services, and explores the benefit to the firm rather than the network.

Table 2.3 syntheses the main sources for this literature review.

		LENSES		
		Networks	**Service**	**Innovation**
DISCIPLINES	**Supply Chain Management SCM**	• (Choi and Dooley, 2009) – JSCM • (Choi and Wu, 2009a, Choi and Wu, 2009b) – JPSM • (Giunipero et al., 2008) – JSCM • (Hanf and Dautzenberg, 2006) – JCNS • (Harland, 1996) – BJM • (Kim et al., 2011) – JOM • (Li and Choi, 2009) – JSCM • (Randall et al., 2011) – JSM • (Villena et al., 2011) – JOM • (Giannakis and Croom, 2004) – JSCM • (Wilhelm, 2011) – JOM	• (Chase and Garvin, 1989) – HBR • (Chase and Apte, 2007) – JOM • (de Vries and Huijsman, 2011) – SCM • (Ellram et al., 2004) – JSCM • (Giannakis, 2011) – SCMIJ • (Harland et al., 2004) – BJM • (IfM and IBM, 2008) – Report • (Lusch, 2011) – JSCM • (Randall et al., 2010) – JBL • (Spring and Araujo, 2009) - IJOPM • (Yazdanparast et al., 2010) – IJLM • (Ponsignon et al., 2011) – IJOPM • (Ponsignon et al., 2012) – TQM&BE	• (Burgess, 2007) – PhD Thesis • (de Vries and Huijsman, 2011) – SCM • (Isaksson et al., 2010) – JBE • (Jansson, 2009) – Futures • (Kim et al., 2006a) – JAMS • (Russell, 2007) – AFJL • (Tan, 2001) – EJPSM • (Agarwal and Selen, 2011) - IJPOM
	Service Innovation SI	• (Angeles and Nath, 2001) – JBL • (Chesbrough, 2011) – MITSMR • (de Vries, 2006) – RP • (Möller et al., 2008) – CMR	• (Bitner and Brown, 2006) – Communication ACM • (den Hertog et al., 2010) – JSM • (Gallouj and Savona, 2009) – JEE • (Gallouj and Djellal, 2010) – Book • (Michel et al., 2008b) – CMR • (van der Have et al., 2008) – SSRN • (Windrum and García-Goñi, 2008) – RP • (Edvardsson et al., 2007) – Book Chapter • (Edvardsson et al., 2005) - IJSIM	• (Bitner et al., 2008) – CMR • (Djellal and Gallouj, 2001) – SPP • (Gallouj and Weinstein, 1997) – RP • (Gallouj and Windrum, 2009) – JEE • (Miles, 2000) – IJIM • (Miles, 2008) – IBMSJ • (Möller et al., 2008) – CMR • (Paswan et al., 2009) – DS • (Tether, 2005) – I&I • (Ettlie and Rosenthal, 2011) - JPIM
	Service Science SS	• (Ostrom et al., 2010) – JSR • (Vargo et al., 2008) – EMJ • (Lusch et al., 2006) – OD • (Ng et al., 2011) – Book Chapter • (Ng et al., 2009) – EMJ • (Apte et al., 2008) – Book Chapter • (Barile and Polese, 2009) – Conference paper • (Sheth, 2011) – IMM • (Smith et al., 2011) – Discussion paper Exeter	• (Hefley and Murphy, 2008) – Book • (Lusch and Vargo, 2006) – Book • (Michel et al., 2008a) – JAMS • (Ordanini and Parasuraman, 2011) – JSR • (Vargo and Lusch, 2004a) – JM • (Vargo and Lusch, 2004b) – JSR	• (IfM and IBM, 2008) – Report • (Lusch et al., 2010) – JAMS • (Maglio et al., 2010) - Book • (Spohrer et al., 2010) – SS • (Lovelock and Gummesson, 2004) – JSR
	Other Fields (Economics, Strategy, Industrial Marketing and Purchasing, ICT, Knowledge Management)	• (Cheung et al., 2011) – SMJ • (Espino-Rodríguez and Padrón-Robaina, 2006) – IJMR • (Gadde et al., 2010) – Book • (Håkansson and Snehota, 1995) – Book • (Håkansson and Snehota, 2006) – SJM • (Håkansson et al., 2009) – Book • (Hult et al., 2007) – SMJ • (Kim et al., 2006b) – AMJ • (Kolluru and Meredith, 2001) – IMCS • (Molina-Morales and Martínez-Fernández, 2009) – SMJ • (Normann and Ramírez, 1998) – Book • (Pittaway et al., 2004) - IJMR • (Todeva, 2006) – Book • (Holm et al., 1999) – SMJ • (Yang et al., 2010) – SMJ • (Uzzi, 1997) -ASQ	• (Lambert and Cooper, 2000) – IMM • (Laseter and Oliver, 2003) – S+B • (Levitt, 1972) – HBR	• (Schumpeter, 1939) – Book • (Schumpeter, 1943) – Book • (Teece, 2010) – LRP • (Tether, 2003) – EINT • (Windrum and García-Goñi, 2008) – RP • (Auerswald, 2009) – SSIR • (Flikkema et al., 2007) – EI&NT • (Roberts, 1998) – RP

Table 2.3: Main Literature Sources
Source: Author

2.3   Supply Networks

As noted earlier, analysis of service innovation at the network level has been limited. Although networks are recognised in service science theoretical propositions (Basole and Rouse, 2008, Lusch et al., 2010), there is still a lack of empirical evidence on their role in service innovation. Also, it seems that because of previous experience in computer science, some SSME proponents are reluctant to employ the term network as it could be misunderstood (Bainbridge et al., 2003). Nevertheless, work has been undertaken in fields that have recognised the network as the minimum unit of analysis (Håkansson, 1987, Jarillo, 1988). Wilhelm (Wilhelm, 2011) examines the network level by moving from the dyad buyer-supplier to "horizontal supply chain relations" (p.663) between first tier suppliers, but his focus is on supply networks related to goods rather than to service(s).

The term networking became fashionable in the 1980s. Both mainstream management and business publications and academic journals have featured articles on how networks could enhance competitiveness (Uzzi, 1997, Eisingerich et al., 2009). In the 1990s and during the last decade, in part thanks to new information technologies and computational power, social networking issues have been explored in depth (Prell, 2012), especially by using social network analysis.

The norm to describe interactions between suppliers and buyers is a set of relations instigated and managed by a buyer, which create tensions among suppliers in terms of competing or cooperating for a particular deal (Lazzarini et al., 2008, Choi and Wu, 2009b, Villena et al., 2011). In some cases, however, tensions that are expected to provide benefits to the buyer could in fact destroy value.

The previous paragraphs review some of the benefits realised from network arrangements; despite the associated complexity, a naïve approach to network analysis could help reduce the negative effects of being actively engaged in a network. However, several authors note that in networks and relationships in general, stable conditions may lead to poor performance and lack of innovation (Handfield et al., 2000). In addition, some argue that relationship diversity negatively affects a firm's service innovation capacity (Kuk and Janssen, 2013).

Many consider the world has not only moved from an industrial to a service economy, but to a knowledge economy (Drucker, 1968); yet over the past fifty years most works view technological innovations and technology developed as drivers of growth in both services and knowledge societies. For some, an emphasis on the production of advanced technologies—nanotechnology and biotechnology—rather than on their use, leads to hidden innovation in services (Christopherson et al., 2008). Also, Christopherson *et al*. (2008) stressed that despite the opportunities that open innovation brings, some caveats are needed; for instance, feedback from customers/consumers/clients is different than a co-creation/co-production process, and collaboration outside the firm's boundaries, while not entirely new, has increased markedly. As mentioned earlier, from a service value web perspective Chesbrough (2011) stresses the importance of the surrounding environment through the interactions with customers, complementors and providers. However, despite labelling it as a web, the interactions are still in the dyadic realm rather than a network one.

Work by de Vries (2006), also mentioned, enriches the synthesis approach (Gallouj and Weinstein, 1997) by complementing it with developments in innovation networks, by opening the possibility of several providers interacting with a client through their competencies and technologies. Although a higher complexity is reached, interactions do not go beyond the client toward the client's customers, or to interactions among several clients within the business network. Therefore, in terms of service innovation, there is room to expand understanding when more members of the supply/business network are involved in the service innovation process.

2.4   Conclusions

The literature review presented in this chapter uses three lenses (innovation, networks and service) to filter the bodies of literature searched. Supply chain management, service innovation and service science are each vast and complex fields; however, for this thesis, works reviewed were limited to those viewed as relevant to one or more of the lenses. To illustrate the point, an overview of the scope in the service science literature is presented.

Although service science is a relatively new field of inquiry, dating from a proposal led by IBM and others to create such a discipline in 2004 (IfM and IBM, 2008), many efforts have been made to make it coherent and comprehensive. IBM leaders have promoted multiple publications to show how works in the field have impacted both business and academia. Books and other publications cited throughout this chapter include Service Science, Management and Engineering: Education for the 21st century (Hefley and Murphy, 2008), the Handbook of Service Science (Maglio et al., 2010), and Introduction to Service Engineering (Salvendy and Karwowski, 2010). These three publications bring together more than one hundred papers in the field, covering issues from the origin to the future of the discipline related to education, design, innovation and operations, and offering opportunities for research and practice.

In addition, more than two hundred papers debating the service science discipline have been published in academic journals. Also, the service-dominant logic debate, launched in marketing by Vargo and Lusch (2004a) but closely aligned with the SS discipline, has generated more than two hundred papers published mainly in marketing journals; additionally, more than thirty papers are included in a book entitled The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions (Lusch and Vargo, 2006a). In sum, over six hundred academic works have been published in this new discipline. In 2008, newly launched journals include the International Journal of Services Sciences (Inderscience), Journal of Service Science and Management and Journal of Service Science (The Clute Institute); and in 2009, Service Science (Informs), Journal of Service Science Research (Springer), International Journal of Quality and Service Sciences (Emerald), plus journals related to service(s) such as Journal of Service Research (Sage).

Clearly, knowledge output in the field of service science has been prolific, generating considerable interest among both practitioners and researchers. The situation in SCM and SI is much more complex, because these fields have been established for a longer time and research interests are broader. Use of the aforementioned lenses has helped narrow down the search and critical review of works that are relevant to this thesis in SS, SI or SCM. The same holds true for other disciplines consulted to better define the boundaries of this research, and where the stock of knowledge is even greater, such as Economics, Marketing, Strategy, Industrial Marketing and Purchasing, ICT and Knowledge Management. Despite the broad range of disciplines and sub-disciplines where literature was reviewed to

identify works that may intersect or influence this research, only the surface has been scratched.

Two reasons explain why arguments used in the literature review are repeated from section to section: first, given the multidisciplinary approach, a particular work could be classified in one or several disciplines, depending on the publication, topic, and researcher association, as can be inferred from Table 2.2; and second, in exploring service innovation at the network level, both supportive and critical positions come together and offer possibilities of merging understandings drawn from the three underlying disciplines, rather than introducing areas where no dialogue is possible.

2.5   Summary

In this chapter three gaps were identified. First, there is limited study of service(s) in supply chain management literature; much is focused on manufactured goods or on services directly involved to facilitate the flow of those goods across the value chain (Harland, 1996, Choi and Kim, 2008, Creazza et al., 2010, Galaskiewicz, 2011). Second, research on service(s) and service innovation processes, at the network level, is scant in current literature on supply chain management, service innovation and service science (Gallouj and Savona, 2009, Kim et al., 2011, Lusch, 2011). Among the few available studies, some SCM scholars have noted that the minimum unit of analysis for the network is the triad; however, they have considered few of the potential triads involved within a network (Choi and Wu, 2009a, 2009b). Third, service science researchers have pointed out the relevance of doing research on services with an interdisciplinary approach and considering the S-D logic; such a view is lacking in studies developed in both the SCM and SI fields (IfM and IBM, 2008, Edvardsson et al., 2010b, Metters, 2010, Ordanini and Parasuraman, 2011, Tokman and Beitelspacher, 2011).

Having identified gaps in the literature, the author proposes the following research questions:

1. How does service innovation take place in a supply network?
2. What enables service innovation within a supply network?
3. Does the level of analysis (dyad, triad or network) hide or highlight elements related to the innovation of service(s) within the supply network?

Given the dynamic nature of the phenomenon, involving people's perceptions, the three research questions pose sub-questions that will be formulated later in the research process, once data analysis and the iterative process between theory and data are under way. Considering the initial three questions, the author notes the following: the answer to the *first* question could be very descriptive; however, the research intent is to understand a service innovation in order to shed light on how things happen within a supply network. Therefore, that question is combined with a why question to allow the researcher to delve deeper into the reasons, rationalities and mechanisms used by those involved in the process of innovation.

The *second* question aims to determine whether something specific should be understood in order to better manage a service innovation process; although the answer could be a list of interviewee perceptions, which may allow the researcher to take them into account in an attempt to derive conclusions by frequencies in a very positivist approach, the purpose is to look at those perceptions as sources of potential theoretical underpinnings. As shown in Chapter 3, the researcher is adopting an interpretivist epistemology that demands a careful and systematic management of data, analysis and theory building.

The answer to the *third* question could be, yes or no, unless it unfolds issues that will need further research. However, at this stage, the answer will a) strengthen the findings from questions one and two, b) help to formulate the follow-up questions, and c) provide elements for the theoretical development to better understand the service innovation process at network level.

 The nature of any supply network is that it is individuals who form relationships within it (Todeva, 2006); therefore, the research method used to explore a phenomenon like service innovation within a supply network needs to be able to elicit the reality constructed by those involved in interactions. In the following chapter, the research design is presented and developed, showing its strengths and weaknesses, especially during its execution.

Chapter 3

Research Design and Methodology

"Searching and learning is (a process of) recollection …
Trusting that it is true, I am willing to search with you for what excellence (virtue) is."
Plato, Meno (1985 [386-382bC], p.67, 81d-e)

The previous chapter presented a literature review on SCM, SI and SS, through the lenses of innovation, networks, and services, and concluded by presenting the research questions. This chapter presents the research design to address the questions raised. One of the points made in the literature review is that supply network realities are constructed by the individuals involved. Also, a number of gaps were noted in the theory of service innovation when analysed at network level. Accordingly, a methodology to elicit why and how members of a supply network develop a service innovation process could help design theoretical principles that are valid in a particular research context, and build the foundations for further research in other contexts.

3.1. General appreciations

Before delving into the features of the research design and method, consider the researcher's worldview in terms of his research paradigm, ontology and epistemology. This information offers the reader reasons as to why and how the research process was conducted, and how the researcher's experience contributed to shape the method used (Fendt and Sachs, 2008). A first caveat is that for the researcher, it is impossible to fully separate the research process from the person undertaking the research, meaning that the process is necessarily influenced by the researcher's interests, paradigms, experiences and even his character.

Based on his experience, the researcher agrees with Lincoln and Guba (2000) citing Richardson (1994, 1997), in that "writing is not merely the transcribing of some reality … [it] is also a process of discovery: discovery of the subject (and sometimes of the problem itself) and discovery of the self" (Lincoln and Guba, 2000, p.184). The research, based on the methodology presented below follows an iterative process.

The literature, the process and the people involved in the research contributed to both the definition and the development of the research method.

The researcher's background in engineering has given him a positivist view of the world, yet this research embodies a constructivist approach. A main reason for this is the research topic: a network of people to whom social realities are relative to those who are observing them. One of the strengths, claimed by an objective / positivist approach to research, is that findings which were an outcome of "objective" observations and experiments or quasi-experiments can be repeated for verification. The researcher's paradigm, ontology and epistemology as well as research method specificities of this thesis are detailed within section 3.4 —where the knowledge tree is presented. "There is some attractiveness to the notion that objectivity is a property not of any particular inquiry but rather of science seen as a whole" (Fendt and Sachs, 2008, p.450). Nonetheless, considering the nature of the phenomenon studied, the researcher adopted a relativistic ontology, in which knowledge is subjectivist and interpretivist. Consequently, the researcher followed inductive theory building, triggered by Grounded Theory principles.

Scholars have debated the relevance, appropriateness and validity of qualitative research methods because of their subjectivity. Those discussions lead the researcher to reflect on his own conception of the world, and his ontological and epistemological essence; these basic conceptions marked the rationale behind a research design, a research method and the use of parts of established methods and approaches, without following any whole research formula in this work.

First, in the researcher's worldview, absolutes and relatives coexist; any research will feature a degree of subjectivism because actions and thinking processes occur through a person. Second, the world is made up of realities independently of the observer, as well as realities that are social constructs, developed as his/her own perceived reality with and by the observer. In analysing interactions among people, an external observer or inquirer may see part of the realities, whereas those directly involved may see other parts. In some of their observations, perceptions will be concurrent whereas in others they will be divergent. The expectation is that the sum of the parts will help to complete the whole picture of what is happening. However, it is possible that even after such an integration process, parts of the reality will still

be hidden from both the external observer and the participants. Similarly to what is presented in psychology and interpersonal studies with the Johari Awareness Model introduced in 1955 by Luft and Ingham (Hall, 1974), there could be an unknown area that leaves room for further and future research.

Therefore, the worldview of the researcher includes both real / objective realities and real / constructed-subjective realities. The world is a complex and complicated system, which positivist researchers have simplified to capture in models that can be manipulated. It is also true that current information technologies allow us to handle and manage larger quantities of data and run more comprehensive models in order to obtain a better understanding of those realities. Nevertheless, those models are still limited in capturing the subjectivities that each interacting individual carries. Consequently, to enhance the understanding, particularly, of social systems, a combination of quantitative and qualitative research methods is needed.

The author lays this research within the social-constructivism paradigm (Easterby-Smith et al., 2008, p.59). In making this choice, the author took into account his worldview presented earlier, together with the four basic paradigms: positivism, postpositivisim, critical theory and constructivism—as presented by Annells (1996) citing Guba and Lincoln (1994)—and Beech's (2009) presentation of the research paradigms, citing an update of Burrell and Morgan (1979). Therefore, the researcher "is subjectively and interactively linked in relationship to what can be known" (Annells, 1996, p.385). Consequently, and following the logic of the previous arguments, the researcher's ontology is relativist, considering "that reality consists of local and specific constructed realities" (p.386); in other words, there is no single reality, but a series of social constructs (Ritchie and Lewis, 2008, p.13). His epistemology is subjectivist and interpretivist, whereby the researcher is actively involved with the method, using previous experiential knowledge in collecting data, interacting with participants and analysing data (Corbin and Strauss, 2008).

One of the difficulties, as pointed out by Lincoln and Guba (2000), is that the researcher's voice is mixed "with participants' voices sometimes dominant; [therefore], reflexivity [is] serious and problematic"(p.173). Mauthner and Doucet (2003) state their research features 'degrees of reflexivity', and it "may take time, distance and detachment from the research" (p.425) to identify and articulate some

issues. They even affirm that upon taking an emotional and intellectual step back from their projects, they were able to achieve a deeper understanding "of reflexivity – and the range of personal, interpersonal, institutional, pragmatic, emotional, theoretical, epistemological and ontological influences on [their] research" (p.425). Accordingly, from the outset of this research, the researcher decided to take a step back at different points in time in order to strengthen his own reflexivity process about what might be influencing the research.

3.2   Research method

The previous subsection introduced the researcher's philosophical stand for this study. Although it influenced the research method used, such a stand is not sufficient to define the appropriate method. The research method selected is determined by the research questions, which by their nature point towards methods that can be applied to better answer the questions. Therefore, to help avoid mistakes, short cuts, and false claims, works undertaken in fields involved in this research which employ potential methods were reviewed (Ellram, 1996, Mauthner and Doucet, 2003, Frankel et al., 2005, Kotzab et al., 2005, Boyer and Swink, 2008, Fendt and Sachs, 2008, Mello and Flint, 2009, Chouliaraki and Fairclough, 2010, Phelps, 2010).

The research questions posed in the previous chapter are as follows:

1. How does service innovation take place in a supply network?
2. What enables service innovation within a supply network?
3. Does the level of analysis (dyad, triad or network) hide or highlight elements related to the innovation of services within the supply network?

Answers to these questions aim to shed light on the complex phenomenon of service innovation, which is the unit of analysis for this research. Service innovation entails a process of co-creation that generates new value among those directly involved and beyond. As mentioned in Chapter 2, to either improve existing or create new service systems, service innovation combines technology, business models, social-organisational and demand innovation (IfM and IBM, 2008).

The unit of analysis is dynamic, complex and involves people's perceptions. Service innovation may deal with organisational models or the utilization of technologies. Therefore, the research design needs to consider how to capture richness in people's stories, covering multiple dimensions. In addition, it needs to reflect on how interaction with the researcher may shape stories shared by the interviewees. Accordingly, best suited to the task at hand is a qualitative approach to what, in practice, represents inductive theory building. The following qualitative methods are reviewed and qualify for this research: a longitudinal ethnographic study (Levina and Orlikowski, 2009), an action research (Eden and Huxham, 1996), a Mode 2 type (Mohrman et al., 2001), a case study (Ellram, 1996) or a grounded theory – GT (Fendt and Sachs, 2008) type of approach.

A research design was selected that is aligned with the researcher's world paradigm, suited to address the research questions, and feasibly applicable to the participants' current context. Any of the methods listed could satisfy the conditions stated. The following paragraphs detail a brief characterisation of each aforementioned method, respectively depicting advantages and limitations for this research.

A *longitudinal ethnographic study* implies the researcher will immerse himself to the point that he becomes part of the group being studied (Easterby-Smith et al., 2008). Such immersion enables the researcher to understand particular meanings and conventions of people's behaviours and how they interpret the behaviour of others. However, because the research examines service innovation within a supply network, the group transcends a particular organisation; hence an ethnographic study does not best suit the context in which the research takes place.

Most scholars agree that *action research* implies a process whereby the researcher is involved with people of an organisation who deem a particular problem to be highly important. It involves a systematic form of enquiry by practitioners to improve and/or solve the problem they are investigating (Eden and Huxham, 1996). In this situation, although it is foreseen that managers and practitioners from several organisations take part in the research, the object of research is not a particular problem to be solved. Again, the level of analysis—the network—goes beyond an organisation and is not expected to cogenerate knowledge from interactions between

the researcher and the participants (Greenwood and Levin, 2000). Consequently, other methodological approaches may better suit the requirements at hand.

Scholars on occasion have questioned the *Mode 2* research appraoch, they often take the term as a synonym for action research or question the embedded nature of the process (MacLean et al., 2002). The key features of Mode 2 are: knowledge is produced in the context of application, it is trans-disciplinary, characterised by diversity and heterogeneity, socially accountable and reflexive, and requires use of quality control strategies. In light of these features, the research in hand is not expected to engage the participants in an "interpersonally creative nature of the outputs" (p.202). Again, a different approach may better suit the research questions posed.

A *case study* method (Yin, 2009) is appropriate for "how" and "why" questions, which by nature are more explanatory. However, in this particular research, where a process—service innovation—is the unit of analysis, a case could be both ambiguous and obscure. Nonetheless, the case study works better in phenomena that show "spatial, temporal and other concrete boundaries" (p.32). An illustration that has been used to describe this research journey is dropping a pebble in water, and following the ripples and bubbles that may result from the disturbance. In this research, the researcher generates disturbance where service innovation is taking or has taken place, as illustrated by the following lines from a poem by James W. Foley (2011)[14]:

> Drop a pebble in the water: just a splash, and it is gone;
> But there's half-a-hundred ripples circling on and on and on,
> Spreading, spreading from the centre, flowing on out to the sea.
> And there is no way of telling where the end is going to be.
>
> Drop a pebble in the water: in a minute you forget,
> But there's little waves a-flowing, and there's ripples circling yet,
> And those little waves a-flowing to a great big wave have grown;
> You've disturbed a mighty river just by dropping in a stone.

A case may better suit the research if the unit of analysis is any of the following: the actors, the network, or a relationship. Service innovation as a process may be likened

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[14] http://www.squidoo.com/james-w-foley#module157075093 - accessed September 15, 2011

to disturbance, and a method that allows capturing causes and effects of such disturbance may better suit this research.

Grounded Theory is a systematic process through which theory is expected to emerge from data collected by the researcher. "The goal was to discover a theory that had grab, would fit the data, and would work in the real world" (Walker and Myrick, 2006, p.548) citing Glaser and Strauss (1967). Considering the research questions, the research context and the researcher's inquiry position, a proxy to GT seems to be the method of choice to deploy an inductive, theory building methodology for this research.

3.2.1 Grounded Theory

In their preface, Glaser and Strauss (1967/2008) state: "Our book is directed toward improving social scientists' capacities for generating theory that will be relevant to their research" (p. vii). They seek to bridge the gap between theory and empirical research by uncovering theory from data. Grounded theory methods are "systematic inductive guidelines for collecting and analysing data to build theoretical frameworks that explain the collected data" (Charmaz, 2000, p.509).

To the researcher, an element that was in a sense almost a revelation was why Glaser and Strauss opted to propose the GT method, and decided to challenge key principles of quantitative methods. Among other arguments, theory verification lies at the core of any research project. Adducing their forefathers (Weber, Durkheim, Marx, etc.) provided many sociologists with outstanding theories which current researchers, lacking their genius, can only test "in small ways" (Glaser and Strauss, 1967/2008, p.10), they posited the need for verification as opposed to questioning the theory as a whole. That position, once taken by sociology scholars, extended to other social sciences. Therefore, Glaser and Strauss challenged the accepting attitude towards previous theories as well as to what Charmaz (2006, p.6) listed as:

- "Beliefs that qualitative methods were impressionistic and unsystematic
- "Separation of data collection and analysis phases of research
- "Prevailing views of qualitative research as a precursor to more 'rigorous' quantitative methods
- "The arbitrary division between theory and research, and
- "Assumptions that qualitative research could not generate theory."

These challenges became the basis on which Glaser and Strauss build their case for legitimising qualitative research as a credible approach. Their position was that there was "no fundamental clash between the purposes and capacities of qualitative and quantitative methods or data" (Glaser and Strauss, 1967/2008, p.17). However, as others have noted, Glaser and Strauss' backgrounds and their desire to justify a qualitative approach led them to place the original method within a post-positivist paradigm (Annells, 1996). As expressed by (Mello and Flint, 2009, p.115): a mix in which "Glaser's positivistic epistemological assumptions, methodological terms, and systematic approach to research [is combined with] Strauss [who] brought the notions of process, action, and meaning from symbolic interactionism".

Figure 3-1 presents the general GT process, based on Glaser and Strauss' original work, in a synthesis developed by Charmaz (2006), who regards GT as "a craft that researchers practice" (p.10), noting that the emphasis every practitioner (researcher) gives to any stage or step varies. However, the synthesis is coherent, with shared commonalities.
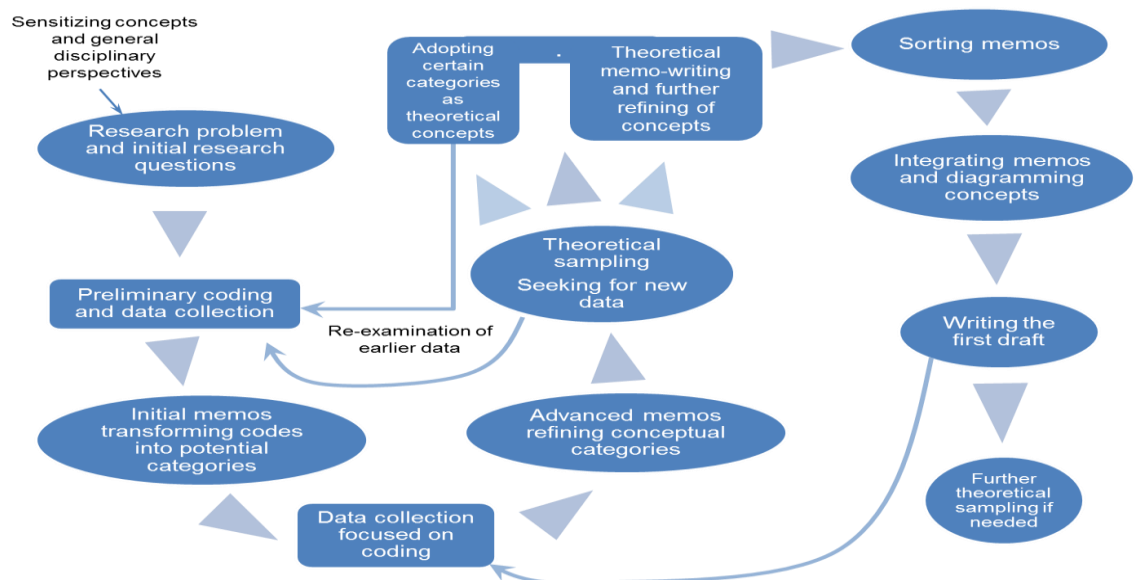
Figure 3-1: Grounded theory process
Source: Adapted and modified by the author based on (Charmaz, 2006, p.11)

At the core of grounded theory is what is known as "the constant comparative method of qualitative analysis" (Glaser and Strauss, 1967/2008, p.101), an iterative approach through which a process of joint coding and analysis is employed to develop

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theory; Glaser and Strauss claim this process is more systematic than the one previously used coding completion prior to analysis. The steps presented in the diagram seem to be sequential, but in practice, re-examination of earlier data generates a constant dialogue that helps elicit theory.

Nevertheless, it is clear from the diagram that even at the last stage, once the researcher is engaged in writing, "the analysis of qualitative data does not cease when the grounded theorist has developed a theoretical framework; it proceeds into the writing" – as noted by Charmaz (2000), citing Mitchell and Charmaz (1996, p.526). In this research, the statement is confirmed. As this chapter is written, issues related to coding (labelling) and analysis presented in following chapters, suggest a kind of dialogue with the methodology's theory.

Several authors address the split between Glaser and Strauss (Annells, 1996, Charmaz, 2000, Kelle, 2005, Charmaz, 2006, Walker and Myrick, 2006, Fendt and Sachs, 2008, Mello and Flint, 2009). Some place emphasis on issues of objectivism versus constructivism (Charmaz, 2000); others, on differences in coding (Walker and Myrick, 2006), pointing out how Strauss and Corbin use axial coding while Glaser employs selective coding. For Glaser, axial coding imposes a coding family: "the procedure forces the data into a full conceptual description" (p.554). For this thesis, the discussion framed by forcing versus emergence of empirical data is a more relevant issue, as discussed in depth by Kelle (2005). On one hand, Glaser uses a more restrictive coding, whereas Strauss and Corbin allow the researcher to create codes based on data collected; on the other hand, the analysis process supported by Glaser is freer - whereas that presented by Strauss is restricted to a step-by-step procedure.

The foregoing discussion of the works mentioned, together with the researcher's experience, leads us to:

> "wonder if some of the insistence on the rigidity of fractioning and coding does not result from a kind of false pride or inferiority complex of GT proponents, an attempt to justify an essentially interpretivist method vis-à-vis a research world still prejudiced in favour of positivism" (Fendt and Sachs, 2008, p.447).

It would appear the idea that methods are ultimately individualised is a more attractive and feasible approach than rigid formulae − especially, when dealing with qualitative research, where interactions between researcher and participants stand to enhance richer outcomes. Regardless of whether a standard or a tailor-made method is used, the key is to show the method employed in a rigorous, transparent, and open fashion. Such transparency helps other scholars and readers [to] assess what is undertaken.

3.2.2 Grounded Theory in Supply Chain Management

Halldórsson and Arlbjörn (2005) review three academic journals related to SCM and logistics between 1997 and 2004, in order to identify and discuss research methods employed to produce SCM knowledge; but perhaps, even more importantly, to build on previous works through which SCM scholars may assess "qualitative inquiries in logistics as opposed to the dominance of quantitative approaches in the current literature" (p.108). The journals they analysed were: International Journal of Logistics Management (IJLM), International Journal of Physical Distribution and Logistics Management (IJPD&LM), and Journal of Business Logistics (JBL). They also cite a previous work by Larson and Halldórsson (2004).

Table 3.1 shows that almost three quarters of the research projects during the period reviewed used quantitative methods, very much aligned with a positivist conception of the world and theory generation. Literature review for this research led to a similar finding.

Method	Mean	Std. Deviation	JBL 1978-1993
Survey	3.78	1.13	54.3%
Simulation / Modelling	3.08	1.63	19.2%
Interview	3.78	1.11	13.8%
Archival / Secondary Data	3.33	1.20	9.6%
Case Study	3.76	1.24	3.2%
Focus Groups	2.29	1.48	n/a
Experiment	2.07	1.57	n/a

Table 3.1: Research methods in SCM
Source: Adapted and modified by the author based on (Halldórsson and Arlbjörn, 2005, p.111)

In their review, Halldórsson and Arlbjörn (2005) cover issues beyond research methodology, noting the level of analysis, purpose of the research, research design used and time frame considered. In terms of methodology, they highlight whether or not the contribution focuses on SCM, whether elements of the philosophy of science

are present, and whether the paper makes explicit reference to methodology (Halldórsson and Arlbjörn, 2005). Table 3.2 summarises their findings.

1997-2004	IJLM	IJPD&LM	JBL	Total
Number of Papers				
Total	109	290	147	546
SCM in title or abstract	29	39	17	85
Focused on SCM	26	34	11	71
Primary actor of analysis				
Manufacturing	8	8	4	20
Retailer + wholesaler	2	7	2	11
Carrier + warehousing	1	5	0	6
n/a	15	14	5	34
Level of analysis				
Function + firm	1	2	0	3
Dyad	5	2	2	9
Chain	13	13	6	32
Network	1	1	0	2
n/a	6	16	3	25
Purpose in relation to the field				
Less direct involvement	15	30	8	53
(Close proximity)	11	4	3	18
Research design / desk research				
Empirical: Quantitative	6	9	4	19
(Empirical: Qualitative + Triangulation)	(6+2)	(7+4)	(1+1)	(14+7)
Non Empirical Literature Review and Theorizing	12	14	5	31
Time frame				
Snapshot	13	19	6	38
Longitudinal	1	1	0	2
(n/a)	12	14	5	31
Most articles do not refer to methodological literature. Only 4 out of 71 mention elements of philosophy of science.				

Table 3.2: Research in SCM, 1997 to 2004
Source: Developed by the author based on (Halldórsson and Arlbjörn, 2005)

(Halldórsson and Arlbjörn, 2005) confirm that research has tended to ignore the network level, as noted in the Chapter 2 literature review; also, that In terms of methodology, quantitative approaches predominate in research on service firms (retailers, wholesalers, carriers and warehousing) directly concerned with services relating to the movement of goods rather than the service as such. However, it may be noted that 14 of 71 articles studied feature a qualitative approach, yet still follow a positivistic epistemology.

That a positivistic epistemology is followed by as many articles featuring a qualitative approach is also supported by Frankel, Naslund and Bolumole (2005) in their article analysing JBL articles published from 1999 to 2004. One of their findings is that most logistics research has followed an objective ontology in which the researcher is detached from either data collection or the phenomenon at hand. In addition, most researchers have kept an external perspective and used surveys as their primary research tool. Although Frankel et al. (2005) mention that 51% of 108 articles reviewed use surveys as their primary research method (p.201), they fail to point out that, according to their analysis, 2 of those 55 articles shared two primary

research methods including surveys, and that another 7 articles shared primary research methods as well, but did not include surveys. Regardless of these details, the fact is that most researchers are grounded in a positivistic approach.

The following statement reflects SCM scholars' mistrust of qualitative approaches:

> "we have some doubts regarding the way questions are asked. In many surveys, respondents are asked to report whether they feel that over a certain period specific practices have grown in importance or not. In most cases this means relying on the perception of respondents instead of relying on real measurements of the effects." (van Donk and van der Vaart, 2005, p.40)

The aforementioned discussion suggests that SCM requires further qualitative research in order to enrich its theoretical underpinnings - especially allowing for construction from transformative conversational insights. SCM also requires a holistic systems thinking approach that considers not just the chain, but also the network. Such an approach could contribute to move organisations from a functional perspective towards a process orientation, discarding a reductionist way of thinking and embracing the whole — one that is more complex, may show contradictions in space and time, and goes beyond relationships between firms to consider interactions among people (Johannessen, 2005).

Nevertheless, it may be noted that current theories considered essential in SCM, such as agency theory, resource-based theory, transaction cost theory, and network theory, are among the assumptions of holistic system thinking (Johannessen, 2005, p.64). When the system studied transcends the chain and includes the network, actions in one place of the network may instigate responses elsewhere. This happens "because someone has gained a different insight that will inspire or provoke that person to do something or say something that stimulates a different attention in everyday organization life" (p.69). These elements show the richness in a qualitative approach that allows us to sense the complex interactions taking place between people and resources within a supply network.

Accordingly, a theory building approach is an appropriate research method in the SCM field given the social nature of supply chains and networks as well as the "newness" of the discipline. Phenomena taking place within supply networks involve interactions and relationships among firms, negotiations among suppliers and buyers,

outsourcing processes generating reactions among customers, suppliers and even competitors, innovations resulting from social processes, and people in every dimension interpreting, reacting, influencing and solving situations (Mello and Flint, 2009).

Consequently, a method that is characterised by field investigation, direct data collection and interaction with practitioners across multiple organizations enhances the possibilities to elicit the complex behavioural aspects that are present in supply networks and supply chains (Randall and Mello, 2011). One of the arguments Randall and Mello (2011) present for the use of GT in SCM research is that "it looks at organisations as they adapt to changes in the environment around them" (p.9). As expected, GT in SCM does not differ much from the general propositions advanced by the method's forefathers (Glaser and Strauss, 1967/2008, Charmaz, 2000, Corbin and Strauss, 2008). Randall and Mello (2011) hold that SCM researchers would like to engage suppliers, manufacturers and customers as well as different functions and managerial levels within each organisation. Such diversity adds broad dimensionality to the data (Charmaz, 2006), precisely the desired effect of GT.

The process proposed for GT in SCM follows that presented earlier in Figure 3.1. Step 4 features —data collection focused on coding— recommend that interviews be conducted with people from different firms and different levels. Step six centres on searching out relationships and validating predicted relationships. In steps eight and nine, when integrating memos and writing, the researcher needs to verify, through group sessions, that interpretations are correct and findings are relevant (Randall and Mello, 2011). Trautrims et al. (2012) use the documentary method for logistics research and show the steps required to develop theory inductively.

In assessing and demonstrating rigor when presenting GT research to SCM scholars, the key element is to show transparency. Special emphasis should be placed on spelling out the motivation for the research, clearly describing and supporting the research questions, thoroughly disclosing the data collection process and method of analysis, evidence that a systematic inductive approach was followed, and demonstrate the explanatory power of theory emerging from the data (Kaufmann and Denk, 2011).

3.3   Research Intent

The intent of this research is to elicit why and how members of a supply network developed a service innovation process. The research is conducted in a particular context and therefore, the theoretical principles that are deemed valid may or may not be valid in other contexts. Nonetheless, those theoretical elements, once organised into a framework, would be the subject of further research to verify their validity in different contexts. This thesis contributes to SCM literature by shedding light on a topic—services—that has not been as amply studied as goods. Particular attention is paid to the analysis of the innovation process at network level rather than at firm, dyad or chain levels.

3.4   Particularities of the research method for this thesis

One element noted here in Chapter 3 and throughout Chapter 4 is that the initial six interviews are part of an inductive process. This exploratory approach to identify a supply network as a subject for research is not normally employed in GT methodology. What is presented in this subsection applies to the second and third stages of this research.

Two very valuable conclusions and appreciations are noted by Fendt and Sachs (2008). First, "the relationship between the researcher's paradigm, ontology, epistemology, and chosen method must be coherent" (p.449). Second, "to engage in qualitative research is to venture into a maelstrom of realities and contradictions" (p.450). These appreciations, in many ways, reflect the researcher's journey in understanding, developing, reflecting upon and writing the elements of the research design and method.

After a challenging process and decanting the different philosophical elements associated to the methodology, it is possible to state: this research was conducted within a social-constructivist paradigm; a theoretical framework that has at its core the social interactions taking place in a supply network around a service innovation that is, in turn, the unit of analysis for this research. Within the social-constructivist framework, the nature of the reality is considered relative to both the participants

and the researcher who, through their interactions, give meanings to those realities. The study, therefore, sits in a relativistic ontology. The researcher moved from Descartes' scientific realism (Laudan, 1984) without reaching the extreme of radical scepticism argued by Hume (Butts, 1959); his understanding of relativism is closer to the dualism posed by Kant (Royer, 1991), in which contradictions in space and time are constantly emerging in the social interactions.

For the sake of coherence in terms of both the paradigm and the ontology, the researcher sees the nature of knowledge as subjective and emerging from interpretations. Therefore, for the researcher, the epistemology is subjectivist and interpretivist. Consequently, the research methodology follows a qualitative approach using an inductive research method or technique.

Figure 3-2 presents the unfolding of the knowledge tree, in order to make the methodological elements transparent to the reader. These elements shed light on the particular research design for this thesis. In the following subsections, the elements that were taken from well-established methods such as GT will be mentioned and in subsection 3.4.3, the detailed inductive approach used in the project will be described and supported.
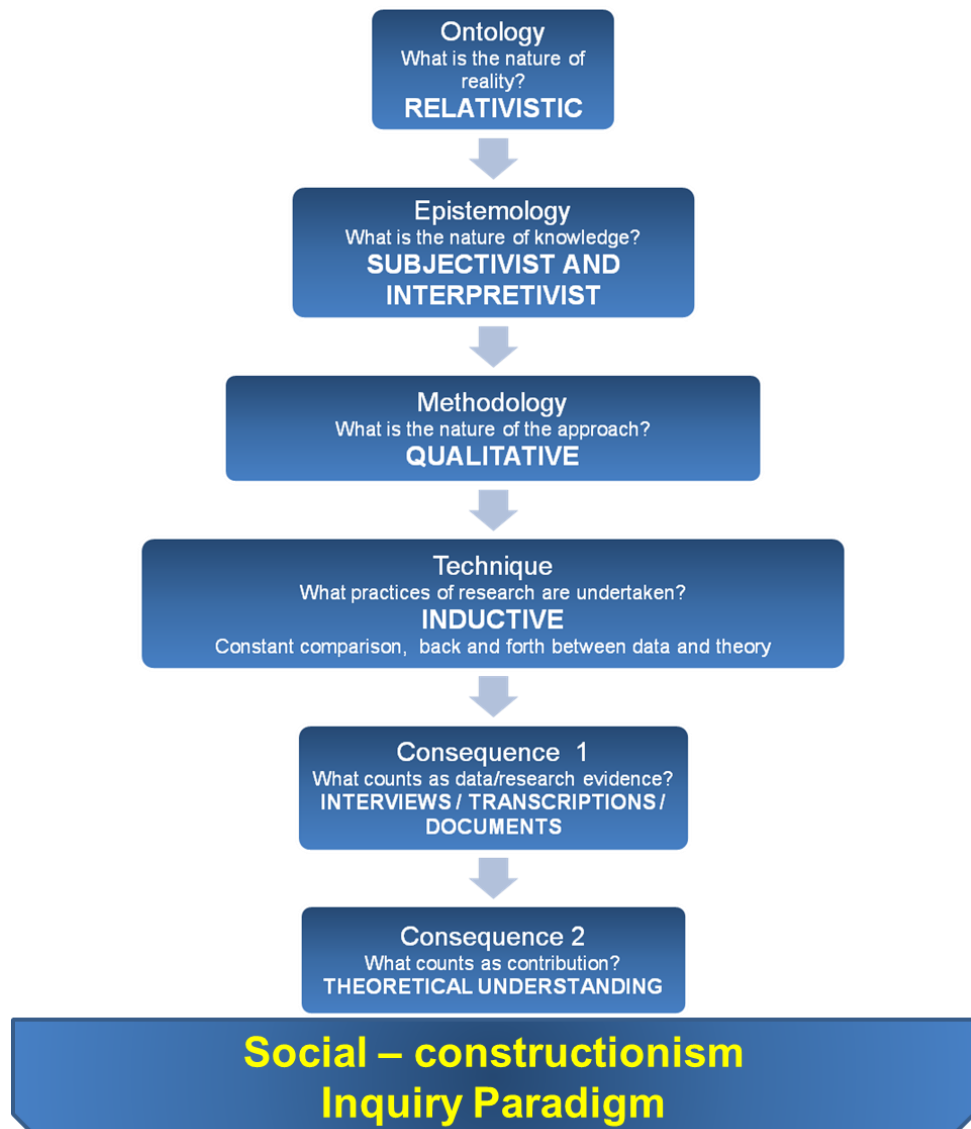
Figure 3-2: Knowledge Tree
Source: Author's development based on (Beech, 2009)

3.4.1 Research methodological approach

Figure 3-1 described the GT process. However, the researcher followed an inductive theory building approach that does not claim to be a GT approach. Such an approach began by the research questions, this being a natural starting point for many research methods. In the case of GT, the forefathers of the method presented the research problem and the research questions at the same level. In this case, the researcher did not identify a research problem as such; he noticed a research opportunity backed up by the literature review and, thereafter, probed certain gaps in the literature, formulated the research questions, discussed, reviewed and polished.

Therefore, the first step in terms of a sensitizing concept was the statement of the research questions. Those questions translate into next steps towards the review of alternative methods, as previously described in this chapter. Anticipating the kind of answers to expect from participants, some broad / preliminary (labelling) coding was developed before starting the data collection phase. The preliminary labelling categories suggested were:

- Service innovation
- S-D LOGIC concepts
- GDL mind-set
- General concepts such as trust, communications, reputation, branding, etc.
- Technology
- Building Blocks: issues such as value, the focus on the story told, disruptions were among those initially considered
- Timeline
- Environment in terms of business conditions phased, complexity perceived and degree of instability

The main purpose of these categories (labels / codes) was to interpret parts of the stories that included closely related information. That information would be used to view the conceptual categories emerging. The categories listed were decided before starting the data collection process. Consequently, up to this second step, this research follows an inductive process similar to the process presented by Charmaz (2006).

The researcher did not write memos in order to transform the labels (codes) into categories. In fact, he started by labelling (coding) the first interview and found labels within each category. The following interviews refine categories within those initially defined. After that step and through the re-examination of earlier data, the comparison with theory and the new information collected lead to a point of theoretical saturation. To help the reader understand the sources of information, following is a list with the raw numbers that will be expanded in Chapter 4.

- 48 semi-structured interviews
- 77 WORD files
- 90 PDF files

- 42 PPT files
- 23 e-mail messages
- 8 hardcopies of Shaula City Marketing Bureau Brochures
- 3 hardcopies of University of Shaula and Wasat Bank Programme Brochures
- 2 JPG files

The inductive theory building approach is represented in Figure 3-3. An element not included in this research was that of the written memos that each of the iterations might have generated. The memos written by the researcher synthesise reflexions related to the steps of labelling (coding), defining and refining categories, the need for additional interviews as new information kept arriving, and adopting categories as theoretical concepts. These elements will be discussed Chapters 4 and 5, where the dialogue between data collection and the analysis takes place.
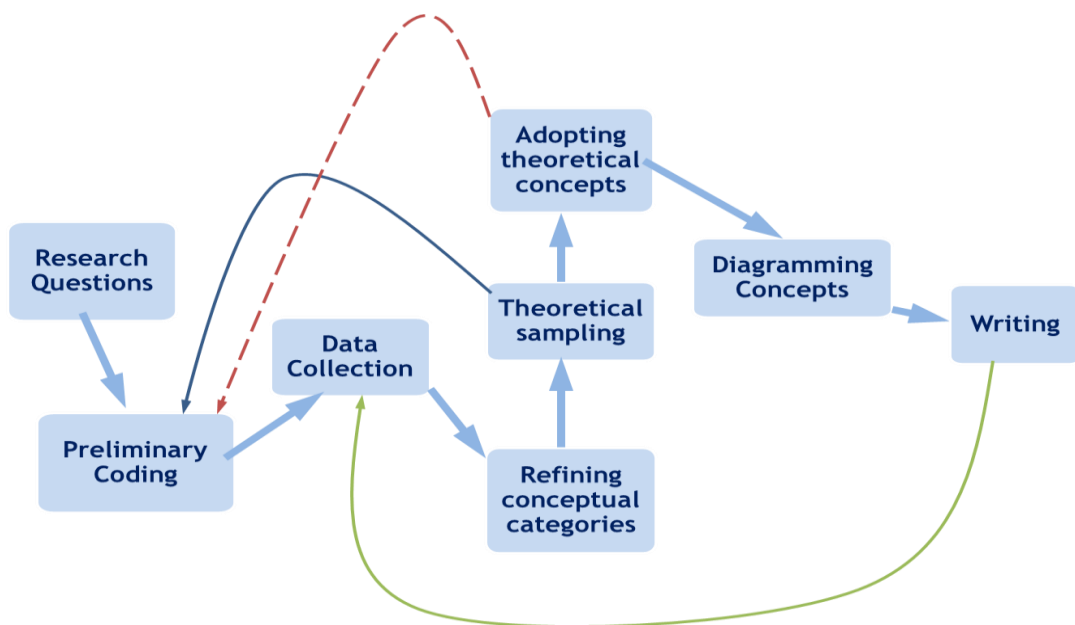
Figure 3-3: Inductive Theory Building approach for this research
Source: Author's development

3.4.2 Methodological elements employed for the analysis

Inductive theory building was combined with some general research tools to organize, synthesize and analyse data collected and coded. In particular, matrix

arrangements were used to group quotes from the interviews in categories and concepts (Miles and Huberman, 1994).

3.4.3 Inductive approach

With the original research questions in mind, three sets of initial interview guides were developed: three for people who were part of the buyer organisation or directly connected to it, one for the buyer's customers, one for people directly involved with the supplier, and one for other people within the supply network. The different guides can be consulted in Appendix 6.

Initial questions were adjusted and reshaped based on the characteristics and findings after each interview. The guides in Appendix 6 were questions to orientate the conversations. However, we can see from the transcripts that follow-up questions were asked in order to clarify or explore new paths based on the interviewees' answers. The purpose, as stated in the inductive theory building approach, was to follow both the theoretical directions and the new questions that were raised through the process. The initial labelling was then expanded and finally grouped to stress the most relevant concepts that helped elaborate the emerging theory.

The inductive approach was organized in three stages. The first stage explored opportunities, choosing the ones that best suited to the research questions. The second stage was an in-depth exploration of a service innovation within a particular supply network, and the third stage was to validate findings with both members of the network explored and people from other networks. Some particularities of the three stages are presented below.

The main purpose of the first stage was to identify prospective fields of research. In that sense, through several discussions with the thesis supervisors and other scholars attending service innovation-related conferences and seminars, the researcher identified five focal firms that could be approached. Those firms each fit into one of the following categories, which help to cover the different potential firms and supply networks associated to services:

a. A service firm – KICS / OCS / OBS
b. A manufacturing firm that has transformed itself into a service firm - KIBS

    c. A manufacturing firm that has embraced the servitisation trend - TKIBS

    d. A manufacturing firm that combines service and manufacturing operations – KICS / KIBS

    e. An information and communications technology firm – OCS / OBS

The five alternatives considered fit into the typology developed by Gluckler and Hammer (2011), in which the following three dimensions are used to describe the different service firms: demand orientation, knowledge intensity, and technology intensity. The five types of services that were empirically defined are: "operational consumer services (OCS), knowledge-intensive consumer services (KICS), operational business services (OBS), knowledge-intensive business services (KIBS) and technological knowledge-intensive business services (TKIBS)" (p.946).

The five initial firms showed potential supply networks in which service innovations have taken place. The contacts, people within each focal firm, were identified and letters of invitation to participate in the research were attached to e-mails (see Appendix 7). A month after the initial communication a follow-up message was sent to those who had not responded. Two months later, a third message was sent asking why they were not interested in exploring the possibility of being part of the research proposed.

Three out of five prospective contacts accepted to be interviewed as a subsequent step. The purpose of the initial interviews was to obtain an overview of the potentialities that each supply network and the associated service innovations offered the research. Details on the different responses are presented in the Data Collection Chapter.

As mentioned above, the purpose of selecting a focal firm was to identify a research field in which research questions could be addressed. Before collecting data for the first stage, general criteria for selecting one of the potential fields were reviewed. Following are the criteria used:

    a. A complex, previously developed supply network linked to the focal firm

    b. Technology was not the focus of the innovation identified

     c. Presence of a service innovation involving several actors within the supply network

     d. A service innovation process still in progress

The criteria was developed based on issues identified in the literature such as complexity and not technology based service innovations; in addition, if several network actors were involved, the possibilities of understanding the process at the network level grew and, studying a service innovation in progress allows a better recollection by interviewees of events, people and details.

Information for reaching a decision was collected from initial interviews with staff attached to each firm. These interviews yielded information related to the characteristics of potential service innovations for research, as well as details on the associated network. In addition, the firms' websites were visited and reviewed, public documents downloaded for analysis, and statements made during the interviews double-checked. The process is discussed in sections 4.1.3 and 4.1.4.

Based on the foregoing criteria, a financial service firm (a bank) was selected as the focal firm. The bank fully satisfies all criteria; one of the four firms was in embryonic stage, two informed that the service innovation identified was no longer in progress, and the fourth was subject to restrictions in sharing sensitive information on the innovation. Brief descriptions of the remaining four firms contacted are presented in the Data Collection Chapter – sections 4.1.1 and 4.1.2.

Once the researcher selected the focal firm, he asked the initial contacts within the firm to help him contact other actors who had been involved in the service innovation process identified. The second stage in the inductive process was to interview several actors and collect documents that showed the evolution of the process described, in order to complete the story and analyse the theoretical implications of that particular practice.

In this specific case of a supply network, the bank was the buyer of a service that was provided by a university to benefit some of the bank's clients. However, the process to design and deliver the service (a training programme) was the result of

multiple dialogues and interactions. Chapter 4 (Data Collection) provides details of the story told as well as a description of the process, whereas in Chapter 5 (Data Analysis), the emerging theory will be presented. In the inductive methodological approach adopted, the interviews, the transcription of the interviews, the verification of the transcription and the diary kept by the researcher in terms of his personal situation, perspective and mood before, during and after each interview, are elements that inform the analysis.

The third stage is one in which the findings and theoretical proposals are presented to people who participated in the research, plus one who was contacted from another supply network. The purpose of the verification stage unfolds in two branches: first, to verify whether the interpretations given by the researcher were adjusted to the participants' understandings or meanings; and second, to listen to the participants' reactions, feedback and comments in a broader context. The researcher asked the participants their perceptions beyond the particular case initially studied in the research. He also asked a member of one of the other supply networks (not analysed in the research), whether the findings made sense and reflected that particular member's own service innovation experiences.

In the three stages described, the researcher uses NVivo as a database tool to manage the information and to code the data, interviews and documents.

3.5   Conclusion

The main conclusion from this chapter on research design and methodology is the importance of being rigorous in the process. It could be said that less is more. If the method is too complex, more variables have to be controlled and the attention of the researcher could be divided. Therefore, considering time and scope limitations, the researcher decided to take an inductive theory building approach. He reduced some of the steps in order to be accurate and accountable. Also, changing the inquiry paradigm, from positivist / quantitative to social-constructionism / qualitative, has proven both a challenge and an enriching learning process for the researcher.

3.6 Summary

This chapter presents the research design and the methodology used for this research. It justifies, based on the research questions, a qualitative approach. Given the selected inductive theory building approach, the researcher presents his reflexions on his journey from a positivist mind-set to a constructivist one, required for this research. Considering the nature of the phenomena that would be explored, the researcher presents a detailed explanation of the knowledge tree that unfolds in this work. It shows why its ontology is relativistic and its epistemology subjectivist and interpretivist.

The chapter provides a view of the elements used from previous developments on grounded theory, making its methodology an inductive theory building approach without aspiring to offer a methodological contribution. In addition, it takes the reader through the steps involved in the inductive process that this research follows. The chapter points out some of the appendices that may help readers follow the logic, steps taken and evolution of the researcher's process.

This chapter shows what was planned, changed, and executed in terms of the method followed by the researcher. It shows reflexivity; however, it tries to follow the reflexion presented by Skeggs (2002) in terms of avoiding self-promotion and self-formation, showing instead "accountability and responsibility in research" (p.369).

The following chapter covers the data collection process in detail, describing the continuous dialogue between the data, the theoretical elements emerging and the instruments used to interview and review the documents provided by the participants.

The labelling (coding) steps, within the research method, are critical to answer the three research questions proposed. The first question — *how does service innovation take place in a supply network?* -- is answered through the stories collected; however, the elements that determine the "how", stem from the conceptual categories emerging through the labelling. The same applies to the identification of enablers of a service innovation and the differences related to the level of analysis.

In addition, once the researcher adopts theoretical concepts emerging from the data, the diagramming clarifies how the innovation studied took place. Equally important is the fact that theoretical saturation—associated to theoretical sampling—is reached when, in the stories collected, nothing new is mentioned; particularly, nothing new in terms of enablers, level of analysis, or issues related to how the innovation occurred. With this in mind, the researcher proceeded to collect the data.

Chapter 4

Data Collection Process: Challenges in presenting a non-linear approach

"It is the disease of not listening, the malady of not marking, that I am troubled withal."
William Shakespeare (1597, Henry IV, part 2, act 1, sc 1, l.100)

The data collection process was previously discussed under research methodology. This chapter details the steps and procedures followed in this iterative stage of the research. Chapters 4 and 5 are intertwined reflecting that as discussed under methodology, data collection and analysis are not necessarily sequential. Data analysis has been an integrative proess, the research essentially followed the data trail; each trail or direction was followed until a theoretical saturiation point was reached, thus theory or understanding emerged from the data.

Data collection unfolded in three stages. The first stage allowed the researcher to pursue an initial approach, identifying potential supply networks where research could be undertaken once a potential service innovation was selected. The second stage comprised a thorough collection of data and information within the supply network selected, chiefly made up of stories told by those directly involved in the service innovation selected, coupled with documents provided by interviewees. The third and last stage centred on verification: the researcher refined the findings to form a more meaningful understanding of the context and nature of the service innovation by inviting commentary from additional parties from the supply chain network and industry.

This chapter describes the general characteristics of the firms approached, duration of the interviews, and factors considered in selecting a particular supply chain. A step-by-step construction process describes the complexity of gathering data from which emerges a theoretical contribution.

4.1 First stage – initial approach

This section repeats some statements related to the methodology, in order to clarify and expand on details that are relevant to both the methodological path followed and the findings of the research.

To develop questions for the interviews, several discussions were held with academic advisors once the methodology had been selected and ethical approval obtained to continue with the research. A requirement made by the ethical committee was to change the names of interviewees and companies in order to ensure participant anonymity. The researcher assigned Spanish names to the participants, and companies were named after stars using a list[15] of both common and scientific names. Although most participants were located in Scotland and the UK, place names were also changed.

As agreed with the team of advisors, the researcher drew out stories from people who were directly involved in service innovation processes, not incidents that, however significant, had instigated service innovations The reason for listening to stories was to identify details of the innovation process within a supply network, and sight theoretical frameworks from empirical experiences. The research considered both events in the past and events taking place while the research was under way.

During this first stage, the interviews sought to identify, from the stories told by the interviewees, service innovations that could be followed over a period of time. A longitudinal study approach of the innovation process was drawn when an interviewee recounted a story involving both past and current events. Characteristics the researcher looked for in a service innovation described by an interviewee include featuring more than one dyad within the supply network, thus affording an opportunity to investigate interactions at a network level; such interactions transcend the focal firm and its dyadic relationships with other network members. Accordingly, potential contributions were envisioned that would impact upon previous supply network research (Dubois and Fredriksson, 2008, Choi and Wu, 2009b, Kim et al., 2011, Wilhelm, 2011) thus extending their findings and proposals to include service innovation.

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[15] Ian Ridpath, English writer dedicated to astronomy, editor of the Oxford Dictionary of Astronomy http://www.ianridpath.com/starnames.htm - accessed January 10th, 2010.

The researcher took certain precautions to ensure a robust and rigorous investigation, and guard against the subjectivity often attributed to qualitative research. Works on reliability, validity and rigour in qualitative research were used to develop specific steps for this research (Morse et al., 2002, Thorne et al., 2004, Seuring, 2008, Näslund et al., 2010, Kaufmann and Denk, 2011). A key first step was to avoid leading the stories; reality was depicted by each interviewee by means of interaction and dialogue with the researcher, whose role was to assist the interviewee with follow-up questions help recall the innovation processes conducted, identify the actors involved, and describe the service innovation process. Appendix 2 presents the initial interview guide questions. Also, to establish rapport and instil trust, each interviewee was asked, in advance, to sign a consent form (see Appendix 3); the form guarantees that the stories told and responses to questions posed are considered to be anonymous.

As noted in Chapter 3, stories recounted by the interviewees and responses to questions posed were used to identify new sources of information, clarify conceptual frameworks, and allow the stories to lead the research. In this research journey, each interview constituted both a start- and end-point. Before, during, and after the interview, the researcher framed a dialogue spanning the theoretical framework, the data, and the emerging theoretical issues: prior to the interview, the dialogue was between the theoretical framework and the expected data; during the interview it involved the data and the information transmitted and being collected; following the interview, the dialogue stretched to include the data collected, new paths of inquiry glimpsed and initial ideas emerging. This first stage of data collection was critical to find a fruitful space in which a service innovation was developing.

4.1.1 Potential focal firms

Before scheduling exploratory interviews, five firms were approached. Each firm was identified either from previous contact related to services and service innovation at the University of Glasgow, or established during an academic conferences. Table 4.1 presents the five firms that potentially could have been involved in service innovation.

Firm	Type of Business	Type of Firm	Contact Person	Perspective on Services
Bellatrix Inc.	ICT Services	Public Limited Multinational Origins back to the mid 1800 Revenue over £18.5 billion	Mateo Gómez	GDL
Gacrux Systems	HighTech Mfg and Services	Public Limited Multinational Revenue over £17.5 billion Formed in the late 1990s	Vicente Martínez	GDL + SDL
IZAR Corporation	IT and Professional Services	Public Multinational Founded in the 2nd decade 1900 Revenue over £70 billion	Carlos Cuellar	SDL
MERAK Incorporated	IT Mfg and Professional Services	Public Multinational Founded in the late 1930s Revenue over £80 billion	César Mora	GDL + SDL
Wasat Bank plc.	Financial Services	UK Subsidiary of a Public Multinational Founded in the late 1830s Revenue over £1.1 billion	Daniel Silva	GDL

Table 4.1: List of focal firms contacted as potential research subjects
Source: Author's development

The five focal firms listed in Table 4.1 were approached and letters sent to the contacts shown (see Appendix 7). Only three firms were willing and able to explore the possibilities offered by this research and contribute to its development. Staff at Bellatrix excused themselves, on grounds that previous research commitments constrained their availability (i.e., time to engage in a meaningful dialogue).[16] Gacrux Systems never responded, despite the researcher's three attempts to contact the company and messages left by academic advisors.[17] A possible explanation for this is that, following the start of the 2008 financial crisis, the business unit

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[16] Electronic messages exchanged with Mr. Mateo Gómez, Client Industry Executive - Global Partners, Bellatrix Inc. Global Services, between 9 July and 4 November 2010.
[17] Messages dated on July 17th, August 26th and November 4th, 2010, addressed to Dr. Vicente Martínez, Chief Technologist at Gacrux Systems.

concerned experienced turmoil derived from budget cuts and renegotiation of large public contracts. [18]

Appendix 5 provides information on research participants, including name, gender, company, and position held at the time of the interview, and the role each played in the service innovation. The information is organised by date and time of interview (face to face or by phone), and location. Again, to maintain anonymity all names of participants, firms and locations have been changed.

Before each interview, the researcher recorded the general conditions in his diary: his mood, expectations, and other thoughts that might influence the dialogue during the interview. Following the interview, he noted key ideas stressed by the interviewee, concepts the researcher interpreted as emerging, and names of persons mentioned, who might offer a path to be investigated.

4.1.2 Focal firms, supply networks, and service innovations

IZAR Corporation, the first focal firm the researcher approached, was a multinational information and communications technology manufacturer. The exploration was focused on its UK division that provides worldwide services. Over the past decade, the firm shifted operations from mainly manufacturing to a service company; in time, the change revitalised the company's stock market price, as may be noted in Figure 4-1. (To assure anonymity the stock value has been eliminated)
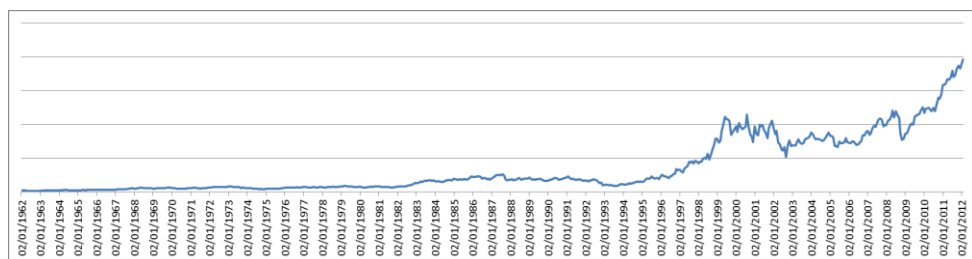
Figure 4-1: IZAR Corporation stock trend, January 1962 to January 2012, New York Stock Exchange
Source: Developed by the author based on http://finance.yahoo.com/... Accessed on January 30, 2012

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[18] EconomyWatch, The Economy of the UK, GB, British Isles (or Whatever You Want to Call It!), 30 June 2010, http://www.economywatch.com/world_economy/united-kingdom/?page=full accessed on January 15, 2012

As operations shifted from manufacturing to services, the company became involved in multiple supply networks; each supply network had its own peculiarities depending on the IZAR business unit involved. As noted in Chapter 2, research and teaching cases addressing service issues have focused on interactions between end consumers and business units, such as customer service units, charged with those relationships. Since becoming a service provider, IZAR stock soared — especially following 2009, when the organisation embraced principles proposed by the S-D logic debate. This outcome may encourage the firm to support service innovation research, but could also trigger limitations to extend the findings beyond the firm's particular context.

The first interview with IZAR was held with two senior executives who had worked at the firm for over 25 years, and lasted about 50 minutes. They had witnessed the company's transformation as well as the challenges and accomplishments related to service innovation processes. The two executives, Carlos Cuellar and Francisco Ruiz, were willing to describe, to the best of their knowledge, several service innovations they had observed within their business location, Soleado in Scotland. The interviewees focused their stories on service innovations housed in two different supply networks.

One service innovation described related to procurement and purchasing activities, outsourcing of services, and interactions among supply network members attached to the procurement office of a large multinational company, based in France but originally from the UK. The second service innovation mentioned was in a very early stage of development at the time of the interview (summer, 2010); on the other hand, it was better suited to initiatives the firm had undertaken, and required the use of technology for gathering masses of data, better manage complex systems, and create value. This particular service innovation addressed the sustainability of a large European city, and entailed joint efforts by IT companies, public agencies, and service providers to capture, process, analyse, and make decisions based on real time terabytes of data.

In sum, step one was to avoid untoward interventions by the researcher in shaping the stories. Second, each interview, and verify the transcription against an audio recording. Third, change names in order to have a clean transcription, and ensure the anonymity of the interviewee, the firm, and its location. Fourth, the sanatised

transcription was uploaded to NVivo 9 for labelling and clustering, as described in Chapter 3.

Following the initial interview, the researcher reviewed the sanitised transcription, analysed the story, and determined what additional public information, related to events shared by the two IZAR executives, should be gathered. This step served to ensure quality information and minimise interviewee bias.

Based on the initial findings, the researcher sought help from interviewees in setting up meetings with others in the firm who were directly in charge of services and innovations described; the aim was to deepen information on the service innovation and the number and availability of persons involved in the supply network. Two additional interviews were held: one with Luis Lucas, an IZAR manager directly involved in the procurement service, which lasted about 50 minutes; and another, lasting about 40 minutes, with Andrés Correa, a manager from the procurement outsourcing service. Correa was a member of the supply network based at Polaris, headquartered at Barif, France.

With regards to the service initiative for the European city, the IZAR manager directly involved in the innovation process was Rito Sanchí, based at Soleado. The interview lasted about 50 minutes, and centred on the complexity of the supply network given the large number of participating public agencies, and the need to draw on several international experiences to develop paths for the city's services proposition. Although IZAR had experience as a provider to public institutions, in this case the main difference was that the firm had to explore, suggest and create value alternatives with other supply network members, rather than offer its own solutions.

Wasat Bank, the second focal firm explored, was now a subsidiary of the Regional Acrab Bank (RAB), one of the world's 40 largest banks; established in Shaula, Scotland during the first half of the 19th century, Wasat was absorbed by RAB in the late 1980s and Wasat data consolidated with that of the holding company. Figure 4-2 presents the historic record of RAB stock prices, for Wasat shares were no longer traded on the London Stock Exchange. Wasat is a medium-size UK bank, representing about 6% of RAB assets.
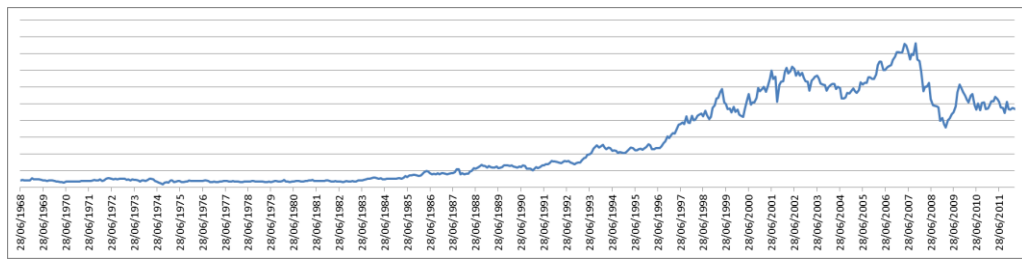
Figure 4-2: RAB stock trend, June 1968 to January 2012, New York Stock Exchange
Source: Developed by the author based on http://finance.yahoo.com/... Accessed on January 30, 2012

Two Wasat managers who served as marketing consultants at the time of the research, Daniel Silva and Sergio Triviño, supplied comprehensive, starting-point information about several service innovation processes in which the bank was involved, including names of supply network actors. Some processes had been developed jointly with supply network members. An interview that lasted over one hour focused largely on a service for some of the bank's customers, provided by a university. Based on initial findings, as in the previous focal firm, interviewees were asked to help set up appointments with persons at the university directly involved with the services innovation they described, and identify supplementary sources of information. What was innovative in this service was the way the value proposition was created; by means of an iterative and interactive process, people from the bank, the university and bank customers created and retuned the service proposition.

The third focal firm explored was Merak Inc., a high-tech multinational company with a hybrid business model; manufacturing still held a leading role, but the share of service solutions in the firm's portfolio was growing. Management changes taking place early in the 21st century caused a sharp drop in the company's share price to a lower trading level.
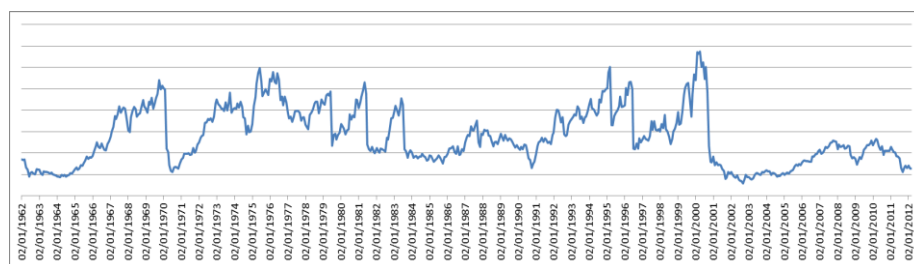
Figure 4-3: Merak Incorporated stock trend, January 1962 to January 2012, New York Stock Exchange
Source: Developed by the author based on http://finance.yahoo.com/... Accessed on January 30, 2012

126.

César Mora, Chief Technologist for Enterprise Services, provided the researcher with initial information about potential service innovations that could be examined. One concerned Suhail Inc., an oil & gas company, interested in developing oil exploration technology and service, drawing on sensors that had been miniaturised and used in computers and other Merak product innovations. Stories recounted by the five interviewees were processed and analysed.

The following sections describe the initial findings and the process of selecting a service innovation and a supply network.

4.1.3 Initial findings

Initial findings revealed that the potential supply networks approached, and information gathered from initial interviews were relevant to the research proposed.

Data collection began with an interview held with IZAR managers based in Scotland. The next three interviews, held with people drawn from IZAR networks, enabled mapping potential supply networks where service innovations identified could be tracked and assessed.

Figures 4-4 and 4-5 present service innovations related to IZAR supply networks, according to information from interviews held with company managers and those related to service innovations linked to its supply networks. Each supply network features differing shape, focus, and actors that interact with each other. Service innovations identified are also different; one involves firms located in Europe and the US, whereas the other focuses mainly on a particular city, with most actors representing government entities. The development stage of innovations vis-à-vis supply networks varies significantly. One, based on outsourcing (Figure 4-4), was the outcome of years of business interactions buttressed by personal relationships that generated high levels of trust. In contrast, the one centred on sustainability (Figure 4-5) was in conversation stage; opportunities were being identified and relationships proposed among the organisations involved and their respective representatives.
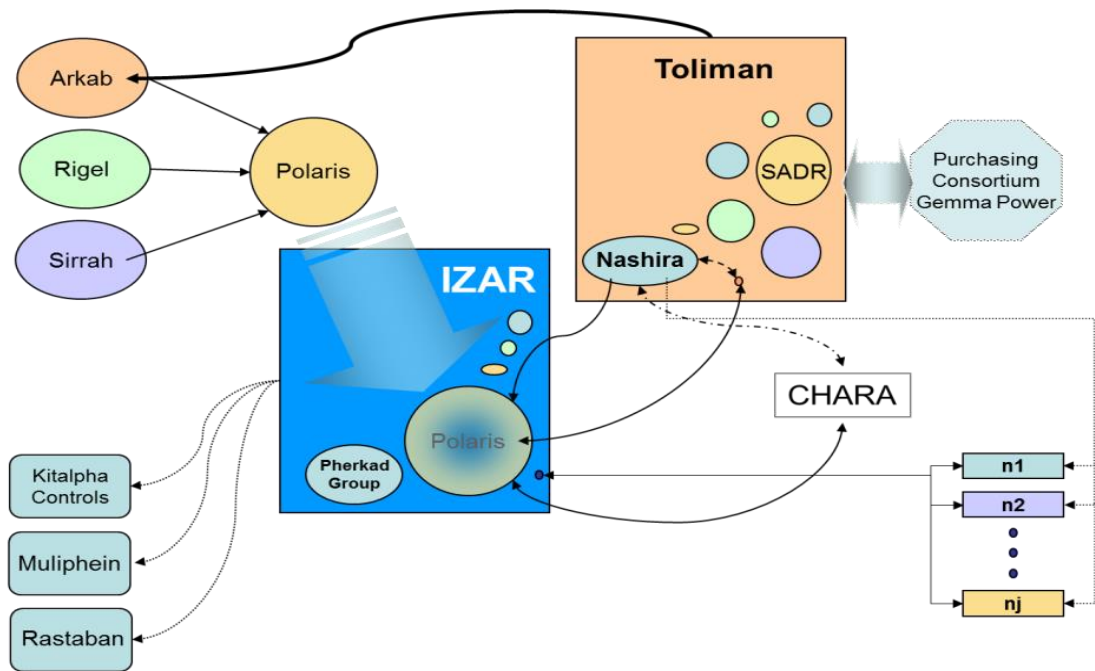
Figure 4-4: IZAR's outsourcing supply network
Source: Developed by the author based on interviews dated Aug 5, Sep 9 and Oct 13, 2010

Figure 4-4 shows how the network evolved over time. Three companies —Arkab, Rigel and Sirrah— established Polaris, a company to outsource low-cost MRO (Maintenance, Repair and Operations). Arkab is currently named Toliman, and has passed from a vertically integrated company to a leaner operation. Polaris was absorbed by IZAR in 2010, as an independent unit from which outsourcing procurement services are provided, among others, to Kitalpha, Mulphein and Rastaban. The service innovation emerged from the active participation of various network actors, changing the way IZAR operates in the procurement outsourcing business. Polaris also provides expanded services to some clients and their customers. Some of these services emerged from Polaris' learning process with other clients, including Toliman and IZAR.
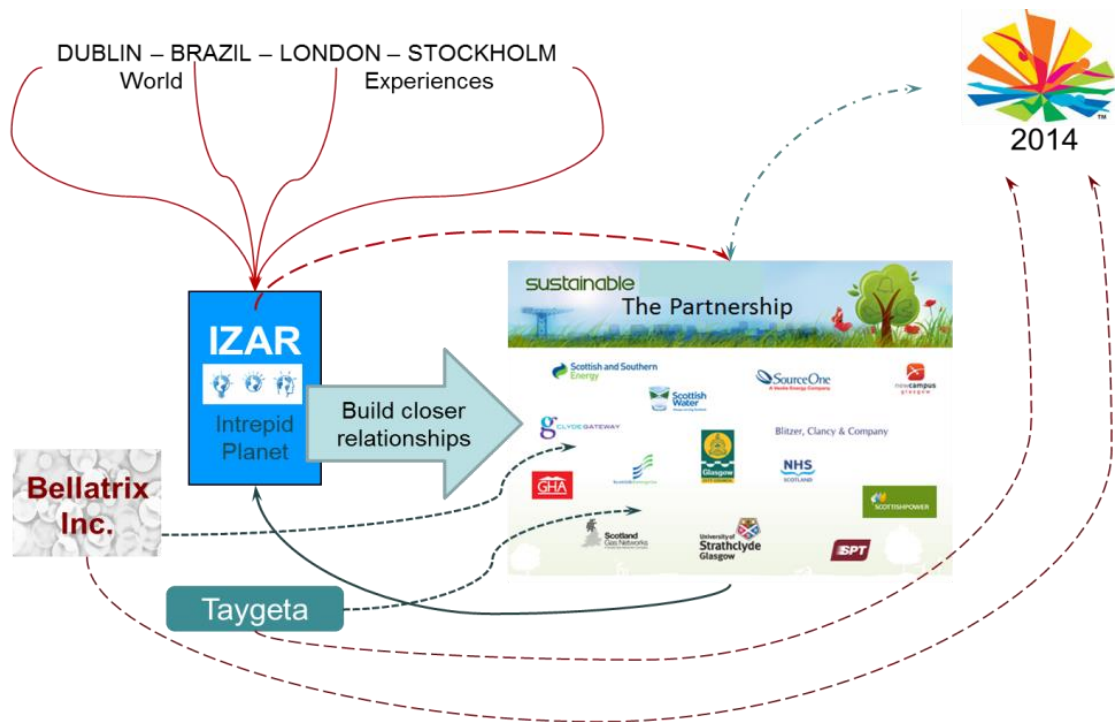
Figure 4-5: IZAR's sustainable supply network
Source: Developed by the author based on interviews dated August 5, and September 9, 2010

Figure 4-5 shows initial conversations among members of a multilateral network launched in January 2010. The main purpose was to develop a sustainable city by supporting macro decisions based on real-time data. To determine how ICT can be used to share information and enable multiple agencies to work together, worldwide experience was examined. In this particular instance direct competitors were enlisted to jointly develop a feasible arrangement for the city. In addition, a major event for 2014 was beyond planning stage; some who were to participate in the event and were part of the sustainable city initiative failed to interact at the right level and at the planning stage, missing out on opportunities to co-create value. They now foresee a service innovation based on working together and taking full advantage of information technology capabilities.

These two networks, in which IZAR was a focus firm, are complex, showing a variety of relationships and structures.

Following the IZAR experience, an interview was held with Wasat Bank PLC managers in order to explore supply networks where service innovations had been developed. During the interview, several supply network actors directly involved in a service

innovation were identified. The service innovation was an outgrowth of prolonged interaction between the University of Shaula, several Wasat corporate customers, and Wasat people from several units at different levels. Figure 4-6 presents the draft of the supply network, the history of the interactions (Phase I and II) as well as some outcomes and goals of the relationship between the focal firm (Wasat Bank) and one of its suppliers (University of Shaula). Wasat managers helped set up appointments with people they had interacted with at the University, and suggested other actors in the supply network needed to undertake the research.

Diagrams depicting supply networks as identified from the interviews, represent interpretation and faithful recall of events as described by the interviewees, drawn from information contained in the sanatised transcriptions and notes made by the researcher following each interview. Each figure specifies the interviews that served as source for the diagrams.
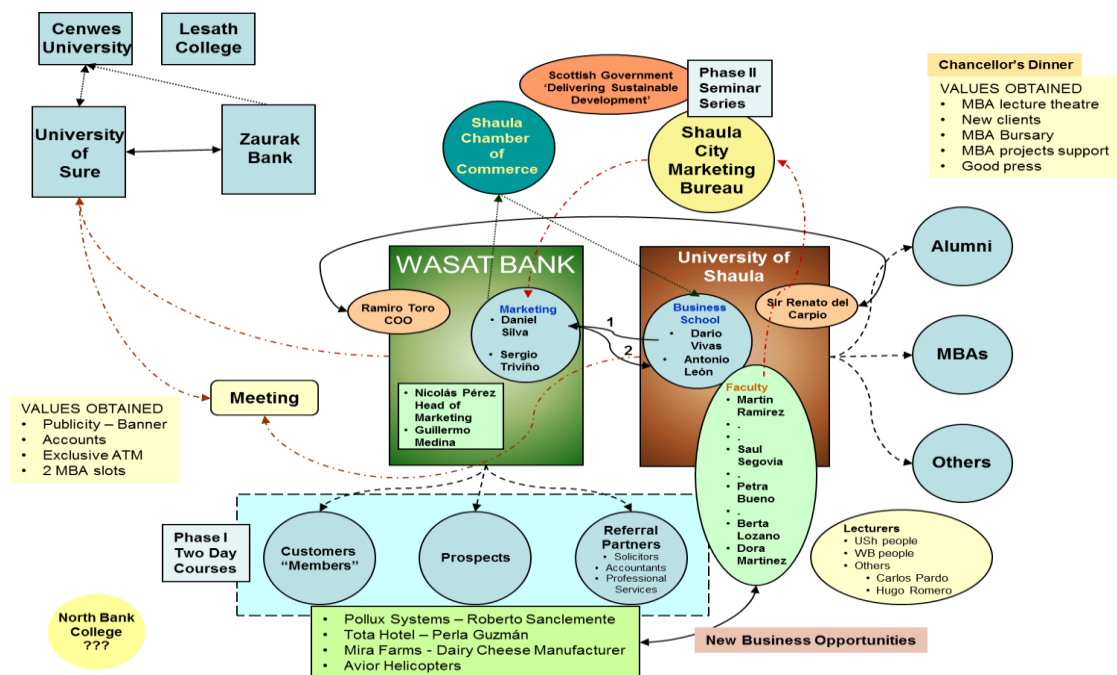
Figure 4-6: Draft of the supply network involved in service innovation with Wasat Bank PLC
Source: Developed by the author based on interview dated September 1, 2010

Figure 4-6 illustrates the supply network's complexity. The researcher could readily foresee the large number of stories to be collected from the service innovation experience. Each story could offer complementary perspectives, depending on the time of involvement and the context in which participation in developing the innovation had taken place. From the standpoint of bank executives directly involved

in early stages of the process, what marks the innovation is the point at which the transactional exchange evolved into a partnership. As noted in the figure the bank's marketing unit and the university's business school initiated conversations to deliver an educational service to the bank's customers; however, conversations and relationships between the two institutions took place at several levels, and customers became involved in co-developing the service. Additionally, university competitors (Sure, Cenwes and Lesath) sought to learn from experiences and enhance the value proposition. Ultimately, the extended network obtained both direct and indirect benefits from the service innovation.

The third focal firm explored —Merak— also presented complex interactions. César Mora described two service innovations at differing stages of development. The first, described in Figure 4-7, is closer to the research on triads presented in the literature review (Choi and Wu, 2009b), involving more than two suppliers and in operation for several years. The second, in an early stage of development, represents a co-development that emerged from mutual interest felt by each core actor's research units; both parties understood how their competencies could be complemented and deployed to generate value for their businesses and for the system. However, given the technologies involved in this particular supply network, neither party was willing to provide the information required for the research.
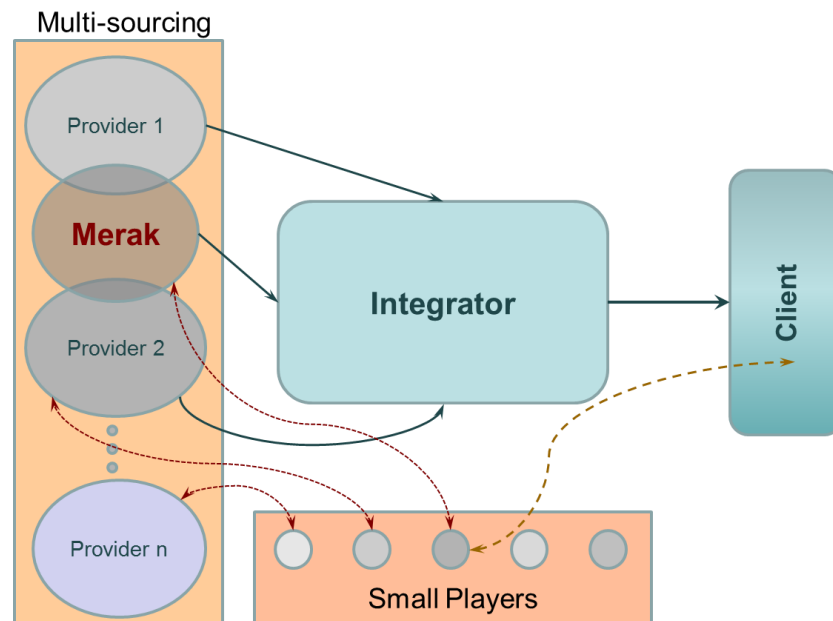
Figure 4-7: Merak's multi-sourcing supply network
Source: Developed by author based on interviews dated Nov 3, 2010

Figure 4-7 shows how the integrator firm allowed small players to become part of the sourcing process, thus providing the client with an improved solution. The arrangement enables competitors to work together, competing and co-operating with each other; this feature lies at the core of the service innovation provided by a supply network of which Merak was clearly a part, but where the integrator was the focal firm.
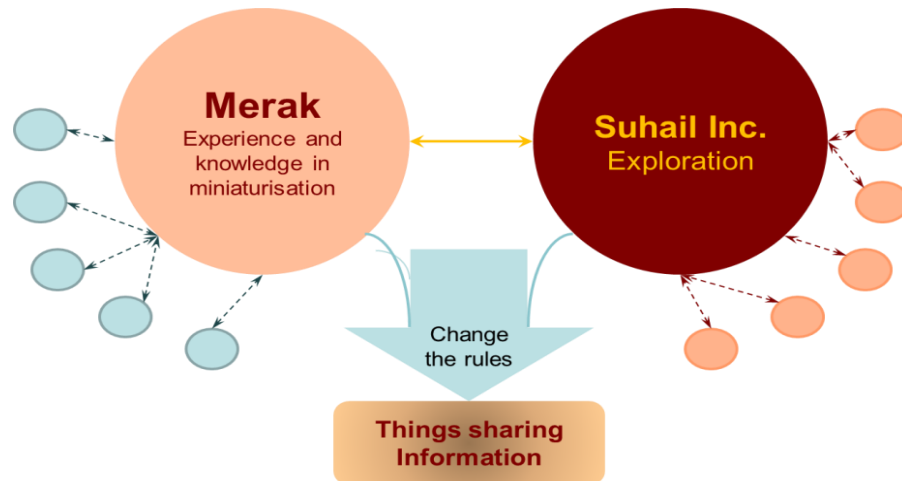
Figure 4-8: Merak's co-development supply network
Source: Developed by the author based on interview dated Nov 3, 2010

As mentioned before, interactions between Merak and Suhail brought together suppliers on both sides to jointly develop new solutions that sought to change the rules of oil exploration services. This particular venture drew on extensive high-tech transfer to a different business, using computer technology such as micro gyroscopes, thus allowing oil service companies to offer a wide range of value added services.

The five supply networks identified through initial interviews, as explained, differ from each other. Nonetheless, an obvious finding confirms the complexity of studying supply/business networks, especially those featuring service innovations. All five offer opportunities for addressing the research questions posed; but the feasibility of this study is challenged by time restrictions, let alone the availability and geographical location of key actors belonging to each supply network.

4.1.4 Selection of a supply network

Building on the methodological approach developed in Chapter 3, answers to the research questions will be socially constructed. Accordingly, respondents to be interviewed within a supply network should meet the following conditions:

- Be aware of the service innovation studied, have taken part in or witnessed interactions that led to or benefitted from the innovation, and

- Be available for an interview following a semi-structured approach.

Moreover, those involved should contribute different perspectives, drawn from diversity in roles played, time of involvement, and critical positions in terms of the experience shared.

Additionally, the supply network should operate in an environment from which the theory generated can be extended to other supply networks, beyond a particular case. Nevertheless, in each instance the researcher will take account of relevant limitations.

As noted in the literature review, supply networks are classified by the lenses of innovation, networks and services, based on the nuclear firm's perspective of the services. Table 4.1 notes the classification for each of the five firms initially approached. Accordingly, the two networks in which IZAR participates may show a higher degree of S-D logic characteristics. A G-D logic perspective is the main driver of the Wasat network, and the Merak networks may reflect some of the GDL+SDL postulates shown by those firms transiting a servitisation path of operations. As mentioned earlier, research in service innovation has been focused on organizations or firms that belong to the service sector; therefore, what has been studied is innovation within service 'firms' (den Hertog, 2000). The researcher considers this condition remains dominant, and that understanding how service innovation takes place in firms that maintain a G-D logic mind-set could contribute to their transformation. Perhaps certain business behaviours not necessarily aware of the paradigm change can be classified under the S-D logic.

The University of Shaula was part of the supply network of Wasat Bank. Such a network has already been classified as an arrangement in which "a complex co-design, production and delivery system takes place" (Giannakis, 2011a, p.1810).

Universities, as service providers, produce knowledge, disseminate it to actors within their networks, and transform knowledge through formal and informal relationships and agreements.

Accordingly, the researcher chose Wasat Bank network for conducting this research based on the conditions noted for the interviewees, the geographical scope of the supply network limited to the United Kingdom, the characteristic of Wasat as a service firm at the core of a supply network in which the G-D logic predominates, and the interactions with a complex university system. The network could elicit S-D logic conditions despite lack of awareness of actors within the supply network; and the findings may be extended to supply networks in both services and manufacturing that share characteristics noted by Giannakis (2011a) — particularly the collaboration aspects intended to co-create value noted when actors related to a university interact.

4.2 Second stage – in-depth process

Once a choice was made regarding the supply network to be researched, the sanitised transcription[19] of the initial interview with Wasat Bank executives was processed, as noted in the methodology. Using NVivo 9 (see Chapter 5), the text of the transcript was labelled and clustered.

The research method indicates that the labels given are then clustered to refine conceptual categories. Concepts emerging uncover further directions to investigate. Some directions are linked with people involved in the supply network and actors associated to the service innovation. Others lead to documents. The steps of labelling, data collection, concept refining and theoretical sampling were continued until nothing new, in terms of emerging theoretical concepts, was found in the data.

The researcher now describes how the interviews constituted the vehicle to follow emerging concepts and map interactions among those involved in the service innovation. Had the research method been linear, the transcription, labelling,

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[19] A sanitised transcription, for this research, results from changing people, companies and places names to assure anonymity. It follows the rules presented in section 4.1.

clustering, and analysis should have been completed immediately following each interview or document collected — a process not always possible in this research journey, mainly because interviewee time constraints did not allow enough time to fulfil every step in a sequential manner. Consequently, enquiries could take an outwards or inwards direction (on the map of interactions) depending on the story shared by an interviewee. Those further directions were not anticipated, in part, because previous steps were not fully fulfilled.

Figure 4-9 shows the result of the process, rather than how it was completed. However, it gives the reader a better idea about where within the supply network (map of interactions) the interviewees were located. It is the final result of the process, including the six interviews in stage three awaiting verification. The next subsection will present details on how verification was undertaken. Figure 4-9 is complemented by Figure 4-10, which presents how the process was undertaken in the time period in which data collection was concentrated.

Numbers shown in Figure 4.9 correspond to those assigned to each interview, as presented in Appendix 5, with interviews organised by date, from first to last. The direction of an arrow signals that an interviewee referred to that particular actor within the supply network related to the service innovation studied, suggesting a direction to follow the enquiry. Some people were mentioned more than once, others just once. It may appear that enquiries stop at the borders of the network. However, actors placed at the border were relatively distant from the service innovation occurring between the buyer (Wasat Bank) and the supplier (University of Shaula), and those closer to actual service interaction (customers, partners, suppliers).
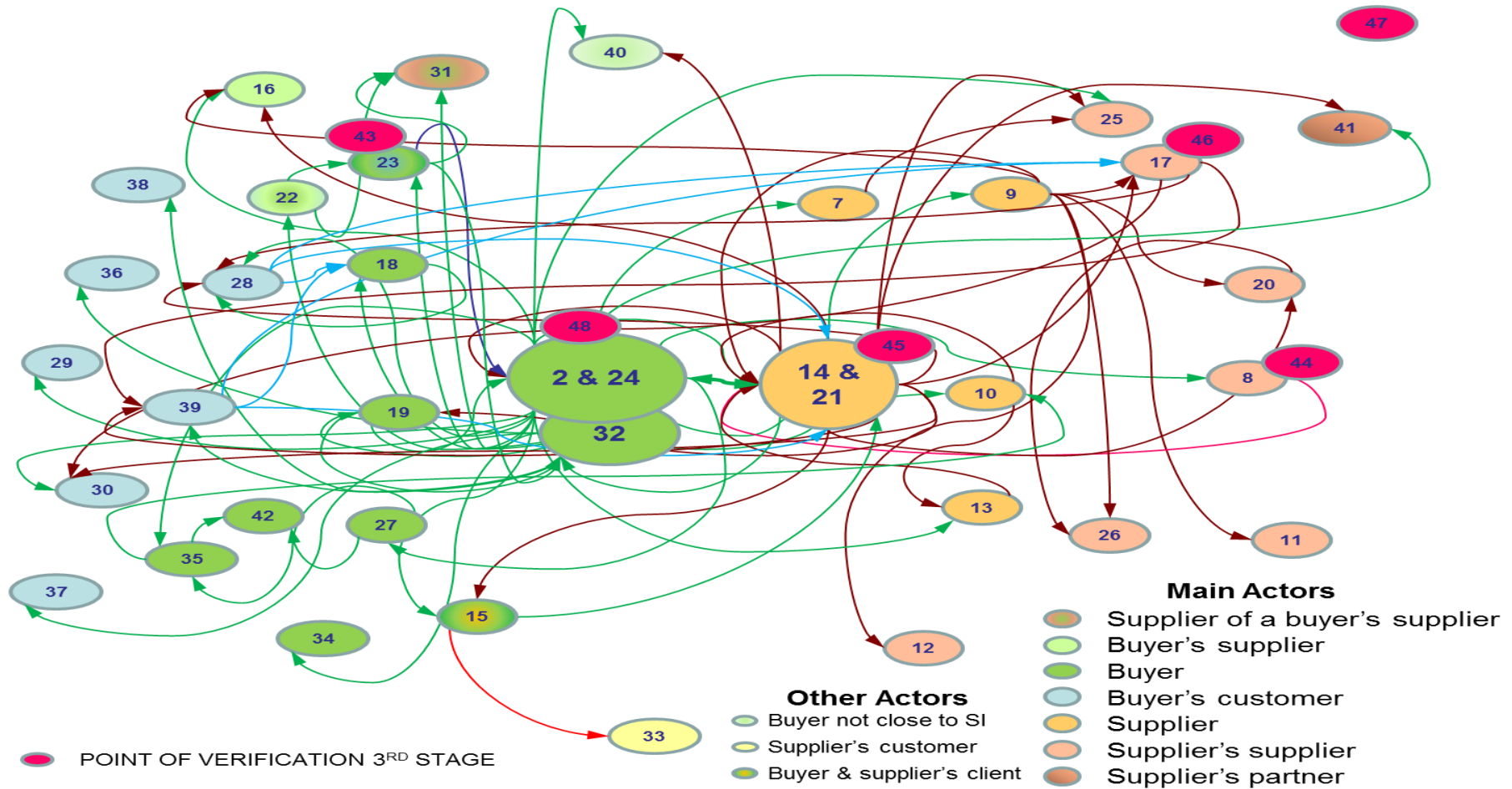
Figure 4-9: Interviewees' location within the supply network – map of interactions
Source: Developed by the author

Figure 4-10 clusters the interviews in periods of time, showing the iterative process for refining conceptual categories, determining the theoretical sample and adopting theoretical concepts, while reviewing the labelling of the nodes for analysis.
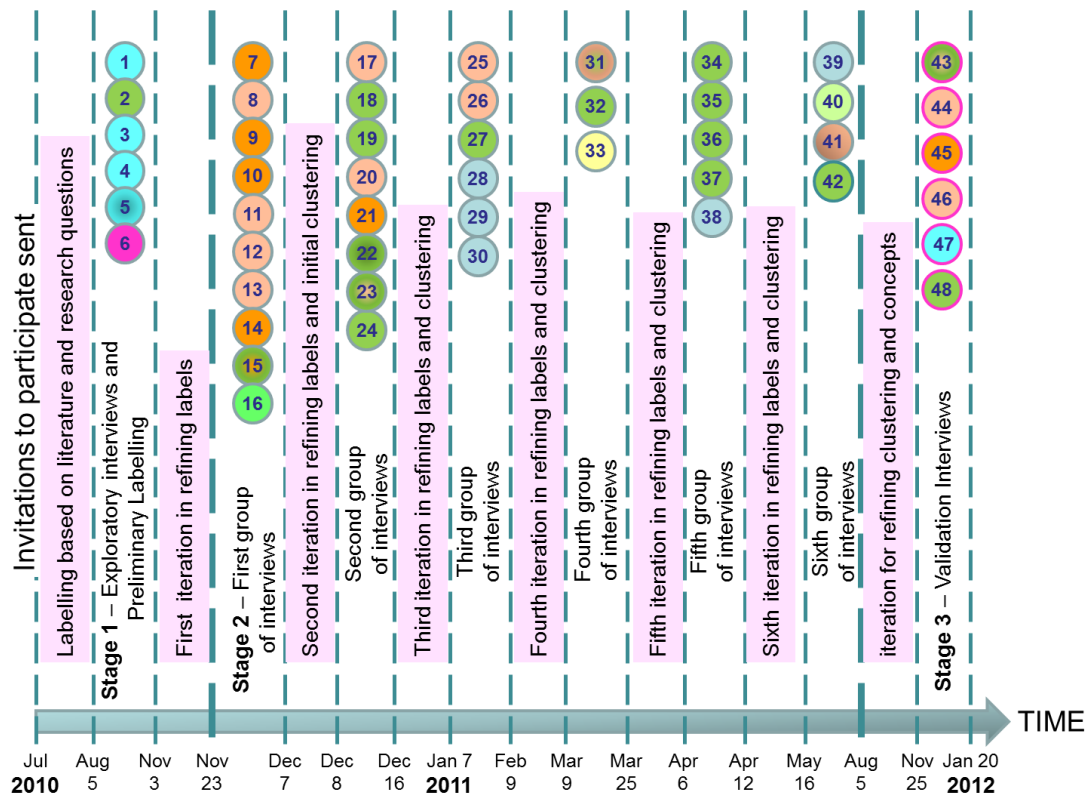
Figure 4-10: Interviewees' location within the supply network
Source: Developed by the author

The two figures show the complexity and multidirectional quality of the links between actors of the supply network, as indeed mentioned during the interviews. The actors and people included in Figure 4-9 do not cover everyone within the network or everyone who had any contact with the service innovation. Those included were individuals who willingly participated in the research and contributed to constructing the concepts for an emerging theoretical framework. As will be noted, the people who participated allowed us to reach theoretical saturation. Therefore, despite the fact that not every person mentioned in the interviews was contacted, those who took part in the research provided the information required.

Figure 4-10, although presented as linear, aims to bring clarity to the data collection process followed. The actual process was not linear. The transcription of each interview took about two days; hence some interviews based on a previous iteration were undertaken without the latter being fully complete. When enough time

between interviews was available, the reflexion, labelling, initial analysis and conceptualization were completed and used to enrich the subsequent interview, thus sharpening and focusing the search for information that either confirmed or challenged what was in construction.

Data collection led to thirty-six (36) semi-structured interviews during the in-depth research stage (see Appendix 5). Of these, twenty-two (22) were more closely related to the buyer side of the core dyad: two of the twenty-two were conducted with two persons simultaneously; hence, in total, twenty-four (24) people on the buyer's side of the network gave information. Of the twenty-two interviews, seven (7) were customers; six (6) were suppliers; and the other nine (9) were employees of the buyer, at different levels within the organisation, who were involved with the service innovation at different points in time. Another fourteen interviews (14) were closer to the supplier: six (6) were suppliers to the supplier; six (6) were employees who participated in building and developing the service innovation relationship at different times; one (1) was an institutional partner; and one (1) was a university customer mentioned by a buyer's employee.

As noted in Appendix 5, eighteen (18) interviews were face-to-face, and the other eighteen (18) were by phone. In addition, interviewees 9, 14, 24, 32 and 41 provided digital or hardcopy documents that related to the service innovation studied.

In order to ensure consistency in labelling different sections of the transcriptions, a second reader checked about 20% of the information uploaded to NVivo 9, finding that about 95% of the texts were labelled consistently; the remaining 5% represented nodes with little impact on concepts emerging from the research. Appendix 6 presents interview guidelines. Adjustments to the guiding questions were made over time to consider the role of the interviewee within the network or a particular organisation. Chapter 5 discusses refining of the nodes used in NVivo for labelling and clustering concepts.

Table 4.2 shows a list of electronic or hardcopy documents related to the service innovation obtained from interviewees.

Electronic Documents

oct-06			feb-07			jun-07		
Supplier	SLIDES	PAPERS	Supplier	SLIDES	PAPERS	Supplier	SLIDES	PAPERS
AL	3	Intro	AL	3	Intro	DS	10	Intro
DI	33					MR	1	Intro
OF	38	6	OF	38	7	OF	38	5
PR	20	2	PR	20	2	PR	20	2
GM	30	2	GM	30	2	GM	58	3
ML	81		ML	49	1	ML	58	1

nov-07			feb-08			jun-08		
Supplier	SLIDES	PAPERS	Supplier	SLIDES	PAPERS	Supplier	SLIDES	PAPERS
DS	10		DS	11	Intro	DS	11	Intro
MR			MR	7	Close	MR	7	Close
OF	36	5	OF	38	5	OF	45	5
PR	23	4	PR	24	4	DI	30	
GM	40	2	GM	40	2	PR	24	4
ML	114	1	ML	114	1	GM	40	2
						ML	58	1
						Catalyst	cases	8

oct-08			feb-09			jun-09		
Supplier	SLIDES	PAPERS	Supplier	SLIDES	PAPERS	Supplier	SLIDES	PAPERS
DS			DS	14	Intro	DS	15	Intro
MR			MR			MR	7	Close
PB-SS	20	2	PB-SS	20	1	PB-SS	20	2
PR	24	4	PR	24	4	PR		
MM	40		MM	40		MR-MM	89	1
ML	64	1	GM	40	1	GM	30	2
Catalyst	Cases	8	Catalyst	Cases	8			

			feb-10			feb-10		
			Supplier	SLIDES	PAPERS	Supplier	SLIDES	PAPERS
			DS			DS		
			MR	8	Close	MR	5	Close
			PR	24		PR		
			MF	133	4	MF	54	
			MR-MM	68		MR-MM	138	
			GM	40		GM	24	

Programme Brochure 2009
Evaluation Form 2007
Wasat and Zaurak Presentation 2010 - 13 slides
Attendees list Feb 2009
Feedback form
Introduction Words April 2009
Two day Agenda 2010
Partnership Review July 2010
3 forms of approval
Partnership Offering Nov 2010
Hardcopy Documents
Programme Materials 2006
Programme Brochure Jun 2009
Programme Brochure Feb 2010
Partnership Review 2008 / 2009
Action plan to 2013 Shaula
Shaula City Marketing Bureau Diary Dates May 2011
Shaula Economic Review July 2010
Shaula for Business
4 Brochures of the Shaula Conference Ambassador Programme

Table 4.2: List of data collected – documents provided by interviewees
Source: Author's development

4.3 Third stage – validation

Although validation is generally undertaken at the end of the analysis, when results are reached, some aspects of the data collection method employed contribute to validation. Dialogue with participants continued once findings had emerged and analyses were "completed". By means of an open, on-line survey, using a SurveyMonkey platform, the researcher asked every person who had been contacted, including those not invited to participate, to express his/her preference in terms of how to comment on the findings: face-to-face, webinar, telephone or e-mail. Out of forty-two (42) people invited, eighteen (18) responded the survey, as shown in Table 4.3.

Summary of answers

Total number of surveys started:	18
Total number of surveys finished:	18 (100%)

1. Please indicate three alternative dates and time slots that best suit you for a "meeting"

				Answers	18
				Omitted	0

	From 15:00 to 16:30	From 15:30 to 17:00	From 16:00 to 17:30	Value
Thursday, 19 January 2012	80,0% (8)	20,0% (2)	40,0% (4)	10
Thursday, 26 January 2012	44,4% (4)	11,1% (1)	44,4% (4)	9
Tuesday, 31 January 2012	54,5% (6)	9,1% (1)	54,5% (6)	11
Wednesday, 01 February 2012	0,0% (0)	0,0% (0)	100,0% (2)	2
Thursday, 02 February 2012	66,7% (2)	33,3% (1)	66,7% (2)	3
Tuesday, 07 February 2012	100,0% (3)	0,0% (0)	0,0% (0)	3
Wednesday, 08 February 2012	100,0% (1)	100,0% (1)	100,0% (1)	1
Thursday, 09 February 2012	66,7% (2)	66,7% (2)	33,3% (1)	3
Other (please specify)				0

2. Please rank the alternative media from 1 to 4 according to your preference.

				Answers	18
				Omitted	0

	1st choice	2nd choice	3rd choice	4th choice	Value
Face-to-face meeting	37,5% (6)	12,5% (2)	0,0% (0)	50,0% (8)	16
Webinar	13,3% (2)	20,0% (3)	33,3% (5)	33,3% (5)	15
Telephone	29,4% (5)	52,9% (9)	17,6% (3)	0,0% (0)	17
Email	31,3% (5)	12,5% (2)	43,8% (7)	12,5% (2)	16

Table 4.3: Results of SurveyMonkey to identify how to contact participants for validation
Source: Author's development

Based on survey results, a letter with questions to be answered over the phone was sent to each contact person (see Appendix 9). The purpose in this final stage of this research was to obtain commentary based on their experience with service innovations.

Of eighteen survey respondents who expressed willingness to engage in a brief phone conversation on the dates suggested, six conversations were held. Seven persons provided feedback, as noted in Chapter 5, thus closing the analysis and refining the findings; those who offered comments are listed in Appendix 5. Among them was an IZAR executive who was totally unrelated to the service innovation and the supply

network in which Wasat Bank and the University of Shaula interacted. His comments, based on experiences in other supply networks, shed light on the findings.

The validation stage helped verify that nothing new emerged in relation to theoretical concepts drawn from the iterative process of interviewing, analysing documents, labelling texts and adopting theoretical concepts and categories.

4.4   Summary

This chapter describes the process used to collect data for this research. It shows the challenges that the methodology employed placed on the narrative, from the initial exploratory stage through validation. The chapter focuses on the thirty-six interviews that generated most of the data used for analysis. The researcher's recollection of the way the research was undertaken is rather scattered, given that a linear progression was not followed; under the iterative process employed, initial steps are re-visited to make adjustments in steps to follow. Reality was constructed while it was being researched.

The data collection process comprised three stages. During the first exploratory stage, five companies were invited to share their experience with a service innovation within their supply networks. Three companies shared their stories. The researcher characterised these companies and chose the Wasat Bank supply network for further investigation, on grounds that the service industry firm was identified as one that follows a G-D logic mind-set.

The second stage was an in-depth process. Thirty-six interviews were conducted, recorded, transcribed, and processed using NVivo 9 software. Nodes were labelled and clustered in order to spot emerging concepts and theories. Once the interviews and documents did not yield new concepts, theoretical saturation was reached and the data collection process stopped.

In the third stage, the findings were presented to participants and people from other networks to obtain general commentary and feedback based on their overall experience – not that related to the service innovation under study. Those comments were used as a means to validate the findings and proposals presented by this study.

Chapter 5

Findings and Analysis

"Common sense is not so common."

Voltaire (1765, Dictionnaire philosophique, 'sens commun)

When Håkansson and Waluszewski (2013, p.443) stated: "on the surface it appears as very mundane", they were referring to industrial marketing and purchasing; the statement appears equally as apt for the findings of this research; the findings may appear obvious, but the reader will find richness in the conceptualization that follows. The findings are drawn from 497 pages of transcripts, collected in 21 hours, 53 minutes of interviews, plus either electronic or hard copies of 33 emails, 88 power point presentations, 125 documents, 5 press releases, 2 annual reviews of the programme and 12 website documents. The main documents are listed in Chapter 4.

The previous chapter described the complexity of the supply network and the process employed to collect data — characterised as being iterative cyclical, and combining data collection and analysis. The challenge of analysing the data by going back and forth is similar to the challenge of presenting data collection in a linear / chronological manner. As presented, the analysis was enriched by data subsequently taken into consideration, just as data collection was enhanced by early analysis.

Figure 5-1 shows how the conceptualization process began with few categories, four (4) listed at the start of the model, and few labels, eight (8) also listed following two of the categories noted. The categories can be seen as "macro" labels, under which other labels are placed; all labels are used for labelling (coding) the data. Both the four categories and eight labels originated in the literature review and the research questions, and represent a sample of the nineteen very first labels used.
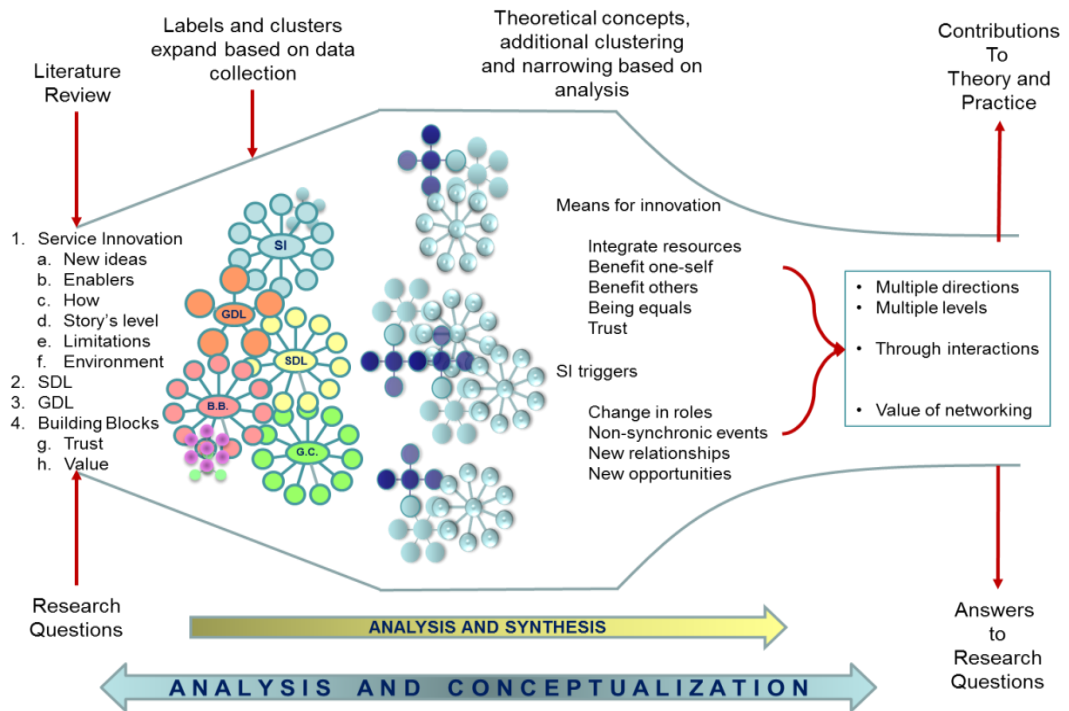
Figure 5-1: Overview of the conceptualization, analysis and synthesis processes
Source: Author's development

As shown in Figure 5-1, the conceptualization process expands to more than one hundred labels through constant comparison, iterative interaction between data and analysis, and cyclical dynamics in both thought and search paths. Appendix 8 lists the complete list of labels used first for coding, followed by clustering concepts that emerged from the data. Conceptualization continued as labels were refined, with some fused, in order to yield concepts that better support the emerging theoretical elements developed, supported and presented in this chapter. Accordingly, this stage likens a compression step, through which the driving forces of conceptualization emerge; and the research output is represented by such concepts as multidirectional and multilevel interactions, and networking value. The figure resembles a gas turbine, and the process described the stages, of expansion and compression, that drive it, as well as the dynamics generated as a rotor is spinned by gas combustion.

Figure 5-1 also helps the reader make sense of the analysis and findings that follow, by presenting a framework on how the analysis was undertaken; conceptual categories and theoretical concepts are identified and developed through the iterative process of data collection and data analysis.

As mentioned earlier, initial concepts and labels were renamed, refined or even expanded as concepts emerged through the findings, and theoretical concepts emerged. In Chapter 2, it was stated that this research is based on a social-constructionism inquiry paradigm, and its ontology and epistemology are relativistic, subjectivist and interpretivist; therefore, its "[theoretical structures] may trigger several different but associated trajectories" (Peters et al., 2013, p.337) – trajectories that converge in the conclusions and contributions chapter.

In Chapter 4, the reader found a description on how data was collected through semi-structured interviews and documents provided by interviewees related to the core supplier and buyer, as well as a supplier's partner. This chapter describes how the analysis was undertaken and shows the reader how findings are supported. As established in Chapter 3, the method selected is an inductive theory building approach. Accordingly, as noted earlier, data collection and analysis were necessarily alternated.

5.1.   Initial Labelling

Characteristics and steps that inductive theory building approaches should include await discussion. Among those approaches, Grounded Theory is well established; but positions vary in terms of what role previous works should play, and at what point in time they should be brought into the process. At one extreme, Glaser states that "Strauss and Corbin were no longer doing GT … and 'forcing' the data and theory, rather than allowing emergence [of the theory]" (Eaves, 2001, p.656); at the other, Strauss and Corbin suggest a new coding technique in which the conditions, the context and even the literature play a role. Beyond the foregoing discussion over GT, the issue at hand for this research is to show how an inductive theory building approach, although it may be "criticised for its lack of adherence to the method as explicated by its originators, Glaser and Strauss" (Eaves, 2001, p.654), was nonetheless useful to ensure a systematic approach to data collection, analysis, and derivation of theoretical concepts.

As stated in Chapter 3, this research engaged with Corbin and Strauss' suggestion of having a freer coding process by means of interaction with the data and previous

works. Hence the conceptual framework shaped the coding (labelling) process – that in turn was built on the literature review and the research questions. Bearing in mind that the research questions addressed the how, what, and level of analysis in relation to a service innovation, these elements lead to initial macro labels. The purpose of the labels was to identify, within the interviews, the narratives that were related or could be labelled as such. Initial labels drawn from the research questions included:

- **Enablers**
- **How**(s)
- **Story level** (**dyad**, **triad** or **network**)
- **Limitations**
- **Environment** (meaning business context)

These five labels appear above in Figure 5-1, under the macro-label of service innovation.

The literature review presented and discussed in Chapter 2 features three lenses (innovation, networks and services) that also provide the researcher certain macro labels for data analysis. Following are the (underscored or bold-lettered) initial labels, also shown in Figure 5-1:

- <u>Service innovation</u> and references to "**new ideas**"
- <u>Networks</u>, in particular **evidence** that interviewees provide
- Service-dominant logic (<u>SDL</u>) concepts, such as **benefit another** and **collaboration**
- Goods-dominant logic (<u>GDL</u>) and a traditional concept, such as **add value**
- <u>General concepts</u>, such as **trust** and reference to **expectations**
- <u>Building blocks</u> of interactions, such as **value**

Certain initial concepts were not included in Figure 5-1 in order to reduce its complexity. Also, some labels or concepts can be associated with more than one macro-label; for instance, in the figure, "trust" is associated to building blocks, and in the previous list, to General concepts. The figure omits the following seven labels: five labels (collaboration, benefit another, add value, evidences and expectations), and two macro-label concepts (networks and general concepts).

Following Glaser's argument, the risk of using labels deduced from the literature is to follow the English proverb "if all you have is a hammer, everything looks like a nail" (Maslow, 2004, originally stated in 1966, chapter 2). However, as Corbin and Strauss have stressed, these initial labels represent a starting point to focus on, leaving creativity open to the results of interaction between data and analysis. In this research, the researcher used these initial labels, then went through the transcripts again to explore each for emerging labels, a process that both helped code the texts and guide data collection that followed, in order to confirm or question the emerging concepts and theoretical ideas.

The first round of interviews was formed by six exploratory interviews, through which five potential supply networks were assessed. These interviews and their respective supply networks allowed the researcher to examine the labels defined critically. Transcripts of the interviews were labelled and new labels and concepts raised by interviewees initiated expansion of the list of labels. For a complete list of labels see Appendix 8.

For instance, to label transcripts of the initial six interviews (interviewees from IZAR, Wasat Bank, Arkab and Merak), the label (concept) used was "**new ideas**", which, in turn, emerged from the literature review. However, the researcher found that it was not enough to describe related elements such as **awareness**, exploration and exploitation. The following quote, communicates that:

> "The benefit to the University as well is, look, this is what we can offer you. So if you wanted to come and do an MBA, you've already seen what we can provide for you. If you want to do another exec education programme, you've already touched and feel [sic] what it could look like, okay?"
>
> *(Marketing Consultant, Wasat Bank)*

In the process of building relationships, both the Bank and its customers become **aware** of a "new opportunity"; "new ideas" could stem from past experience with the University — perhaps, in this case, the MBA or an executive education programme. So the Bank views interaction as a source of "new things" that may add value to its employees, customers, or itself. The Bank may also view interaction as benefiting the University. In the end, the University will be getting "new businesses

or sales" for its products. The Marketing Consultant's statement also communicates the idea of **exploration**. An environment was being created where the different parties (the bank, the University, and the bank's customers) explore new business opportunities — a key component in a service innovation (DTI, 2007, Paton and McLaughlin, 2008, Schwarz et al., 2012) leading to a "successful **exploitation** of [those] new ideas" (Paton and McLaughlin, 2008, p.78).

Beyond this expansion of the "new ideas" label (category / concept) into new labels, new categories and concepts not directly associated to the initial labels were also included as transcripts were labelled. For instance, one interviewee had in mind the firm's business purpose, and how it may influence the way a business opportunity may be embraced, challenged, analysed, rejected or otherwise disposed of; accordingly, a label named "**business purpose**" was established. The researcher's idea for the label came from the following quote:

> "And we have to… we still provide a lot of the service we would normally provide in that environment. … Another interesting constraint we've had is competitors of IZAR when we have been bidding. Ah, they know that we are managing on behalf of Toliman and we go to Deneb and we want to buy Deneb laptops for Toliman. That, by the way is a fact, we buy Deneb laptops for Toliman. IZAR buys their laptops for Toliman."
>
> *(Procurement Outsourcing Manager, IZAR)*

So the business purpose was beyond "selling the procurement outsourcing service"; in this case, it was the purpose of providing the potential client with a comprehensive and competitive solution that may include and, in fact, does include, dealing with direct competitors accepting what the customer perceived as valuable. The discussion derived from this idea opens a new perspective that needs further exploration; i.e., the richness of the texts provided by the interviews. Informal, random, or "off the-cuff" statements triggered trajectories the researcher had to assess and pursue. The previous two "labels"—business purpose and new ideas (its expansion)—as well as the single quotes used are presented as illustrations of the process through which the researcher analysed and interpreted the texts, leading to further labelling and analysing new data.

Once the six initial interviews were examined, the list of labels and concepts enumerated in Appendix 8 went from nineteen to sixty-one. Among others, two labels were added under the concept of value: value perceived and value judgement. Furthermore, by listening to the recorded stories as well as reading transcripts of those same stories, the researcher found that the interviewees, in addition to having their stories framed within a **"level of analysis"** as expected (dyad, triad or network) in some cases, showed a particular **emphasis,** resulting in another label for further exploration. Appendix 8 lists the labels associated to both macro-labels (such as: service innovation, S-D logic concepts, General concepts, etc.) and sub-labels that expand the associated concepts. However, the reader may realise that the list does not present the labels in chronological order, based on the moment of adoption. The reason to avoid such an order is that it may obscure clustering concepts that help elicit emerging theoretical conceptualizations, which in turn synthesised findings.

The second and third iterations in refining labels, concepts, categories, and clusters, led to an expansion of the list that reached 138 labels (see Appendix 8). As mentioned before, the labels used open trajectories, to be explored, that can confirm or question an emerging theoretical concept. In the analysis, one of the researcher's tasks was to search for commonalities and differences in texts. That analysis went beyond the labelling and coding as described. The process by which interview texts were compared and clustered is discussed in the following section.

5.2   Findings

As shown in Chapter 3, the researcher has been pulled back and forth by his positivistic mind-set. Using the NVivo9 software, the sources (interviews and documents) and the nodes (labels, concepts and theoretical categories) can be compared, clustered and finally analysed in tables and diagrams. Without placing too much importance on these tools, they provide the researcher a sense of direction towards the findings. However, it should be noted that in using the inductive theory building approach, the objective is formed by theoretical concepts emerging from the data — concepts that stand out when subsets of data are seen together, or when relevant quotes are placed side by side, so as to sharpen the connections.

The findings emerge from reviewing the stories told by the interviewees, processing the data gathered, and identifying patterns shaped by the data. An inductive theory building approach is characterised by "a systematic set of data collection and analysis procedures to develop an inductively derived theory from the data" (Eaves, 2001, p.655). In addition, in order to examine the texts critically, critical discourse analysis (CDA) can be used as a research tool for analysing data (Janks, 1997). Given that "a fundamental property of language is that it enables human beings to build a mental picture of reality" (p.336 citing Halliday (1985)), the researcher systematically examined grammatical elements in undertaking text analysis, in such a way as to rescue the true meaning of the stories told, and how those meanings pointed to a theoretical direction.

A starting point was to look for patterns in the labelling of the data collected. In that regard, NVivo9 allowed the researcher to explore the data through matrix arrangements making it possible to view the labels' density across the interviews. Figure 5-2 shows an Excel table in which colours are associated to the number of references (texts labelled) per source (interview); those with 10 or more references are coloured pink, 5 to 9 references are blue, and 1 to 4 references, green. Columns represent interviews and rows, the labels used. Both at the top and bottom of the columns colours represent interviewee source: orange for the bank, blue for the university, yellow are the bank customers, red figures are supplier suppliers (faculty, lecturers), red with yellow are supplier competitors, grey are "partners", and #33 is an independent university customer.

From the matrix, the observer can glean that some labels seem to dominate; the thinking process interprets that observation as a starting point rather than as a point of arrival — a finding in itself, but clustering labels and renaming them was part of the systematic process for identifying the emerging theoretical concepts.

Going further with this initial finding, it is worth noting that "value", the label with the highest frequency, accounts for 250 observations. Of these, 83 were bank staff, 52 university suppliers (faculty), 46 bank customers, and 33 university staff directly involved with the service innovation. Therefore, in different ways the buyer (the direct customer) attached value to the service experience. Additionally, "value perceived" observations ranked 7th of 100, where bank customers represent 44, bank

NODE / INTERVIEW	Total
1 : Asymetric information	2
2 : Building blocks	8
3 : Chain disruption	11
4 : shake - turbulence	4
5 : Connectivity	32
6 : Dependence on individuals	114
7 : Characteristics of those involved	34
8 : Evidences of networking	129
9 : Complexity	0
10 : No develop	5
11 : Evolution of relationship	158
12 : Changing roles	5
13 : Distribution of benefits	0
14 : Hows	23
15 : Time perception	19
16 : Whats	31
17 : Story	17
18 : Boundaries	4
19 : Change of focus	5
20 : Emphasis	25
21 : Building relationships	75
22 : Central coord	2
23 : Change of thought	3
24 : Internal Politics	10
25 : Iterative process	0
26 : Learning	10
27 : Social responsibility	2
28 : Strengthening relationship	28
29 : Level	77
30 : Dyad	83
31 : Move - Dynamic	0
32 : Network	69
33 : Roles	0
34 : Triad	15
35 : Starting point	100
36 : Value	250
37 : Contacts	38
38 : Ideas	21
39 : Information	22
40 : Problem solving	0
41 : Relevance	46
42 : Value judgement	13
43 : Value perceived	100
44 : Environment	16
45 : Business conditions	16
46 : Complexity in relationships	9
47 : Unstability or turbulence	9
48 : GDL mind set	35
49 : Add value	11
50 : Direct competition	3
51 : Discrete transactions	9
52 : Tangible transactions	10
53 : General concepts	15
54 : Alignment	0
55 : Being Equals	0
56 : Branding	25
57 : Communication	40
58 : Control	0
59 : Differentiation	17
60 : Expectations	23
61 : Facilitate	0
62 : feedback	30
63 : Growth	7
64 : Heterogeneity	5
65 : Learning	9
66 : Measurements	15
67 : Accountability	7
68 : Cost	14
69 : Customer Satisfaction	7
70 : Effectiveness	7
71 : Investment	7
72 : Performance	10
73 : Profit	8
74 : Returns	7
75 : Savings	0
76 : Opportunism	12
77 : Positioning	25
78 : Reputation	29
79 : Trust	17
80 : obvious	0
81 : SDL concepts	54
82 : Co-creation	23
83 : Collaboration	94
84 : Integration	13
85 : Operand resources	8
86 : Operant resources	26
87 : Service Innovation	97
88 : Additional Example	0
89 : New element	0
90 : Benefits to another	108
91 : Business purpose	22
92 : Expectations	20
93 : Follow ups	13
94 : Needs	18
95 : Objectives	12
96 : Outcomes	11
97 : Changes	0
98 : Actor	0
99 : Context based	0
100 : Negotiated	0
101 : Role	0
102 : Space	0
103 : Time	0
104 : Unpredictable	0
105 : Enablers	25
106 : Business size	6
107 : Flexibility	8
108 : Forums	0
109 : Involvement - engagement	13
110 : Location	14
111 : Long term	9
112 : Response	6
113 : Spend time together	2
114 : Visibility	1
115 : Hows	9
116 : Limitations	60
117 : Business size	3
118 : Communications	21
119 : Distance	2
120 : Lack of	10
121 : People	0
122 : Policies	0
123 : Resources	19
124 : Response	15
125 : Structure	23
126 : New ideas	105
127 : Awareness	73
128 : Exploitation	14
129 : Exploration	61
130 : new to firm	16
131 : new to industry	12
132 : new to market	22
133 : Previous experiences	57
134 : Relation of Power	0
135 : Whats	15
136 : Technology	4
137 : Characteristics	3
138 : Time Line	36

Figure 5-2: Matrix nodes by interviews

Source: Author's development based on NVivo9 matrix query result

staff 27, and faculty 17. Together, these two labels bear out the service innovation was delivering benefits to both the customer (bank) and bank customers, and that the supplier's suppliers (faculty) also perceived some value in the experience. Again, this initial observation shows that the innovation was developed not just by the supplier but by several network actors.

The top ten labels assigned to statements featured in interviewee stories are: "value" (noted earlier) — 250, "evolution of relationship" — 158, "evidences of networking" — 129, "dependence on individuals" — 114, "benefits to another" — 108, "new ideas" — 105, "value perceived" — 100, "starting point" — 100, "service innovation" — 97, and "collaboration" — 94. These represent 38.85% of the labels; the next 11 labels —covering those highlighted in the table— represent 21.52%, for a total of 60.37%. Accordingly, 21 labels representing 15.2% of those used covered over 60% of references made by the interviewees.

Based solely on this initial observation, it may be affirmed that the interviewees appear to have viewed the service innovation under study as an experience where value was created even for others within the system. It also appears relationships were emerging: links represented more than one-to-one connections and were evolving into network arrangements, people were key to the process and at the least exposed to new ideas, and collaboration was part of the game; 3% of the labels (97) addressed service innovation as an issue in the experience they were sharing.

On the other hand, when observations by column are considered, of the 3230 labels given to statements in the interviews, 32.6% came from bank staff interviewees, 22.7% from bank customers, 19.1% from faculty, 15.9% from university staff and the remaining 9.7% included university competitors and other network actors. The average frequency of labels given varies as follows: 105 per bank customer interview, 103 per university staff interview, 88 per bank staff interview, 77 per faculty interview, and 63 per other network actor; thus showing a fairly balanced frequency among the different populations interviewed. In addition, the top four richest interviews, in terms of number of labels, represent one for each population group: 264 per faculty member, 253 bank staff, 224 university staff and 215 per bank customer — which again shows a good balance. The top ten interviews show a total of 52.8% of labels coming from 27% of the interviews: 3 from the bank (17.9%), 3 from

bank customers (13.8%), 2 from faculty members (11.2%), and 2 from university staff (9.9%).

The figures and initial reflections drawn from Table 5.2, as mentioned earlier, represent findings that helped the researcher undertake further analysis. They show that actors within the supply network studied, regardless of their role and extent of participation in developing the service innovation, were more or less equally involved. They also show differences in interviews; some stories collected were richer than others, some interviewees became more engaged than others in the research process, and some were more aligned than others in understanding the role of a service innovation in creating value and how collaboration among network members fosters new opportunities.

Nonetheless, figures presented in the table are not enough; they may provide hints about what direction to follow, but the richness lies in the text. Accordingly, to elicit the findings, as mentioned earlier, the researcher undertook a critical analysis of the texts — especially the parts that were labelled (coded). Those texts were explored using a technique used in CDA, and limited as a research tool, involving "different types of analysis simultaneously rather than sequentially" (Janks, 1997, p.330), which facilitates the identification of conceptual linkages and interconnections among texts. The researcher does not claim that a CDA has been conducted; CDA as a research method is used to explore relations of power under social practices linked to historical contexts and ideologies. This research does not explore those dimensions of social reality that may be associated to a service innovation or the actors within the supply network studied.

Elements included in the analysis of texts are pronouns used —whether inclusive (we, us, our, etc.) or exclusive (you, s/he, it, they, them, yours, etc.)— pre-suppositions and implications shown by the use of negative questions, or by changing state verbs (change, improve, transform, become, etc.). These two elements used in analysis of the texts help to better understand realities constructed by interviewees in relation to supply network actors and those directly involved in a service innovation. The researcher noted that CDA research methods and techniques cover a wider range of categories in the language used, such as passive/active forms, tense, adjectives-adverbs-nouns, references to other texts, etc., that are closely related to the

ideological heart of CDA and the exploration of power relations, and hence were not used in this research.

As explained in both the Methodology and Data Collection chapters, the initial findings and the process of labelling in conjunction with the analysis provided the researcher new paths and a guide to next steps in the data collection process. The labels used as well as the tools for dissecting the texts allow concepts to emerge and be used and developed in following sub-sections. Interview transcripts were re-read as many as four to five times, notes taken and information patterns gleaned, using NVivo9 as an automatic and systematic approach to identify words in context, related labels and words, and word and label frequencies across the thirty-six interviews. By undertaking these tasks, the researcher identified categories that were refined through constant data comparison.

In following pages, the findings are clustered in three topics associated to the emerging concepts: network structure, service innovation and interactions. Each sub-section shows converging patterns emerging in the process until the findings are presented. At the end of the chapter, findings will be used showing how the analysis leads into the dynamics of supply and innovation.

5.2.1 Findings related to the network structure

Following the chronological events described in Figure 4-10, once the exploratory interviews were completed, labelled and analysed, and the decision made to undertake an in-depth exploration of a service innovation that had taken place in one of Wasat Bank's supply networks, the next rounds of interviews were conducted. The second round of interviews included the first and second groups, as presented in Figure 4-10. Details about the interviewees can be seen in Appendix 5. These groups involved ten (10) people directly related to the University of Shaula, five (5) people working in three different units at Wasat Bank (human resources, financial services and marketing), one (1) bank supplier, one (1) Bank sister company executive, and two (2) people related to University of Sure, a competitor of University of Shaula in the United Kingdom.

Interviewees from the Wasat Bank, belonging to the second group of interviews held in December 2010, were two marketing executives, Mr Daniel Silva and Mr. Sergio Triviño; both were also subjects of the initial exploratory interview, held in September 2010. They were asked to map out the network that was evolving from the relationship between the Bank and the University of Shaula. At the time of the interview, Mr Daniel Silva was a consultant to the marketing unit (an internal position within the bank); for over three years he had been in charge of developing, with the University of Shaula, the executive education programme for the Bank's customers, and just moved to another position within the organisation. Mr Sergio Triviño was the Strategic Partnership Manager and Marketing Manager at Wasat Bank, and led the relationship with the University of Shaula Business School at the time of this research. The programme offered to the Bank's customers was known as "Linking and Development", a name that had recently been changed to "New Ideas to Trade". Figures 5-3 and 5-4 present the understanding of how the network between the bank and the university was perceived by each executive.

Almost two months ago I sent you, on a power point slide, my understanding of the network, based on the meeting we had on September the 1st. Would you please, draw your current understanding of the network that has been evolving from the different initiatives between Wasat Bank and University of Shaula (Business School).
Include people (titles or names), firms, projects, activities and whatever you consider is part of the network.
Thursday, 16 December 2010 – Daniel Silva
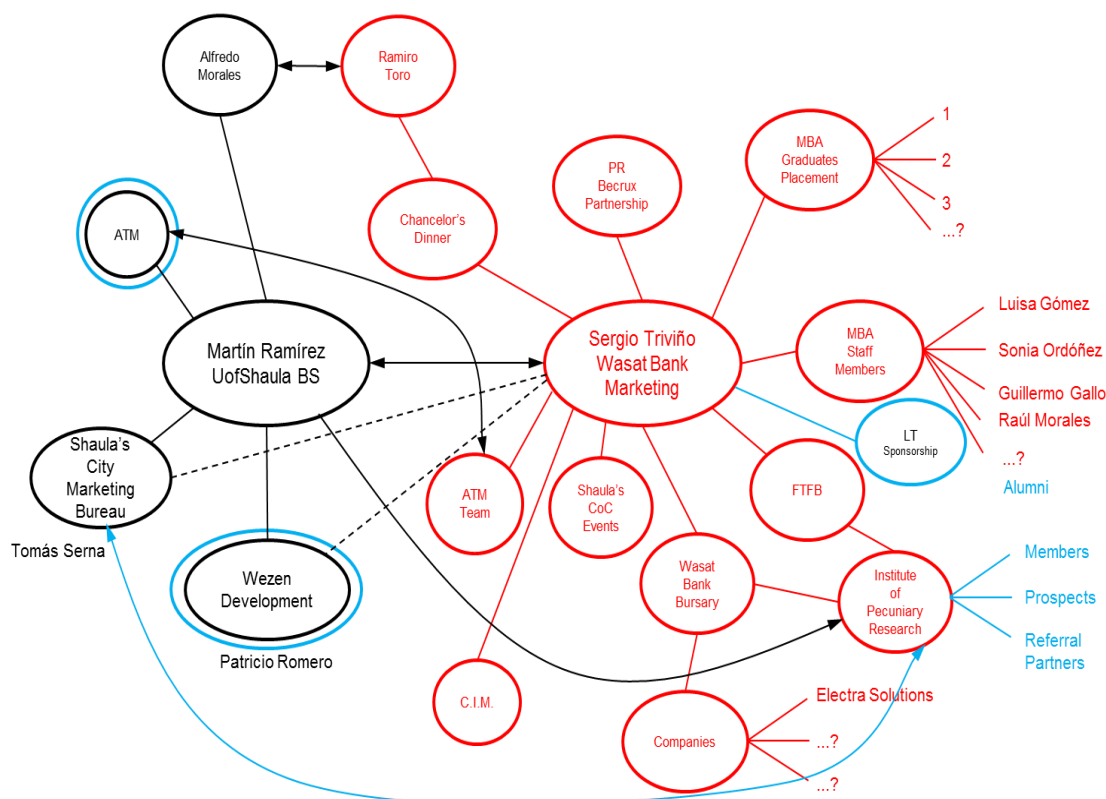
Figure 5-3: Wasat-Shaula supply network – Map 1
Source: Author's development based on Daniel Silva's sketch

Almost two months ago I sent you, on a power point slide, my understanding of the network, based on the meeting we had on September the 1st.
Would you please, draw your current understanding of the network that has been evolving from the different initiatives between Wasat Bank and University of Shaula (Business School).
Include people (titles or names), firms, projects, activities and whatever you consider is part of the network.
Thursday, 16 December 2010 – Sergio Triviño
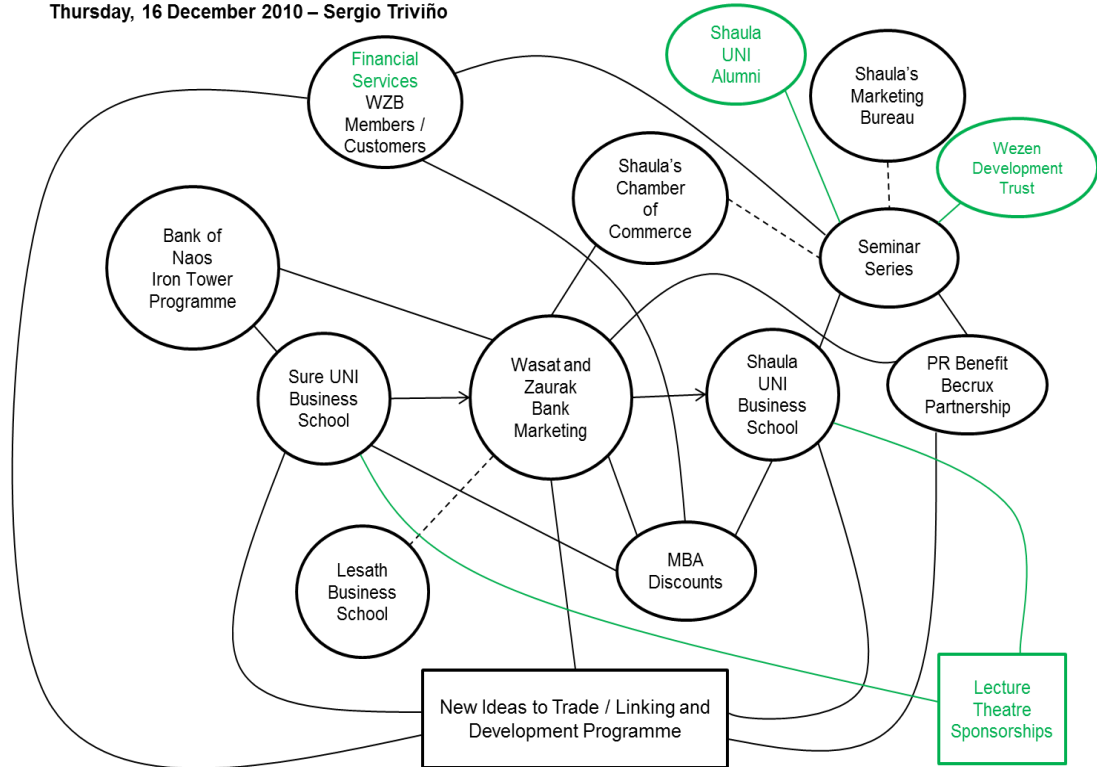
Figure 5-4: Wasat-Shaula supply network – Map 2
Source: Author's development based on Sergio Triviño's sketch

Two observations may be gleaned from the figures. First, each executive showed a different level of detail in their respective diagrams. Second, one executive introduced more than one level of interaction between Wasat Bank and the University of Shaula, and the other executive presented the relationships with alternative education suppliers, such as University of Sure and Lesath Business School. These two observations triggered new trajectories of enquiry to clarify the network structure, the actors involved and the kind of interactions taking place while the service innovation was developed.

At this point in the research, what has been identified is the view of the network from the buyer's side, the Bank; another view could be provided from the supplier's side and further up-stream. Interviews conducted up to December 2010 did not result in additional information; but when a University supplier was interviewed in January 2011, the researcher learned that this interviewee was aware of the initial contacts between the Bank and the University back in 2005. Additionally, he had been a lecturer to the Bank's customers when the Linking and Development programme was

launched. Before the interview, the researcher noted the supplier's level of awareness of the relationship's development. Once the researcher shared his understanding of how the supplier viewed the network being developed, the supplier was asked to draw a diagram, presented in Figure 5-5. As expected, a different perspective helped complete the initial understanding of the network structure.

Almost two months ago I sent you, on a power point slide, my understanding of the network, based on the meeting I had on September the 1st. With people from Wasat Bank.
Would you please, draw your current understanding of the network that has been evolving from the different initiatives between Wasat Bank and University of Shaula (Business School).
Include people (titles or names), firms, projects, activities and whatever you consider is part of the network.
Friday, 7 January 2011 – Patricio Romero
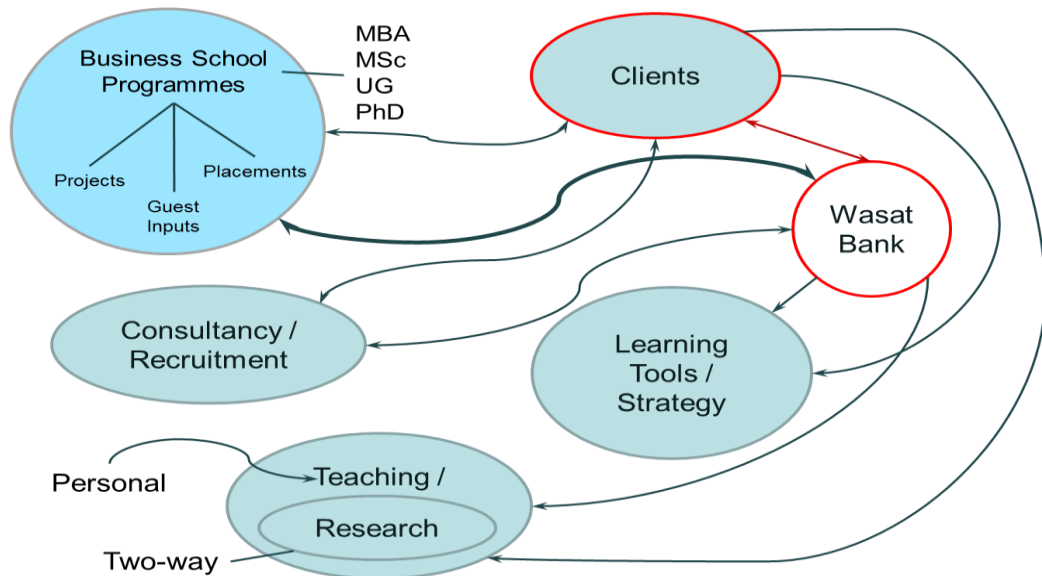
Figure 5-5: Wasat-Shaula supply network – Map 3
Source: Author's development based on Patricio Romero's sketch

Figure 5-5 shows the view of a faculty member at the University of Shaula Business School, who is treated as a supplier's supplier in this research. He saw the network developed through the relationship established between the University and Wasat Bank, as a source of business opportunities. The Bank's clients could become any of the following: a market for established programmes offered by the Business School; potential recipients of consulting work undertaken by students; potential recruiters of students; a source of valuable candidates for teaching, lecturing, and even conducting research; and/or a source for research projects based on client needs. Also, the Bank could be a source of information on learning tools and strategies in selected areas. The reader may imagine that this view surprised the researcher. It was different from the researcher's initial interpretation and understanding (presented in Figure 4-4) of this supply network, and different from the views the

two Wasat marketing executives shared of the network involved in service innovation (Figures 5-3 and 5-4).

These general perceptions were considered along with all information gathered from the interviews. NVivo9 helped the researcher identify portions of the texts to find connections, opposite arguments and further explanations about issues related to the research questions and the emerging concepts. To show the reader some of the materials used as intermediate steps in the analysis, Appendix 10 presents some results of queries obtained with NVivo in matrix form, word trees or lists of references.

To address the network structure found in this supply network, the reader may turn to the network archetypes presented by Todeva (2006). Some structural configurations are very rigid, whereas others allow for more movement among the actors. For instance, the heterarchy structure is defined as "an organismic adaptable system for coordinating business operations" (p.136). The author also introduced certain aspects related to the relationships, ties and links found among members of a business network. On that particular issue, Mariotti and Delbridge (2012) build on Todeva's description of embryonic and inactive links, conducting empirical research that led to expand the category from strong and weak ties to potential and latent ties. These categories fit much better into networks operating in dynamic environments. In addition, Håkansson et al. (2009) suggest a rainforest as metaphor for the business landscape; they claim such a metaphor helps understand the interactions between actors within the network, and offers a good likeness of the diversity of both the actors and cooperative approaches.

With the previous framework, the researcher proceeded to read the transcripts several times, make lists of words and concepts, go back and forth to refine the lists through constant comparison, and continue the journey through subsequent groups of interviews, labelling and re-labelling the transcripts.

Concepts and categories related to networks and networking emerging from the first group of interviews included: "roles", "joint work", "business purpose", "business objectives", "spaces to encounter", "complexity in relationships", "instability",

"turbulence", "communication", "connectivity" and "boundaries". As stated in Figure 4-10, the process was iterative. Up to the fifth iteration, undertaken in April 2011, the concepts and categories kept expanding in number of descriptors and attributes. As they emerged, these concepts and categories were then used to label incoming transcript texts as well as review the previous transcripts.

Some clustering of concepts and categories began to converge in the second iteration, but most took place after the fifth iteration. Clustering concepts included: "change of roles", "benefits of networking" and "multiple levels". Concepts included in the sixth iteration were: "alignment", "context based" and "policies". No new concept emerged from the sixth group of interviews; accordingly, based on the methodology adopted, theoretical saturation was reached and the sampling / data collection process was stopped. The final iteration was to refine the clustering from which proposed theoretical concepts are drawn.

As previously shown in Figure 5-2, in some concepts the labelling density directed the researcher to consider potential clusters. The clusters (below) emerged after several iterations and helped define the path towards proposing theoretical concepts. Figure 5-6 depicts the outcome of clustering the labels as described, with the name of the cluster shown at the top of each section followed by individual labels. The figure does not include all labels; those clustered represent about 28% of all labels assigned to the texts. "Conditions for links" was the first cluster, the result of grouping labels 12, 22, 23, 51, 67, 68, 113 and 114, as numbered in Appendix 8; the second cluster is "Directions of links", grouping labels 51, 65, 89, 90, 104, 112 and 126; and the third cluster is "Increase in links", grouping labels 9, 12, 28, 30, 54, 99, 110, 113, 114, 119, 121 and 125. The three clusters represent, respectively, 11%, 9% and 16% of the total number of labels. Adding these percentages results in a number different than the 28% stated earlier, because some of the labels are used in more than one cluster. Other potential clusters gleaned from the figure belong to subsections that follow, on service innovation and interactions.

Continuing with Figure 5-6, the colours at the top and bottom of the columns represent the firm associated to each interview; and the colours within the matrix are based on the frequency of labels per interview. Following is the distribution of labels grouped in each cluster.

CONDITIONS FOR LINKS

NODES / INTERVIEW	2	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
118 : Communications	1	0	1	0	0	0	0	0	1	2	0	1	0	2	0	5	0	0	1	1	0	0	0	2	0	0	0	0	3	1	0	0	0	0	0	2	0	23
109 : Involvement - engagement	0	0	1	0	0	1	0	0	3	2	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	2	0	13
111 : Long term	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	1	2	0	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	2	0	13
83 : Collaboration	13	0	2	3	3	0	0	4	9	4	0	1	0	2	0	1	5	4	4	5	0	5	6	2	0	3	0	0	1	11	3	0	0	0	1	2	0	94
79 : Trust	1	0	0	0	1	0	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	5	0	0	1	1	1	0	17
57 : Communication	1	0	3	2	0	0	0	2	5	1	1	3	1	1	0	3	1	0	0	1	1	2	1	2	0	0	1	0	4	0	0	1	0	4	0	4	0	40
6 : Dependence on individuals	6	0	5	6	4	0	0	5	16	4	1	4	2	5	0	4	2	1	8	10	2	2	3	1	0	6	2	1	0	4	0	0	0	3	0	6	1	114
7 : Characteristics of those involved	0	0	3	2	3	0	0	1	0	1	0	1	1	5	0	0	3	0	0	0	0	5	1	1	0	0	0	0	2	0	0	0	4	0	2	0	34
	22	0	12	14	13	1	0	11	33	17	2	12	6	16	0	11	14	8	13	17	3	9	17	7	4	10	2	2	1	29	5	0	1	12	1	21	2	

DIRECTIONS OF LINKS

NODES / INTERVIEW	2	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
83 : Collaboration	13	0	2	3	3	0	0	4	9	4	0	1	0	2	0	1	5	4	4	5	0	5	6	2	0	3	0	0	1	11	3	0	0	0	1	2	0	94
46 : Complexity in relationships	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
64 : Heterogeneity	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
54 : Alignment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 : Evolution of relationship	15	1	0	10	6	0	0	2	10	2	0	5	6	8	0	0	9	4	0	13	1	1	7	7	5	10	2	0	1	8	3	1	4	10	0	6	1	158
9 : Complexity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 : Strengthening relationship	2	0	0	0	1	0	2	0	4	1	0	0	3	2	0	1	0	0	1	0	0	0	0	3	2	0	0	0	5	1	0	0	0	0	0	0	0	28
	30	1	3	14	10	0	2	6	23	7	0	7	9	13	0	2	14	8	6	18	1	6	15	9	9	15	2	0	2	24	7	1	4	10	1	8	1	

INCREASE IN LINKS

NODES / INTERVIEW	2	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
128 : Exploitation	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	3	1	0	1	0	0	0	1	1	2	0	0	0	0	0	0	14
118 : Communications	1	0	1	0	0	0	0	0	1	2	0	1	0	2	0	5	0	0	1	1	0	0	0	2	0	0	0	0	3	1	0	0	0	0	0	2	0	23
113 : Spend time together	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	6
108 : Forums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
84 : Integration	0	0	2	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	13
37 : Contacts	6	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	11	2	0	0	0	0	3	0	1	1	0	2	1	1	0	0	0	0	38
8 : Evidences of networking	22	0	2	1	1	1	1	2	7	2	2	2	2	3	1	7	6	3	4	13	2	0	3	2	4	2	7	2	7	5	2	1	4	0	5	1	129
6 : Dependence on individuals	6	0	5	6	4	0	0	5	16	4	1	4	2	5	0	4	2	1	8	10	2	2	3	1	0	6	2	1	0	4	0	0	0	3	0	6	1	114
7 : Characteristics of those involved	0	0	3	2	3	0	0	1	0	1	0	1	1	5	0	0	3	0	0	0	0	5	1	1	0	0	0	0	2	0	0	0	4	0	2	0	34
32 : Network	11	0	2	2	1	0	1	6	1	0	0	3	1	0	2	8	1	1	6	0	0	10	5	2	0	0	3	2	0	1	0	0	0	0	0	69
34 : Triad	3	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	1	0	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	15
21 : Building relationships	6	0	2	4	2	0	1	2	2	1	0	4	6	2	0	2	1	0	0	3	0	0	0	3	0	1	0	3	6	0	6	2	0	3	0	75
	56	0	18	15	12	1	3	12	46	11	3	12	15	19	1	22	22	5	15	57	6	2	27	16	8	17	4	10	4	26	19	3	9	13	1	18	2	

LABELS NOT CLUSTERED FOR NETWORK STRUCTURE

NODES / INTERVIEW	2	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
87 : Service Innovation																																						97
90 : Benefits to another																																						108
126 : New ideas																																						105
127 : Awareness																																						73
133 : Previous experiences																																						57
129 : Exploration																																						61
132 : new to market																																						22
130 : new to firm																																						16
131 : new to industry																																						12
116 : Limitations																																						60
125 : Structure																																						23
123 : Resources																																						19
124 : Response																																						15
120 : Lack of																																						10
121 : People																																						0
122 : Policies																																						0
117 : Business size																																						3
119 : Distance																																						2
105 : Enablers																																						25
110 : Location																																						14
106 : Business size																																						8
112 : Response																																						9
107 : Flexibility																																						6
114 : Visibility																																						1
91 : Business purpose																																						22
92 : Expectations																																						20
94 : Needs																																						18
95 : Objectives																																						12
93 : Follow ups																																						13
96 : Outcomes																																						11
134 : Relation of Power																																						0

Figure 5-6: Matrix nodes by interviews clustered for network structure
Source: Author's development based on NVivo9 matrix query result

"Conditions for links", the first cluster, featured two labels covering 59.8% of observations, of which "dependence on individuals" represent 32.8% and "collaboration", 27%; these two labels signal the importance of interactions and the kind of dynamics that collaboration entails. Three labels — "communication", "characteristics of those involved" and "communications" — represent 27.9%. Surprisingly, "trust" was among the least observed labels in this cluster, with only 4.9%. Again, as noted earlier, these are initial findings that shaped, at the time, directions for further inquiry and text analysis.

The second cluster, "Directions of links" includes the label "evolution of relationship", with 54.9% of the observations, and "collaboration", with 32.6%. Interviewees noticed how links with other network members changed over time, moving toward more complex but comprehensive interactions, in some instances becoming in fact partnerships.

The third cluster shown in Figure 5-6 is "Increase in links", for which the top four labels are "evidences of networking", 24.3% of observations; "dependence on individuals", 21.5%; "building relationships", 14.2%; and "network", 13%. Label distribution in the previous two clusters initially suggests that by participating in the service innovation studied, network members were increasing the number and perhaps thickness of links with other network members; but in this particular cluster, such triad label was among the least observed —only 2.8%.

In the above three clusters, interviewees from the bank provided the highest number of observations — respectively, 37.9%, 39.9% and 33.4%. These were followed by observations made by bank customers or university staff. These figures show that people involved in the core dyad and the initial triad bring information relevant to the research.

A review of figures by interview and cluster shows the following: for the "conditions for links" cluster, a university staff member made 33 of the 348 observations, followed by a bank staff member, with 29. On average, university staff generated 14 observations, other network members 12, bank staff 11, competitors 9, and bank customers and faculty, 7 each. Consequently, an initial finding in this category is that those in the core dyad are most aware of the characteristics labelled and clustered. Nonetheless, other network members who were not very close to the service innovation analysed also contributed significantly to this cluster.

For the "directions of links" cluster, interviewees who made relatively more significant contributions were as follows: competitors, with 12 observations on average; bank and university staff, 10 each; and bank customers, 8 each. However, as in the previous cluster, an interview with a bank staff member provided the highest number of observations — 30 of 288. All but two interviewees provided

information to this cluster and to the analysis that helps identify the emerging theoretical issues related to dynamics within the network.

For the "increase in links" cluster, bank staff members again triggered most of the labels. However, on average, university staff made 19 observations, whereas bank staff made 15, and bank customers and faculty, 14 each. As main contributors, out of 530 observations, one faculty member made 57 observations, followed by a bank staff member, with 56. Accordingly, these two interviewees provided over 20% of the labels for this cluster. Nonetheless, it should be stressed that, on their own, such numbers may prove misleading; theoretical concepts emerging from the analysis are chiefly drawn from the qualitative analysis that follows.

As noted for matrix data shown in Figure 5-2, the aforementioned analysis is hardly conclusive; instead, these initial valuable findings are a source of leads to be considered in reviewing the stories drawn from qualitative research. Apparent contradictions and complexity in the stories are intrinsic to the service innovation studied.

Based on the literature review and the research questions, the researcher was aware that the supply network selected to study a service innovation would be complex, featuring diverse actions and relationships, and allowing for an experience that could be named a service innovation. Figure 5-7 presents the supply network in which the service innovation took place, based on the researcher's analysis of data collected. Based on the data, the service provided (education and training) appears to imply that the findings are particularly valid to a supplier such as a university.
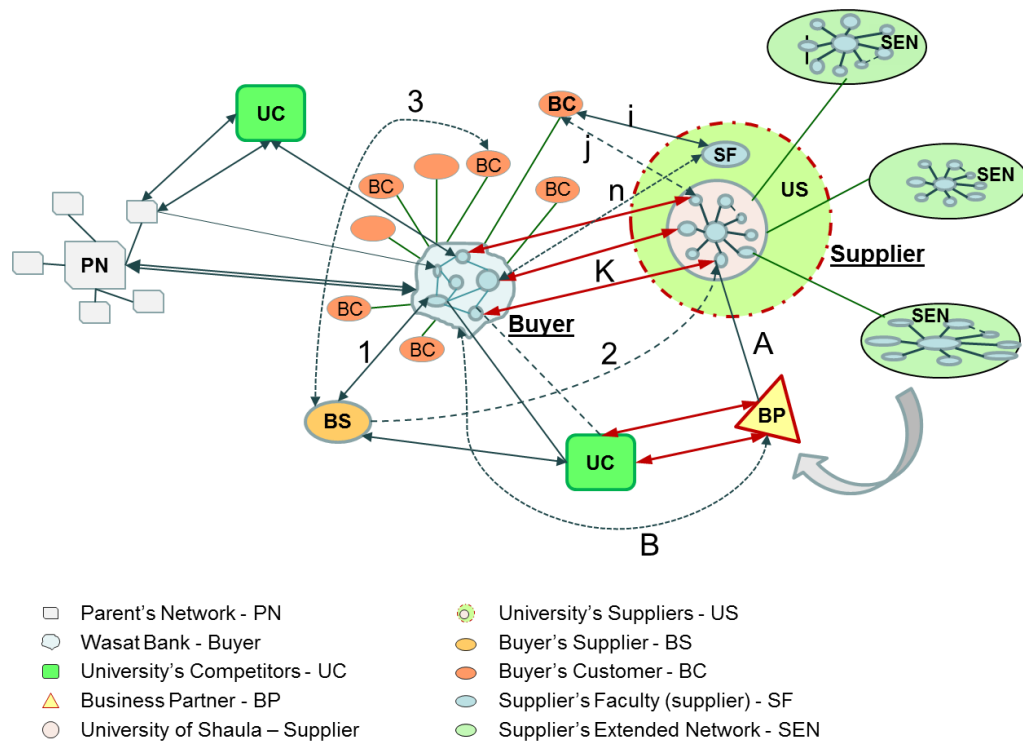
Figure 5-7: Wasat-Shaula supply network – Findings
Source: Author's development based on interviews and previous sketches

University peculiarities make it differ from other suppliers, for example, the organisation's relationship with faculty members; despite being employees, scholarly independence renders them (in this case) as suppliers to the university and to the buyer. Another is that, in offering a service, the organisation is essentially selling it; but its main interest is the possibility of searching for questions and learning experiences that can be offered to others, and spawning future research opportunities. A university's disciplinary structures generate both enriching dialogues and isolated behaviours that may reduce the transferability of interactions at different levels. These points may need further research to find out whether they are common to higher education institutions generally or to organisations with certain characteristics, or limited to the University of Shaula and the network developed with Wasat Bank.

Figure 5-7 presents a synthesis of the network structure that builds on the above observation. Names assigned to configurations cited in the following paragraphs are in quotation marks, and are those noted by Todeva (2006, p.131) citing previous works by several authors:

- The buyer, in this case a bank, contains a network in which the actors are different business units. Although featuring a hierarchical organisation, with both "functional" and "matrix" structures, a "heterarchy" configuration is revealed by the way people from different business units interviewed were related to the service innovation studied. This structure might reflect reality for the subsidiary Bank core actor in the supply network studied, rather than that of the parent multinational Bank, which may also show "multidivisional" and/or "transnational" structures. Such a simultaneous combination of structures renders the organisation, in itself, very complex. Therefore, any given conclusion could be valid for a division, business unit or subsidiary, but not necessarily the organisation as a whole.

- The supplier, a university, also contains a business network. It is organised by colleges and structured in schools, centres, other transversal units, and the central administration. Some schools and some colleges may have more interactions; when present, these tend to be one-to-one (dyads). Within each college or school, organisational structures may differ. At the time of this research, the business school was mainly structured as a "functional" organisation, with some "matrix" type of behaviour. However, at the University level, the dominant configuration would appear to be "hegemonic / ego-centred", with the central administration surrounded by colleges, schools, etc. Faculty members, although belonging to a home 'department', can move around, follow different career paths and relate to the outside almost as independent units within the University structure, a situation that leads to define a space that resembles a "community / dispersed / distributed" configuration.

- Although, a small number of other networks surrounding the service innovation studied within the Bank-University (buyer-supplier) network were involved, the researcher did not go beyond general identification of what are known as the Supplier's Extended Network (SEN). Among these networks are: alumni, NGOs, funding entities (e.g. ESRC), academic community and government institutions. In Figure 5-7 only three SENs are presented to reflect the involvement of other networks. Exploring the impact these networks may have on the supply network in which a service innovation is taking place requires additional research.

- As a result of the service innovation developed in a previous relationship "A" between the supplier (University) and a partner (SP)—who came from one of

the SENs—a new business relationship "B" was established between the supplier's partner and the Bank (see Figure 5-8). That new business relationship went beyond transactional interactions, allowing the actors to join in developing projects together. However, the supplier's partner also became a customer to the Bank. According to Choi and Wu (2009b), this particular triad could be called a "balanced state 1" triad, insofar as each actor had a relationship with the other two. In fact, every relationship is different from the other two, and seemingly not sustaining each other with experiences from the others. Each relationship can be seen almost as a dyadic one rather than the triad it constitutes.
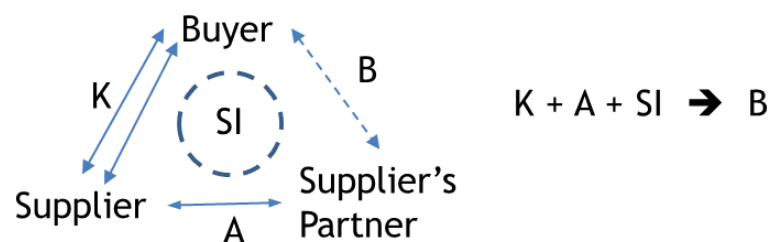
Figure 5-8: New triad in which every link is different
Source: Author's development

The following quote supports this finding.

> "You know, for instance, we brought the Shaula City Marketing Bureau into the fold for the seminar series and they co-branded the event and were providing someone to record the events of the seminars. But because of that introduction, the Wasat Bank ended up doing some business with Shaula City Marketing Bureau and purchased some billboard space, because they had made that relationship."
>
> *(Executive Development Programmes Manager, University of Shaula)*

- As a result of the strong buyer-supplier relationship, and the service innovation taking place, the researcher found that a buyer's supplier (BS) who had a long standing and strong link "1" with the buyer, started to provide a service "2" to the supplier (see Figure 5-9). That link did not go further during the service innovation; nonetheless, the role played by this particular buyer's supplier had an impact on the way the service innovation was communicated beyond the network actors.
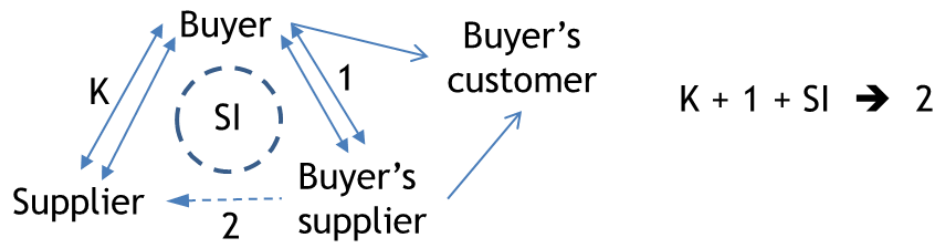
Figure 5-9: New triad with one weak unidirectional link
Source: Author's development

In addition, the researcher found that this particular buyer's supplier was also the supplier to one of the Bank's customers. None of them, the Bank or the customer, were aware of link "3". Similar to the previous finding, within the network, some links operate as if they were between dyads.

- In Figure 5-10, the researcher presents the development of a number of ties within the network that helps shape its structure. Some of the Bank's customers with whom the Bank has a link "m", participated in the "Linking and Development" programme and, based on their experiences, started developing new ties with a particular supplier's supplier, a lecturer, such as "i" or with the supplier "j". Also, the Bank itself started a tie "n" in addition to the institutional link K. Those links created new triads supported by the service innovation that was developed between the Bank, the University and the Bank's customers. When identified in the interviews, links such as "j" and "n", despite being bidirectional, were weak. In these three cases, the triads created were operating as such, rather than as a set of dyads.
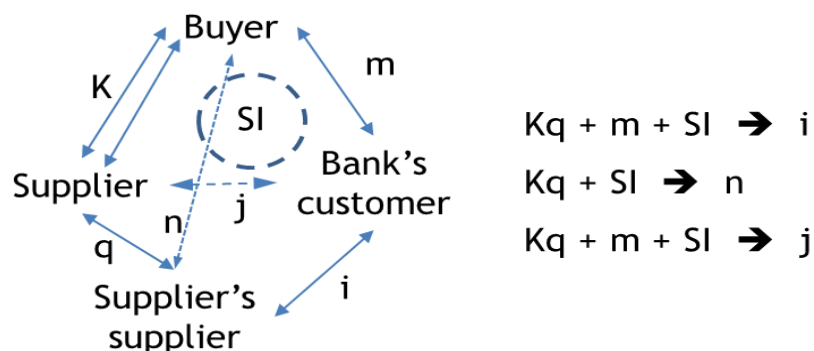
Figure 5-10: Triads triggered by the relationships around the service innovation (SI)
Source: Author's development

Figure 5-10 shows that the requirement from the buyer (Wasat Bank) to provide a service to its customers through the supplier (University of Shaula) released other events. First, the supplier's suppliers got involved as well as the buyer's customers; second, their participation and experiences over time led to new relationships (links) within the supply network; and third, although every participant was involved in the same service innovation, the effects and the type of links developed were different for each party.

- An additional issue found in this supply network is the case of a competitor of the University. Seginus University boasts strong ties with the supplier's partner and the Bank's supplier, both directly involved in the service innovation studied. It also has a close relationship with a different business unit within Wasat Bank. Seginus was approached at the beginning of the process to offer the services University of Shaula is offering to the Bank, but was not selected to become a partner institution for the "Linking and Development" initiative. Seginus did not participate in the development of the service innovation; consequently, the researcher found that during the period of time studied, one of the actors—Seginus—despite being part of this particular supply network, was dormant.

> "… We did run a pilot with, um, ah, Seginus. Um, oh, now that wasn't myself that ran that, that was before me, and that was led by a guy called Federico Jerez. So the reason why… We did, actually, have a further conversation with them when we had the conversations with [University of Shaula], to look at, um, Linking and Development, and, um, to be honest, the reason why we didn't go with them was, um, I suppose it was… the sense that we got was it would be much more of a supplier relationship, which was not what we needed, because we needed something that was going to be developed that was flexible, that would meet our needs, and it would do over a period of time. And, obviously, we'd been working together for a long time, so it's just something's been right there."
>
> *(Head of iFs Marketing, Wasat Bank)*

These findings are part of the foundations for the dynamic triad theoretical concept that emerges from the data. The researcher has named this concept as such because of the changing nature found in the supply network studied. This subsection on the network structure, as the reader will have noticed, has started to uncover issues that will come together in section 5.3, where the analysis of the findings is developed and

the conceptualization completed with findings related to service innovation and to interactions.

5.2.2 Findings related to how the service innovation took place

The innovation in this supply network is seen in two dimensions, the value co-creation process, and the changes in the actors' roles and their relationships within the network. In fact, the changes are the elements that will show the dynamism in the triads analysed and facilitate an innovation space arrangement.

Before addressing the dimensions mentioned, a significant finding for this research was that the interviewees viewed as an innovation the programme in which they were involved, the "Linking and Development" programme. Not every interviewee had the same concept of innovation, or the same experience or view of its experience, but what they saw in the programme and in what happened after the programme was something "new", featuring an idea of newness. The following quotations reflect that.

> "Because it's the first time I had ever come across this kind of mediated relationship. … when I was at Seginus we ran a, a multi-million pound executive education programme for a big FTSE listed business … you pay us a certain amount of money, send us them [your own executives] for two days at a time, we'll put them through a programme. The business [here], I mean, the interesting model, where actually the person paying the bill is not the recipient. So the Bank is saying, I'd like to understand my clients better, and deliver them something of value, and so I'll pay you, if you'll educate them. And that's an interesting twist, I think. The value chain has been distorted somehow, so that it's for the business concerned it's free at the point of delivery, because the Bank is mediating the relationship. And so I think that's quite innovative. Certainly I, certainly I've never come across it before, and certainly University of Shaula had not done this before. I know that Sure University Business School and Zaurak Bank had used this model before, but that, I think is, the business model itself is an innovation. But, you know, the constellation of actors in the network is different than in a normal executive education programme. So I think that's, that's why it strikes me as an innovation."
>
> *(Executive Education Director, University of Shaula)*

This quotation characterised the Bank's role as a mediator, intermediary or agent as opposed to just a buyer of services. The Bank is an actor that goes beyond the role of

a typical agent—facilitating relationships—to one which is actively involved in benefitting the recipients of the educational service provided by the University. The quotation also indicates that the Bank aims to better understand its customers. The previous quotation, as well as the one that follows, both stress the fact that the business approach used by the Bank was new to them.

> "… because I've never come across anything, I've never heard of any other Bank doing something like this before. Er, and I thought it was a, a, a different but very good approach and it was a different offering to, erm, for business people."

> *(Partner and Head of Private Client, Rukbat Solicitors)*

> "I was very impressed with that idea and the fact that so many of the guys from the Bank gave up their time, as well, to come along. But the fact that it was, you know, maybe one banker to three customers or clients, certainly – I liked that and it was pretty innovative."

> *(Managing Partner, Errai Accountants)*

The former two quotations of statements made by the bank's customers highlight that the business approach was not just new to them, but also different. In particular, the latter customer pointed to the bankers as the differentiator.

> "… but you know, we saw it as doing something different for our customers. I've been using the word customer throughout this, but in this part of the Bank we call our customers members, and it's to encourage that feeling of belonging and being members of a club, and it's trying to offer our members something beyond just that, um, transactional service than providing a home for deposits, or lending money, or doing basic banking transactions. Expanding the banking relationship beyond traditional banking products, and you know, to say that by being a member, um, with Wasat Bank we offer you the core banking products, we also do this."

> *(Director Corporate Banking – Financial Services, Wasat Bank)*

This executive's perception, added to previous perceptions and understandings, explain the rationale behind the Bank's decision to take a "membership" approach in offering the programme to its customers. It can be synthesised in the goal of providing customers with a more comprehensive service, one that goes beyond

transactional exchanges to include a deeper value creation relationship for both the Bank and its customers.

> "It was an innovation, um, in that it, it lead, um… it lead the path of us looking for, look for non-financial ways to support our business clients. And this was one particular way which, um, was innovatively put together and the longevity of it highlights the success."
>
> *(Divisional Director, Wasat Bank)*

This top executive ratifies the previous statement in terms of why the Bank decided to follow a different path that took it out of its comfort zone, allowing new relationships and links to grow. Not only did these interviewees see the programme and the opportunities blossoming from it as innovative; almost every interviewee also identified innovative elements. For instance, several of the interviewees noted that at the point of delivery, there was very little if any innovation. Most lecturers took a traditional approach before, during and after the sessions; but some decided to engage participants more deeply by helping them understand their respective companies beforehand — a practise employed in other programmes as well. Despite their earlier statement belittling innovation, the same interviewees recognised the approach used to deliver the programme was innovative. They agreed on what had already been pointed out in terms of the intermediating or agency role adopted by the Bank, and the concurrent participation of the Bank's customers and bankers. Following are three quotations pointing in that direction.

> "I've got to be honest. I don't think bankers think like that. I, I think that the… I think that what they'll be wanting to do is they'll have a list of things… They'll, they'll have a, a set of boxes in front of them that they want to put a tick in. So they'll say, did the client seem happy? Was it professionally dealt with? Did we get value for money? And they want to put a tick in all these boxes. Ah, I… I don't know whether they'll have seen it as innovative, actually."
>
> *(Research Fellow 2, University of Shaula)*

> "The fact that the Wasat Bank were bringing in their clients, that I think was quite innovative. That they were laying on training sessions for them. Um, the delivery of the training course from the University point of view, because I've… I obviously… I, I, heard of some of the other sessions, I don't think there was much innovation there."
>
> *(Honorary Professor, University of Shaula)*

"… it wasn't always the same group of clients that came, because it incorporated some bankers and their clients, so it was a kind of, a two day away for the businesses and their banking relationship managers."

(Research Fellow 1, University of Shaula)

The previous quotations reopen the trajectories for further analysis of concepts surrounding the service innovation process that was part of this particular supply network. Table 5.1 summarises findings related to how the service innovation took place.

How service innovation took place	
Findings	**Quotation used**
Bank's role as a mediator, intermediary or agent	"it's the first time I had ever come across this kind of mediated relationship … The value chain has been distorted somehow, so that it's for the business concerned it's free at the point of delivery, because the Bank is mediating the relationship. And so I think that's quite innovative … the business model itself is an innovation. But, you know, the constellation of actors in the network is different than in a normal executive education programme." *(Executive Education Director, University of Shaula)*
New business approach	"I've never heard of any other Bank doing something like this before." *(Partner and Head of Private Client, Rukbat Solicitors)*
New as a service beyond transactional exchanges	"we saw it as doing something different for our customers … offer our members something beyond just that, um, transactional service … we offer you the core banking products, we also do this" *(Director Corporate Banking - Financial Services, Wasat Bank)*
New in how the service was delivered	"it wasn't always the same group of clients that came, because it incorporated some bankers and their clients" *(Research Fellow 1, University of Shaula)*

Table 5.1: Summary Table on Service Innovation Findings
Source: Author's development

The next sub-section presents findings pointing to concepts emerging within topics closely related to service innovation.

5.2.2.1. Value co-creation

The key element found was that some conditions foster a sense of newness, which can be interpreted as a service innovation. Conditions identified were continuous dialogue, multiple interactions, and multiple iterations. If those conditions were involved in relationships between supply network members, the interviewees

perceived that a worthier value proposition was generated — a valuable trajectory to pursue.

Additionally, the stories told show how some characteristics must be present in order to make value co-creation possible. Among those characteristics, "flexibility" (8), "trust" (56), "collaboration" (126), "involvement" (23), "communication" (38) and "value perceived" (105) seem to be critical; as does the idea of "co-creation" as a whole (27). (Numbers in parenthesis show the times these concepts were used when labelling the transcripts.) Through constant interaction with the data, the researcher found that frequency of a label is not sufficient evidence to denote a concept is necessarily emerging; it is the story's context, tone and flow that show the relevance of the characteristics mentioned. That is why even a characteristic such as "flexibility", although not used very much, was identified as a required characteristic in a co-creative process.

Specifically, findings show that the aforementioned characteristics emphasised three behaviours: searching for new business opportunities and benefits, giving a sense of direction to the relationships established, and allowing the integration of resources rather than duplicating them across the supply network.

The following quotations illustrate findings related to the concepts previously mentioned and named: characteristics, conditions, and behaviours that are components of the idea of co-creation.

> "Well having such a good relationship with the Bank is one. I mean, I think they found their relationship with us valuable. … Occasionally Martín gets invited along to a working group, or you know, a meeting where they're trying to have a brain storming session because they value that sort of input. For him, it's an interesting thing to do on a day. In terms of keeping it fresh, I guess we've been willing to be flexible. You know, whatever they want we'll try and meet that, you know, in terms of changing the lectures around or, you know, updating the content and trying to work with them. Because we've occasionally gotten feedback from them … over time we've been trying to get them to change that. You know yourself, asking an academic to change their material is not the easiest thing to do; they don't really want to. But we've worked on them over time to try and get them to use examples that were more relevant to an audience … so we've made more of an effort to be as engaging as we can.
>
> *(Executive Development Programmes Manager, University of Shaula)*

The previous quotation makes two valuable connections to flexibility; one is the idea of "working with them" and the other is "being engaged". Both connections are strongly related to the emerging idea of co-creation.

> "Yes, um, we had to have discussions, because again, the University had a reputation to, you know, to retain and keep intact, so you know, we wouldn't have wanted to do anything which, um, may have meant that they thought that the, you know, their side, their research was going to be diluted, but it's been quite a, I must admit, being quite flexible in their actual approach."
>
> *(Senior Marketing Consultant, Zaurak Bank)*

Willingness to be flexible was not only evident on the part of the supplier (University); it was clearly recognisable in the buyer's (Bank) experience. The buyer values the unique characteristics of its supplier and in fact engaged in discussions to fully capture value for the benefit of its customers, without jeopardizing the supplier's integrity.

> "The interesting thing as well was that some of the speakers, sometimes we provided the speaker and sometimes the University provided the speaker, and maybe we would never have known who those speakers were."
>
> *(Marketing Consultant, Wasat Bank)*

In delivering the service to the Bank's customers and to an extended business community, the Bank and the University shared their resources and actively collaborated towards a common goal. The practise differed from traditional buyer-supplier relationships, where the buyer pays the cost and the supplier is solely responsible for providing the service. In this case, the buyer is directly involved, not just in negotiation discussions but in bringing its resources to the table, even to the point of delivering the service. Under these conditions, the supplier's role could change from provider to facilitator or even intermediary.

> "…businesses where the Bank wanted to really deepen their relationship with them, and in a way the Bank is then becoming involved in the development of

the strategy of their client, which I think is quite an unusual but quite a valuable thing for them to do,…"

(Executive Education Director, University of Shaula)

"… but certainly for me the Wasat Bank have been quite refreshing in how we even conduct our, our, kind of, quarterly reviews with them, the Wasat Bank. … what I try and do is, on a monthly basis, our accounts go to Wasat, to Miguel, so he gets our accounts on a monthly basis, we provide our accounts to him within ten days of the month ending. So he gets them and then, just, I take a note, just every, every three months, every four months, I'll phone Miguel, ask him in for just a chat, that's all. So it's not a formal review on a quarterly basis, but there is a formal review on a yearly basis. So I like to keep him up-to-date with what we're doing and, you know, say, right, this is the next plan, this is what we're up to next, or this is how things are going and I, so I just made a point of every three, four months invite him in, we'll have a coffee and talk and, just, he gets brought up to date. And that way, there's no surprises."

"I suppose, in our business, I mean, we have always, there are always people wanting to sell you things aren't there? Always, always. And I suppose, as I develop, you have a circle of friends that you actually trust, I think, you know? And, ah, so that for me is very important."

(Managing Director, The Marquis Bakery)

The two executives quoted communicate active involvement, beyond transactional activities — an involvement framed in trust, open communication and continuous dialogue. Both the Bank and the customer perceive that working together helps increase value. The relationship was marked by multiple interactions at multiple levels.

"Although the Bank probably wouldn't describe it this way, what they've developed – possibly by chance – is a model which is more sort of value-driven, in that they tend to be looking for benefit for both parties. The basic premise is: if they look after your business, you in turn will look after theirs. And if the two, if they and the client can do something together, better to do it together than for the client to seek alternative sources."

(Professor Patricio Romero, University of Shaula)

"When Antonio came on board, we re-energised it again. We said, you come up with what you think you can deliver with four lecturers, or… I don't like using that term, four professors who you trust and you think have commercial nous that could deliver it to a business audience. And they came up with that, but we have undertaken throughout this whole process, so this has been running

three years, going on four years now, and Sergio's still running with it at the minute. It's been iterative, collectively we've… we have sat down."

(Marketing Consultant, Wasat Bank)

One of the quotations shows that value is a concept that drives interactions and relationships among actors of the supply network who participated in the service innovation they jointly developed. The quotation represents the view of someone involved, but to some extent detached as an academic and a supplier's supplier. However, as the second quotation points out, the programme between the Bank and the University was not a single event, but an ongoing relationship, strengthened along the way, that has required several iterations to realise its value.

The above quotes show the researcher's complementary point of view on how value creation is undertaken by means of a joint process among supply network actors; a co-creative process allowing innovation, thanks to open communication, flexibility, active involvement, trust, collaboration, and the perception by participating actors that value is being generated. These characteristics, in turn, foster conditions for a continuous dialogue, multiple interactions and iterations, thus providing fertile soil for value co-creation. Table 5.2 summarises findings related to value co-creation.

Value co-creation

Findings	Quotation used
Continuous dialogue	"I've spoken to the Wasat Bank HR people in relation to who do they send in the programme. So I've kept at least sort of four areas of dialogue going" *(Supplier's supplier, University of Shaula)*
Multiple interactions	"I mean a lot of interaction with the client and, and initially the guy who headed up the programme from the Wasat's perspective, erm, [draws breath] forgotten his name, nice guy, Irish guy, erm, there was, he sat through nearly all of the courses, he, erm, and he had a, you know, constantly feeding back what was working, what wasn't working, er, and so on and so forth. … we had a lot of interaction with the client, yeah. *(Supplier's supplier, University of Shaula)*
Multiple iterations	"… so this has been running three years, going on four years now, and Sergio's still running with it at the minute. It's been iterative, collectively we've… we have sat down." *(Marketing Consultant, Wasat Bank)*
Flexibility • **working with them** • **being engaged**	"I guess we've been willing to be flexible … we've worked on them over time … we've made more of an effort to be as engaging as we can" *(Executive Development Programmes Manager, University of Shaula)* "… but it's been quite a, I must admit, being quite flexible in their actual approach." *(Senior Marketing Consultant, Zaurak Bank)*

Trust	"I suppose, as I develop, you have a circle of friends that you actually trust … I like the way they talk, you know, it's quite… Miguel Martínez is very straight talking, he's very sharp, he's quite witty, that's all very good. Martín, I think is a good balance with Martín" *(Managing Director, The Marquis Bakery)*
Collaboration – share resources	"The interesting thing as well was that some of the speakers, sometimes we provided the speaker and sometimes the University provided the speaker, and maybe we would never have known who those speakers were." *(Marketing Consultant, Wasat Bank)*
Involvement	"in a way the Bank is then becoming involved in the development of the strategy of their client" *(Executive Education Director, University of Shaula)* "… on a monthly basis, our accounts go to Wasat … every three months, every four months, I'll phone Miguel, ask him in for just a chat … not a formal review on a quarterly basis, but there is a formal review on a yearly basis. So I like to keep him up-to-date" *(Managing Director, The Marquis Bakery)*
Communication	"The marketing director for the entire group was, if my memory serves me correctly, Cristobal Franco. There were a number of other people who came in and out over the duration of the early stage of, of discussion; some of whom then subsequently left Wasat Bank. But there was one point of continuity that was Daniel Silva" *(Former Director, University of Shaula)*
Value perceived	"I understand from the Wasat, their thinking is, how do we add value to our package? How can we make something that, adds value to our package? Um, equally, they'll be looking at it saying, how can we leverage a relationship with somewhere like the University of Shaula? So, that's a win-win for them, um, in theory there should be a win-win for their customers. Um, and they might find that their customers wouldn't ordinarily do something like that, but they're making it possible" *(Managing Director, Pollux Systems)*
Co-creation	"if you get a, a user or customer involved in the design process very early on and you acknowledge that they'd have an equal power in that design process, you actually end up with a significantly better product. It's about recognising that power." *(Exec Educ Director, University of Sure)*

Table 5.2: Summary Table of findings on Value Co-creation
Source: Author's development

5.2.2.2.   Changing roles and relationships

Collecting stories that span a five-year period enable us to view a change process — especially change in the roles played by actors within the supply network, and change in relationships linking the actors. Interviews reminded participants of certain

events, and how they understood or perceived the roles of actors in relation to a service innovation initiative. Some of those roles are directly related to roles played in the supply network (buyer, supplier, customer, partner, etc.). In several cases, different roles were played simultaneously. Looking at the network described in Figure 5-7, the supplier (University of Shaula) was at once buyer, partner, and customer. Each role opens some opportunities and closes others; and each role in the supply network may lead to a specific role in the service innovation experience.

The word "change" and similar expressions were used in the interviews more than three hundred (300) times. In a frequency table of 1000 words with more than three characters, the word "change" ranks 169th; and among the data labelled (coded), statements showing change were noticed more than seventy (70) times. These figures simply confirm that change was relevant in the answers given by participating actors in their construction of the reality studied.

Issues surfacing in the interviews included:

- Relationships that changed over time, while roles remained the same
- Roles that changed, triggering changes in relationships
- New roles played to satisfy challenges and changes
- Actors who take on new roles and relationships that generate some kind of value

At this point, when referring to relationships, the researcher uses the definition that states: a relationship is a "connection or linkage between nodes, actors or other network units" (Todeva, 2006, p.217).

The service innovation studied took place among actors of the supply network presented in Figure 5-7. As stated in Chapter 2 and based on the literature review, for this research, a supply network is a subset of a business network with blurred edges. It is a system in which dynamic interactions among actors may take place at multiple levels, in multiple dimensions. With that in mind, the findings indicate that actors' roles and the relationships among them generate a space and a framework that either fosters or hinders a service innovation.

The following quotes show, in a series of snap shots, the changes in the roles played by the buyer (Wasat Bank) and the supplier (University of Shaula). An initial approach is at the dyadic level.

> "I was one of the earlier account managers for the University and very much involved in trying to expand that relationship by involving people from our marketing here, involved initially in… when the dinners first started, got involved in the actual organisation of the Chancellor's dinners, so it's been a good journey with the University."
>
> "I don't know what triggered it. Um, I think there was a realisation that here we are, in Shaula, head office in Shaula, they're a big institution and there's Shaula University, a customer of the Bank, another big institution, and we should look to see what we can do differently that will benefit us mutually, enhance our relationship with existing customers, what will bring in new customers."
>
> *(Director Corporate Banking, Financial Services, Wasat Bank)*
>
> "… they were the University's banker, they had a number of ideas they were interested in talking to us about, collaborating on;"
>
> *(Former Director – Antonio León, University of Shaula)*
>
> "… in the case of the Wasat programme I think in the areas of training and education the University is very much just a supplier. And actually the power wholly with the Bank because they paid for the services and we were hoping to get them to buy from us so they were very powerful in relation to us. … But, over time, we, we developed specialist knowledge and capability, which the Bank began to find useful. Any client with the Wasat Bank would find it quite hard to replicate what we had been doing for them straightaway with A N other business school. And so the balance of power shifted from being powerful bank, weak customer in the University, to being more of a partnership."
>
> *(Executive Education Director, University of Shaula)*

For many years, the University had been a customer of the Bank. In that sense, the University was a buyer of financial services provided by the Bank. The link between the Bank and the University was kept before, during and after the period in which this research took place. The associated roles were also maintained and were managed by specific business units within each organisation. Those people in charge of the traditional operations and transactions were not involved with the service innovation analysed in this research. However, as we can see in one of the quotes,

people in the Bank and maybe at some level in the University were wondering about the possibilities of extending the relationship.

In 2005, people from both sides approached each other with proposals that led to the Bank asking the University for an educational service. The last quote in the previous set, states that in the Wasat "Linking and Development" programme, the University acted as a supplier to the Bank. Later, the relationship moved towards becoming a partnership. Consequently, the University was and still is a customer (buyer) of the Bank; it became and still is a supplier for the Bank, and a partner in specific endeavours. Simultaneously, at least three relationships are taking place: operational - traditional financial services, transactional - traditional educational services and, as partners - innovative and value co-created services.

The previous quotes show the role and relationship changes that the two core actors in the supply network experienced. The Bank's customers also played a key role in this research and in the supply network's dynamics from 2005 to 2010. They became the object of benefits expected from the programme launched by University of Shaula upon request of Wasat Bank, which paid for the programme. Following are some quotes showing how relationships with the customers also changed.

> "Which, after I'd been on the course, and that's why I've kept talking to Martín and Miguel, is that there, there, there's... there has to be something to be got out of it. It, it, it's, it's logical."

> *(Managing Director, Pollux Systems)*

This Bank customer, after attending the "Linking and Development" programme, developed a relationship with two of the lecturers who participated. The relationship has led to research and consulting activities. Therefore, the Bank customer became a University customer also.

> "… he'd given some of the lecturers over the two days, in his business, and how that had developed into this research project that Daniel's outlined. Um, and it was really just a recommendation to… to… to make use of… of the University."

> *(Strategic Partnership Manager, Marketing Manager, Wasat Bank)*

Although the quote is not explicit, the person it refers to is the Managing Director of Pollux Systems. The quote shows that it was not only the relationship between the organisations that changed, but also the role played by this Bank customer in the service innovation; from being a recipient of the expected benefits from the programme, he became one of the supplier's suppliers. In such a role, this Managing Director gave a speech, shared his experiences, and became actively involved in value creation for others participating in the programme.

The actors' attitude also shaped their relationships and the roles they played. Following are two quotes regarding this issue that will be commented afterwards.

> "So I've probably been quite active, either directly or indirectly, in pursuing potential links, both during and after each of the programmes."

> *(Professor Patricio Romero, University of Shaula)*

> "Miguel phoned me and said, perhaps there could be something the University could do for you here. We've got, there's a programme, that with, ah... could be self-funding, you know, it might not cost you too much money. I went, oh, all right, okay. And I said, well that's funny because we're just on the point of engaging and doing this strategy for the future of the business, you know, the handover of shares etc. So I said, well I could tie that up, and that's how that happened. So the University actually contacted me on this occasion."

> *(Managing Director, The Marquis Bakery)*

As an example of several comments, these two quotes show how two different professors actively searched for business opportunities. The first, Patricio, is open to the possibility. The second professor, Miguel, is mentioned by one of the Bank's customers. Miguel was aware of the availability of funds that can be used by companies to hire universities for research and consulting activities. The information started to flow and the experiences during the Wasat programme opened the possibilities for those involved to deepen their relationships or to explore business opportunities.

Another change observed was the shift from being a partner of the University to becoming a customer of the Bank. Following are the relative statements.

> And the relationship deepened. Take that a stage further, we now Bank with the City marketing Bureau,

> *(Marketing Consultant, Wasat Bank)*

> I moved my Bank account of this company to the Wasat Bank…

> *(CEO, Shaula City Marketing Bureau)*

The flexible structure that was generated and described in section 5.2.1 facilitates the emergence of new relationships.

> "… the University has met over 100 businesses, not all of them but some of them have hosted student projects for us, or participated with research. You know, we've built relationships as a Business School to parts of the business community that we would not have reached without this partnership, and I think that's been really useful for us."

> *(Executive Education Director, University of Shaula)*

> "We're a supplier to him and he's a customer. He's actually in a waste... food waste disposal business. So we supply him with waste paper and waste food and he composts it."

> *(CEO, Mira Farms)*

Both statements show evidence of how networking is facilitated by the role of the Bank as an intermediary; it allows for building relationships between entities that in some cases, as expressed in the second quotation, become effective business partners. Two of the Bank's customers met in the programme, realised they had a particular common need or opportunity, and one became a supplier to the other.

In this particular supply network, as mentioned earlier, the University's characteristics were unique in many ways. One is that its faculty members (professors, lecturers and even administrative staff) may simultaneously play more than one role. For instance, Martín Ramírez is the Executive Education Director; he is also a Professor at the Business School, a researcher and a consultant. For a University as a whole and especially for a business school having strong ties with the business community is essential to their mission. Therefore, most business schools allow their faculty members to engage in consulting projects that may be contracted directly with the individual rather than through the institution. In other cases, a

professor willingly uses his time to pursue a relationship that may give him access to data that will be useful for his research agenda. Understanding this level of "freedom" may help to better understand some of the findings, roles and relationships pointed out in this research.

> "… so I've spent quite a bit of time in helping the team within the Bank that are reviewing the bank's strategy, uh, going forward, by you know, I've been to a couple of meetings, I've briefed them, I've read their documentation and I was doing that this morning actually."
>
> *(Executive Education Director, University of Shaula)*

In this case, it is noteworthy that the main point of contact on behalf of the University, who was in charge of leading the "Linking and Development" programme, also became an *ad hoc* consultant for the Bank. With such a positive attitude, the institutional relationship is cemented and new business opportunities may be identified for the individuals and for the institutions.

Not every actor within the supply network had the same active, forward-moving attitude. Some are passive or just react in a way that might be expected.

> "I was just there and delivering my stuff, that's all."
>
> *(Professor Marcos Leal, University of Shaula)*

> "It was really just taking a two day seminar and then after that, erm, there was nothing after, that."
>
> *(Business Development Partner, Wasat Bank)*

> "… strengthening the company's relationship with the Wasat."
>
> *(CEO Avior Helicopters)*

The previous statement does not mean that in the case of these three interviewees, there were no business opportunities. The researcher is aware of at least two in relation with these specific people. What the quotations show is a sit-and-wait attitude that could also be valuable in a flexible and dynamic environment such as the one emerging from the data.

> "We tend to operate by building a network of people with whom we're in touch and that can now low bubble away for years and years and years and then, all of a sudden, one of them... one of the relationships springs back into life by saying, we need to think about this, could you come and see us, or we'd like to deal with that, could you come and see us?"
>
> *(Executive Education Director, University of Shaula)*

The former statement shows how, in this particular supply network, a dormant status adopted by some actors in relation to others is okay. Not every link has to be equally active to be involved in the innovation space. Most of the quotations have stressed the actors' roles from the point of view of the people involved. However, there was also a concern for institutional relationships.

> "I think the most valuable thing is if we could keep it going, because in lots of institutions, lots of universities these relationships come and go, they don't last and you don't build up any longitudinal and deep relationships with people – it goes back to the thing I said about individuals moving around. I think if we could prove that we've done this for a while and it's been sustained because people get benefit from it, then that would be good. … it [the relationship with the Bank] almost got institutionalised at the business school level, but it didn't quite get there, it's still too dependent on particular individuals."
>
> *(Professor David Iglesias, University of Shaula)*

The findings point out the fact that in a supply network, the social networks associated may have a major impact on how the supply network operates, and how a service innovation—the unit of analysis in this research—is affected. It was not the purpose of this research to cover a social network angle, leaving it as a path for further research.

In previous pages, evidence of changes in roles and relationships among actors of a supply network were presented. This evidence, together with that on value co-creation, is analysed in section 5.3. The two dimensions that emerge from the findings, the co-creation process and the changes taking place in actors and relationships, are part of the innovation concept that is constructed in this thesis. Specifically, the innovation space concept is linked with that on dynamic triads to conceptualise that such a network structure facilitates and may enhance service innovation within a supply network. Table 5.3 summarises findings related to the changes mentioned.

Changing roles and relationships

Finding	Quotation used
Roles change over time Supplier to buyer and Buyer to supplier	"… they were the University's banker" *(Former Director, University of Shaula)* "… in the case of the Wasat programme I think in the areas of training and education the University is very much just a supplier" *(Executive Education Director, University of Shaula)*
Simultaneous roles • **Customer** • **Supplier** • **Partner**	(Consider the previous two quotes) "You know, whether that's the client; the client's getting something out of it. The bank's getting something out of it. But also the uni's getting something out of it, and I think it's just a really good, ah, example, of how that collaboration and partnership can work, in action. Um, as I said, benefits for all. Benefits for the client, for the bank, and for the University." *(Learning and Performance Manager, Wasat Bank)*
Bank's customers change • **Become University's customers as well** • **Become University's suppliers**	"Which, after I'd been on the course, and that's why I've kept talking to Martín and Miguel, is that there, there, there's… there has to be something to be got out of it" *(Managing Director, Pollux Systems)* "… he'd given some of the lecturers over the two days…" *(Strategic Partnership Manager, Marketing Manager, Wasat Bank)*
Active actor	"Miguel phoned me and said, perhaps there could be something the University could do for you here. We've got, there's a programme…" *(Managing Director, The Marquis Bakery)*
Passive actor	"I just was there and delivering my stuff, that's all." *(Professor Marcos Leal, University of Shaula)*
Ad-hoc role	"… so I've spent quite a bit of time in helping the team within the Bank that are reviewing the bank's strategy" *(Executive Education Director, University of Shaula)*
Dormant status	"We tend to operate by building a network of people with whom we're in touch and that can now low bubble away for years and years and years and then, all of a sudden, one of them… one of the relationships springs back into life by saying, we need to think about this, could you come and see us, or we'd like to deal with that, could you come and see us?" *(Executive Education Director, University of Shaula)*
New relationships	"… the University has met over 100 businesses, not all of them but some of them have hosted student projects for us, or participated with research. You know, we've built relationships as a Business School to parts of the business community that we would not have reached without this partnership, and I think that's been really useful for us." *(Executive Education Director, University of Shaula)*

Table 5.3: Summary Table of findings on Changes
Source: Author's development

5.2.3 Findings related to the interactions

Interactions started to emerge from the data, as a concept, mid-way through the research journey. However, it was not as clear as the other two: network structure and service innovation. Recently, Håkansson and Waluszewski (2013), focusing on activities undertaken by sales people, procurement staff and technical personnel, helped the researcher to better encapsulate what was emerging from the data. These scholars argue "the supplier-customer interaction has a central development function for efficiency and innovativeness." They further state that this is a "… key engine for dynamics in any theoretical study" (p.443). It seems to the researcher that some of the elements discussed in their work could be aligned with this thesis. However, this research goes beyond the dynamics in dyads and takes the discussion into the terrain of triads.

The previous subsection reiterated that the definition of a network is given in terms of the interactions taking place between its actors. It also states that a relationship is a connection or link between actors of the network (Todeva, 2006). However, Håkansson et al (2009) suggests that a business interaction is a process that may lead to innovation. Their statement was (p.27):

> "business interaction can be interpreted as a process that occurs between companies an which changes and transforms aspects of the resources and activities of the companies involved in it and the companies themselves."

With this in mind, Håkansson and Waluszewski (2013) is used as a guide to characterise the interactions identified in this research. However, it has to be pointed out that this research has covered dyads, triads and the network, considering that the minimum unit of a network is the triad rather than the dyad (Choi and Wu, 2009a), as addressed by Håkansson and Waluszewski. Nonetheless, the researcher was also aware that other scholars have had a triadic approach in discussing network implications (Holma et al., 2009, Holma, 2010, Menor and Johnson, 2012).

As stated before, most interviewees felt comfortable addressing issues on a one-to-one basis, meaning sharing their experiences about dyadic interactions rather than more complex arrangements. Few interviewees deliberately mentioned the presence of three or more actors in a particular interaction. Nevertheless, when describing the

relationships or the interactions involved, from which the business / supply network can be derived, the presence of multiple and simultaneous links that make up the network can be implied. Consequently, the direct references that the quotations show are mainly about dyadic interactions rather than triads or the network as seen from an individual's point of view. Nevertheless, as the inductive theory building approach used demands a constant comparison, the researcher made connections between the interviews to complete the picture of interactions and relationships beyond the dyad and beyond the role of an individual within each actor.

Previous studies have focused on the business side of networks; they study how interactions change relationships and how these, in turn, change the actors' roles. Cantillon and Håkansson (2009) characterised interactions in terms of the changes they cause to the resources of the actors involved. This research, on the other hand, has been focused on the service innovation and how the network in which it took place facilitated or hindered the innovation process. The findings are aligned with issues related to previous works on interactions such as: the thickness or heaviness of the interaction (Corrêa et al., 2007, Cantillon and Håkansson, 2009), the core role that the interaction plays between the focal dyad (Cantillon and Håkansson, 2009, p.51), the "use of words such as partnership or alliance to describe a more long term agreement between two actors" (p.53), and "the variety of roles played when multiple triads are in place" (Harrison et al., 2012, p.5).

> "But it was interesting, one guy who came to the course in June he's from, I think he works up in the north. He's a business partner up, right at the top of Scotland and he brought along somebody from Sirius Harbour, which is, you know, the main fishing area with the Ferry port and they're an LBN customer, you know. Brought them along because he'd been talking to them and he's now, he got to the point where he's pretty confident that the bag to draw down, you know, £8 million worth of deal banking transaction to fund this [project] and they weren't even a customer and it's not just because of the fact that he came on this course. But it's, it was great that he actually got in touch with me, you know, because I chased him a few times. But he finally and he got pretty hacked off with me contacting him. But when it got to the point when he actually had something to say he remembered or something had happened with that deal, you know."
>
> *(Strategic Partnership Manager, Marketing Manager, Wasat Bank)*

This quotation may communicate a **"pure exchange"** interaction in which nothing changes as a result of the relationship. In this case, those involved are the Bank, the

University, the Bank's business partner and a potential customer. This situation is typical of what was observed in this supply network and the associated service innovation. Although there were always dyadic interactions, many other interactions involved more than two actors. However, when the quotation is considered carefully, the reader can see that an £8 million project, funded through the Bank, triggered changes. There was also a change in the role of one of the actors, whereby he shifted from being a potential customer to being a customer. Thus an actor invited someone from outside this supply network to participate in a programme proposed mainly for the Bank's customers. As a result, the invitee became a customer, a project obtained financial resources from the Wasat Bank, and the University of Shaula became acquainted with this businessperson from the North of Scotland. Several changes, several moves taking place not at the same time but over time.

> "for the Business School, I think, um, it was one of the first, um, major relationships, which, which covered um, a range of activities, um, and involved sponsorship, uh, so um, uh, in that sense, it was an innovation, but it…it might have been just part of the natural growth of the school,…"

> *(Professor Hugo Carreras, University of Sure)*

"The programme with University of Shaula was designed to deliver:

- The 'Linking and Development Programme'. Delivery of 3 x mini SME MBA's for our IFS members per annum
- Joint associated promotional, marketing, and communication rights for the Programme
- Resource and research support. Access to Research, Innovation, Services
- Education. Access to educational support for our own Bank employees
- Banking Access. We are currently the main bankers for University of Shaula commercially.
- Community Linkages
- Brand building and PR

In addition, some of the results for 2008/2009 include:

- Wasat Bank Bursary – iFS (3 member bursaries of £5k towards executive PT MBA Programmes)
- MBA Programme discount of 33% off PT MBA Programme if Wasat Bank place 3 or more people per annum
- Continued Knowledge Transfer
- HUB ATM Activity
- Private Banking for University of Shaula Staff and IFA links
- In the crossover period of the last financial year [2008] and the incoming financial year, we [Wasat Bank] have managed to increase press exposure for the new seminar series entitled 'Delivering Organisational

Performance' and the new Wasat Bank Lecture Theatre. Increasing awareness and exposure for both institutions in the Scottish marketplace.

- In 2008 I [Daniel Silva] managed to secure the branding and naming rights of the MBA lecture theatre at University of Shaula for the sum of £20,000 plus VAT for a 3 year term. The actual value we should have paid for this privilege (given current advertising rates) was £20,000 per annum or £60,000 in total. We will continue to realise this pre-paid value with the use of the WBLT."

(Post Implementation Review 2009, Wasat Bank)

Although the first statement is not directly related to the service innovation in the Wasat-Shaula supply network, it is common to the experiences shared by Wasat Bank and the University of Shaula. The second is a long excerpt from an annual review document that shows the richness of the interaction, i.e., the multiple dimensions and trajectories involved.

The interaction can be classified as **"buying and selling"**. The product offered by the University to the Bank's customers was tailored and changed over time, based on the feedback received from participating customers and Bank executives, as well as the Bank executives in charge of this relationship and programme. The business units in both the Bank and the University faced minor changes to better attend the needs of the programme and the relationships between the two institutions evolved into a **"thicker"** interaction.

> "… since then, obviously, we've done more things together, so there's a seminar series, the, the sponsorship of the, um, the lecture theatre and those sort of things, and that's exactly the model that we kind of expected to do: we'd try something but then: how do we build on that and how we actually work together in partnership? So it was always seen as being much more of a partnership than a sort of like supplier relationship, if that makes sense."

(Head of ifs Marketing, Wasat Bank)

This quote uses the word "partnership" to describe the expectation of a long-term relationship, which led to mutual commitment. It shows how the relationship between Wasat Bank and the University of Shaula, at least between the two business units directly involved (IFS marketing and the business school executive education), was evolving to become a **"close cooperation"** interaction. However, as mentioned before, the interaction became "thicker" not just between the two business' units directly involved, but also between the two actors through multiple business relationships.

Some of those business relationships changed over time and also transcend the two focal firms into the supply network. That is an issue that shows what Cantillon and Håkansson (2009) stated about a deliberate purpose, thus classifying the interaction as "**networking**". Based on the data collected (interviews and documents), Wasat Bank expected the "Linking and Development" programme to deepen relationships with its customers, expand its customer base and have a "significant effect on related business relationships".

> "I understand from the Wasat, their thinking is, how do we add value to our package? How can we make something that, that adds value to our package? Um, equally, they'll be looking at it saying, how can we leverage a relationship with somewhere like the University of Shaula? So, that's a win-win for them, um, in theory there should be a win-win for their customers. Um, and they might find that their customers wouldn't ordinarily do something like that, but they're making it possible."
>
> *(Managing Director, Pollux Systems)*

> "I think the triggers were... I think maybe sometimes Wasat Bank feel they wanted to show some of their customers that they were, ah, willing to help by almost sort of educating or expanding the knowledge of some of the customers as well. And, ah, listen you know... Again back to this relationship thing. How do you do that? You can do it by having a half a day round of golf, but sometimes you need just something a little bit more, um, straight down the middle in terms of facts and figures. And in that case, in a classroom environment to focus the mind a bit more."
>
> *(CEO, Mira Farms)*

Wasat Bank customers saw that the methods it used to hire the University of Shaula to deliver an educational service had the purpose of changing the relationship between the Bank and some of its customers. Consequently, the former observation is confirmed in the sense that the customers become aware of the underlying objective of Wasat. It confirms the nature of a "networking" interaction. Furthermore, the triad in which the Bank (first actor) aimed to add value for its customers (second actor) through the service offered by the University (third actor) is a triad that exemplifies interactions fostering changes.

For instance, the first customer's narrative notes that the value proposition goes beyond his own firm; he refers to "our package", referring to the business as a

whole. The statement "in theory there should be a win-win for their [the Bank's] customers" means that the Bank's customers can enhance their value offers for *their* customers. The positive effect brought about by the service hired by the Bank, co-produced with the University and the Bank's customers, and delivered to the Bank's customers, goes to the customers' customers. As noted before, there is a significant effect on others' business relationships that may also lead to innovations in terms of services and goods.

> "… they've sponsored the lecture theatre; … bursaries we've set aside for them to offer their business clients a part time MBA place with a £5,000 bursary. Because they're friends they went out to their clients and let them choose. As long as they met the criteria for the MBA, kind of let them figure out how they want to take that away; whether they [unclear] the competition, I don't know. … We've also worked with their training and development people. … but if they send three part time students, employees of the Wasat Bank on the MBA, we give them a 30% discount off the fees. So we've been trying to use our relationship with them to build our part time MBA, …"

> *(Executive Development Programmes Manager, University of Shaula)*

This quotation validates the previous statements and shows that the University of Shaula had its own agenda for this interaction. The University was deliberately looking to leverage other relationships through the "Linking and Development" programme. Those relationships with its "customers" (potential students becoming students, and firms that employed participants sending other executives to the University's programmes) changed over time. This, then, provides more evidence of a "networking" interaction between the focal firm and the University. Both were looking to affect other business relationships.

The following two quotes also show how the interaction between the two focal firms was perceived as getting thicker.

> "… they had been interested in sending some of their staff members on various of our degree courses, our MBA, which is why I became involved. So we were aware that there was a wider potential relationship."

> *(Professor David Iglesias, University of Shaula)*

190.

> "Who delivers speakers both from the Wasat and to the client – from the client into some of our programmes, you know. Like, I want someone to talk on sustainability in x. Now, we've got a list of people and if it's a half-hour slot for undergraduates, somebody would come in and do that for me. Um, I'd like to see us build on the potential of the student placements with the client *companies*.
>
> *(Professor Patricio Romero, University of Shaula)*

In the relationship expressed in the interactions, the sense of thickness went beyond the actors and involved the individuals. As presented by Holma et al. (2009), "personal chemistry" is one of the "most stable cooperation facilitators" (p. 89) in developing and changing interactions. Consequently, the findings associated to interactions also show the influence of people in generating dynamic triads. Following are three quotations pointing to that issue.

> "I guess the thing about it is, when you talk about our partnership, you're really talking about people who are, are like-minded. And whilst you can talk about the organisation, a lot of it comes down to the individuals that you're actually dealing with. Because we may have got somebody completely different who may have taken a different view. So, yeah, definitely."
>
> *(Head of ifs Marketing, Wasat Bank)*

> "There've been some initiatives where some of their staff has benefited through education. I believe we also reciprocally invite each other to seminars, which will add value to each other."
>
> *(Divisional Director, Wasat Bank)*

> "And we've… we've… I would say, is it as successful as we would like it to be? Probably not, has there been relationships created, yes but maybe not to the extent we wanted it, because it is largely down to individuals to sell it. …"
>
> *(Marketing Consultant, Wasat Bank)*

This subsection, with its collection of quotations from the interviews and a reference to one of the documents collected, shows the richness of the interactions within the supply network studied. The actors (firms), the people in the firms interacting at different levels, the goals and objectives of firms and people, and the interactions are all elements fostering dynamic triads. In turn, those changing triads foster or trigger business opportunities that could become service innovations, and at least some of those could be seen as innovations. Table 5.4 summarises the findings related to the interactions.

Interactions

Finding	Quotation used
Pure exchange	"he got to the point where he's pretty confident that the bag to draw down, you know, £8 million worth of deal banking transaction to fund this [project] and they weren't even a customer and it's not just because of the fact that he came on this course. But it's, it was great that he actually got in touch with me, you know, because I chased him a few times. But he finally and he got pretty hacked off with me contacting him. But when it got to the point when he actually had something to say he remembered or something had happened with that deal, you know." *(Strategic Partnership Manager, Marketing Manager, Wasat Bank)*
Thicker interaction -Close cooperation-	"… since then, obviously, we've done more things together, so there's a seminar series, the, the sponsorship of the, um, the lecture theatre and those sort of things, and that's exactly the model that we kind of expected to do: we'd try something but then: how do we build on that and how we actually work together in partnership? So it was always seen as being much more of a partnership than a sort of like supplier relationship, if that makes sense." *(Head of ifs Marketing, Wasat Bank)*
Networking	"You know, it's another stage in developing me, and I think, you know, their key accounts, they obviously have key accounts that they look up on and say, maybe not so much that this guy needs a bit of help, but maybe this is a good guy, maybe he could bring something to the party for everybody... I think, in their philosophy of the, kind of, networking institution … they're keen to develop networks, and I think it's obviously proving good for them…" *(Managing Director, The Marquis Bakery)*
Each actor may keep its own agenda	"… they've sponsored the lecture theatre; … bursaries we've set aside for them to offer their business clients a part time MBA place … as long as they met the criteria for the MBA, kind of let them figure out how they want to take that away; … We've also worked with their training and development people. … but if they send three part time students, employees of the Wasat Bank … we give them a 30% discount off the fees. So we've been trying to use our relationship with them to build our part time MBA, …" *(Executive Development Programmes Manager, University of Shaula)*
People's role	"I guess the thing about it is, when you talk about our partnership, you're really talking about people who are, are like-minded. And whilst you can talk about the organisation, a lot of it comes down to the individuals that you're actually dealing with." *(Head of ifs Marketing, Wasat Bank)*

Table 5.4: Summary Table of findings on Interactions
Source: Author's development

5.3   Analysis of findings: towards a dynamic supply space

> "I think we recognise, and this… this demonstrates that the best way to connect businesses is to put… get them in the same room together."

> *(Strategic Partnerships Manager, Marketing Manager, Wasat Bank)*

This chapter's opening statement warns the reader of the risk of trivialising the findings with quick judgements that could make them seem obvious and mundane; its accompanying quotation is also a popular saying of common wisdom. However, in business settings, common sense is generally the least common of the senses. On one hand, the findings presented have shown the complexity of the system; on the other, the following analysis will conceptualize elements that can help managers to enhance the space where interactions and innovation take place, and contribute to the on-going academic discussion on the connections between dynamic triads and service innovation.

Up to this point, this chapter has communicated mostly facts, described situations and cited relevant works on the topics addressed. It started by clarifying the process used to allow the findings to arise in the iterative and almost never-ending process of labelling. The findings were then grouped into three sets. First, those related to the network structure observed; second, the ones associated to how the service innovation took place; and third, those findings centred on interactions among actors and individuals within the supply network studied. At the core of the findings has been the unit of analysis for this research—service innovation—surrounded by the conditions, which either fostered or hindered it, the network structure and the interactions among actors. These two elements may place the timeless chicken and egg question into play. Does a network structure determine the interactions or are the interactions forcing a network structure?

In the following pages, the researcher will bring together the data, the findings and theory, and through a dialogue (Holma et al., 2009) among these three elements, conceptualise his understanding. Such a conceptualisation will lead into the next chapter regarding conclusions and contributions. The core of the analysis is

represented by the changes observed over time and how those changes contributed to the development of a service innovation that was, in turn, contributed to by multiple actors through their interactions and that was implemented and fine-tuned over a period of five years.

The objective of this research was to explore a service innovation within a supply network, look at it through three lenses—innovation, networks and services—and build theoretical bridges between the fields of SCM and SI, by using elements that have been used in other fields such as service science, business networks and industrial marketing and purchasing.

Consequently, the analysis will be presented following the objectives posed for this research. First, the conceptualisation of the triad when considering a service innovation process (Choi and Wu, 2009b, Holma et al., 2009, Villena et al., 2011, Harrison et al., 2012); second, considering the integrative approach to service innovation (Gallouj and Savona, 2009, Howells, 2010), what can then be said about the de Vries (2006) model on service innovation in networks of organizations? Third, the characteristics of a space that fosters service innovation (Håkansson and Waluszewski, 2013).

Although it followed an iterative process, the analysis was characterised, as mentioned above, by multiple revisions (read and re-read), the main purpose of which was to dissect the texts from the transcripts and the documents provided by interviewees to identify the concepts emerging from the explored situation. Figure 5-11 is a diagram showing the general steps taken in the research to elicit the concepts that are introduced in the coming sections.
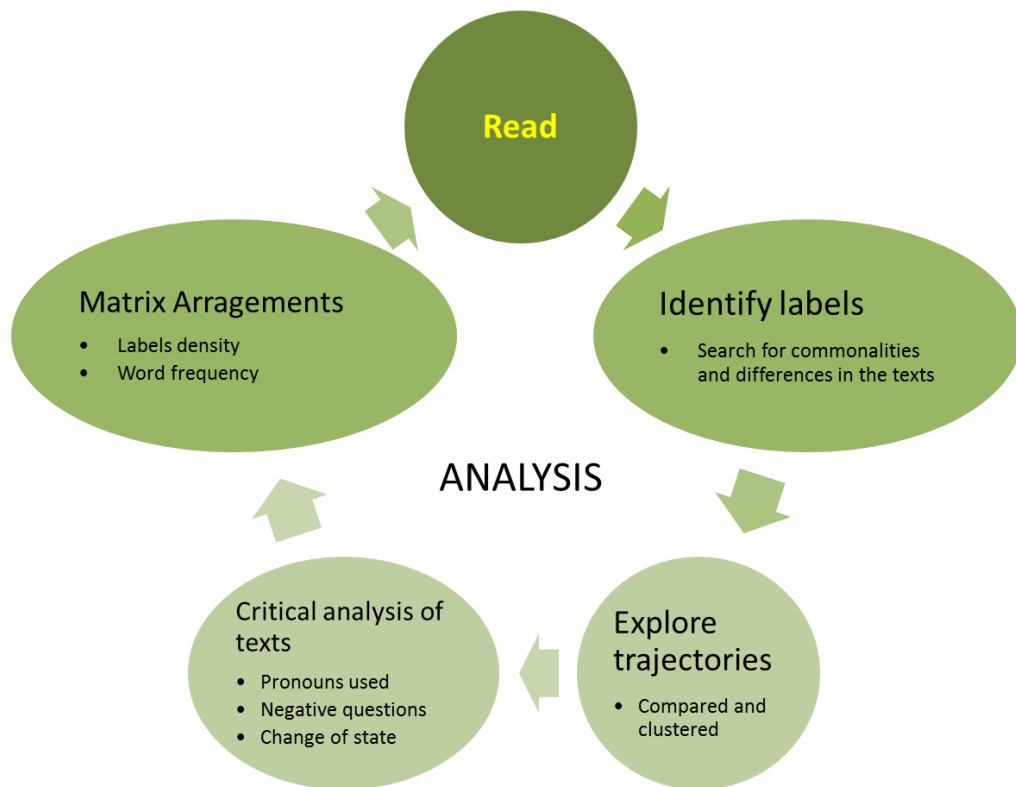
Figure 5-11: General Analysis process
Source: Author's development

5.3.1 Network level

At one extreme is the individual and at the other, the network. In that continuum other structures are present, such as the firm, the dyad, the triad, etc. Some disciplines, such as psychology and consumer behaviour, are focused on individuals. Most business and management fields are focused on the firm or the organisation; studies are usually discipline based, aiming to contribute to the organisation's competitive position, and employing specificities in terms of SMEs, Corporations, Public Institutions, NGOs, Multinationals, etc. Few scholars have focused their research and studies at network level. Among those who have, many have focused their attention on the dyad while very few have systematically considered the triad, and even less so if the analysis involves cross-disciplinary studies.

As has been mentioned from the start, this research examines a supply network and considers both dyadic and triadic interactions. The purpose is to move the strategic understanding in SCM studies from a linear to a more comprehensive and multidirectional space of relationships within a network. The findings show that most interviewees shared their stories and experiences based on dyads. Very few included

a higher level either at the triad or the network levels. However, depending on the people and the way in which they were involved in the service innovation, the scope of their narratives was focused on the dyad, a triad or even the network.

Holma (2010) described the situation in which a focal triad is embedded in a wider business network that belongs to a particular industry, and how its actors also have links to a wider network. In her work, the triad studied is a supplier-customer-intermediary operating in the travel industry. Figure 5-12 uses Holma's (2010) arguments to re-configure the supply network presented in Figure 5-7. In this research case, the triad study is a buyer (Bank), a supplier (University), and several of the Bank's customers. Those three can be considered "the focal triad" buyer-supplier-Bank's customer. However, given the roles played by the Bank in terms of service innovation, perhaps the Bank could be referred to as an agent, rather than a buyer, or a funds provider. The industry where the service innovation takes place is the education industry or a professional service industry, rather than the banking industry. The imaginary boundary and the actors involved, to extend the findings in a particular service innovation case to a broader context, depend on the industry chosen.

B = Bank   U = University   C = Bank's Customer
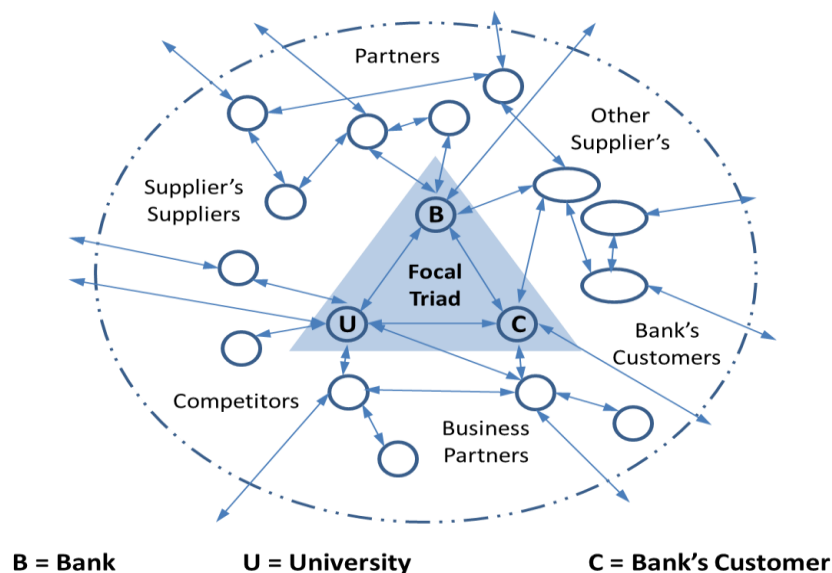
Figure 5-12: Wasat-Shaula-Customer triad embedded in a wider network
Source: Author's development based on (Holma, 2010, p.75)

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5.3.2 The focal dyad

The focal triad is presented in two dimensions. However, a third dimension can be added if the representation shows multiple triads "operating" simultaneously within the same network and under the umbrella of the same service innovation. Such a representation builds on the arguments Harrison et al. (2012) develop regarding a "shadow triad" in which, for their study, "one unitary triad performs multiple interactions processes simultaneously".
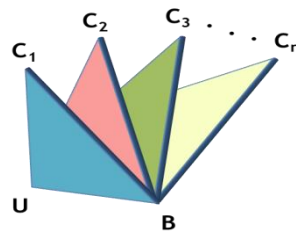
Figure 5-13: Wasat-Shaula-Customers simultaneous triads
Source: Author's development

As indicated in the literature review, several authors (Choi and Wu, 2009b, Holma et al., 2009) have argued that the triad is the minimum unit within a network to analyse networking effects and behaviours. In the past, researchers have studied those triads that are better identified by practitioners and easily related to their core business: buyer-supplier-supplier (Wu et al., 2010), buyer-supplier-buyer's customer (Li and Choi, 2009) and customer-intermediary-supplier (Holma, 2010). Most have studied the triads based on a focal organisation implying an ego-centred configuration (Gulati and Gargiulo, 1999, Todeva, 2006). In contrast, the IMP group dedicated to study the relationships within business networks has focused its attention on dyads (Anderson et al., 1994, Ford et al., 2003, Håkansson et al., 2009).

Considering the previous two configurations based on the contributions by Holma (2010) and Harrison et al (2012), the researcher focuses his attention on a "focal dyad" rather than on a "focal firm" or a "focal triad". The reason for this is that, in this research, the findings suggest that several triads with a common focal dyad were interacting and changing, a situation represented in Figure 5-13. In this case, a focal dyad (University (U) – Bank (B)) helps to better understand the changes in roles and relationships that may have contributed to the service innovation that took place. Nevertheless, this was a concept that emerged while writing the analysis; therefore,

more research is required to explore it in relation to service innovation at network level rather than product innovation at firm level (Ngugi et al., 2010).

5.3.3 Triads

Focussing back on the triads, their changes, actors involved and interactions described earlier in this chapter, the researcher can affirm that the findings support several works. When looking to the actors and the individuals, the level of interaction and participation varies. Some of the Bank's customers only attended the "Linking and Development" programme, while others decided to take additional steps and take advantage of networking opportunities. Those who decided to get involved and collaborate with the initiative got additional benefits. This is aligned with previous works (Giannakis, 2001, Kolluru and Meredith, 2001, Giannakis, 2011b). Nonetheless, a main difference is that, in this case, the customers were not looking for standardisation of the services. Each interaction and relationship evolved through a different path. Some were just strengthened, others became thicker, and for others, new relationships that were developed led to the creation of new opportunities.

5.3.3.1.   Triads and the intensity of its dyads

Although it has been stated that in several cases the focal dyad remained the same while the third node changed (developing almost parallel realities), it is also true that the service innovation allowed or pushed other triads to emerge as shown in Figure 5-14.
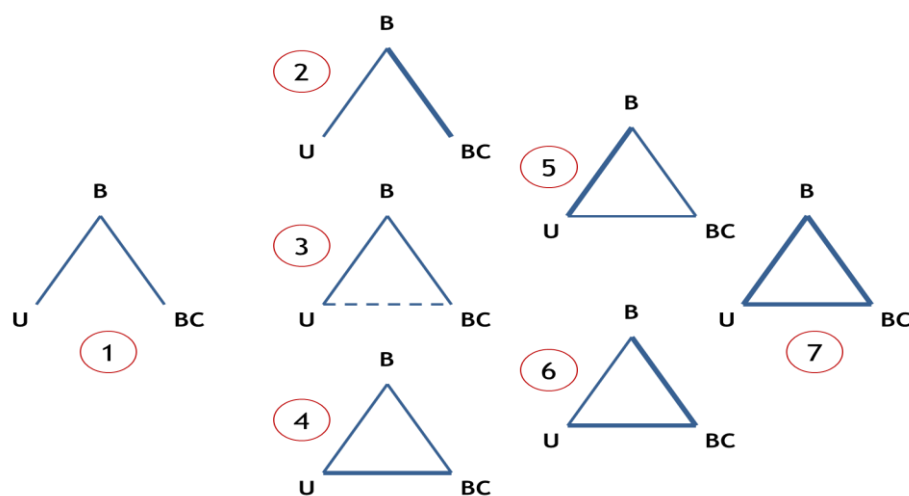
Figure 5-14: Focal Triad changes as a result of the service innovation
Source: Author's development

The initial focal triad, represented in Figure 5-14 by "1", has two links with about the same thickness, and a non-existent relationship between the University and the Bank's customers. As a result of the co-creation of the value proposition expressed in the service innovation, the Bank's customers were invited to participate in the "Linking and Development" programme. As a consequence, the triad changed in some cases and stayed the same in others.

Triads "2", "3" and "4", evolved. The first direct result of the investment made by the Bank in its customers was that some of their current relationships were strengthened, becoming thicker. The Bank increased its banking services with some of its customers or brought new customers by word of mouth. The second result is a new light link between the University and some of the Bank's customers, while the other two links stay the same. The third result brought a thick link between a few of the Bank´s customers and the University, while the original relations with the Bank stay the same. In triads "3" and "4", it is the University that perceives a more direct value from the Bank's investment in its customers.

Over time, triads "2", "3" and "4", may evolve into triads "5" or "6" in which the three actors are interacting and some of the dyadic relationships become thicker. Finally, an apparent ideal world emerges when, as a result of the service innovation, the three links become thicker as shown in triad "7".

The changes shown, although presented as if "7" would be better than "3", do not imply evolution; they only imply change. Depending on the value perceived by the actors, the interactions may change the triad in one or another direction. Some dyadic interactions may seem non-existent, but the reality is that they are in a dormant state. Those situations can be seen in the work undertaken by Gulati and Gargiulo (1999) and Peng et al (2010) when describing the six types of triads based on a "focal organisation", and how those triads affect cooperation among the three actors.

5.3.3.2.   Triads, a new actor, and tetrads

Even if a "balanced" condition is reached the triads tend to change; "a triad is never stable" (Holma, 2010, p.75), because of constant changes among the three dyadic links conforming it. Consequently, the following is a set of changes observed in the findings of this research. Figure 5-15 shows changes originated by the activation of a "new" actor. In the findings, in addition to the triad Bank-University-Bank customers (B-U-BC), another two triads within the supply network were analysed and the service innovation presents the changes described below. The new structures are illustrated with the case of the triad B-U-BC involving a new actor whose business role is being a supplier's supplier. For this particular supply network, he is a professor or lecturer hired by the Bank, charged with delivering the educational service.

Whereas the professor is a University employee, the lecturer could also be an employee or someone who is hired just to deliver a particular training or educational activity, without having an employer-employee contractual relationship. Nevertheless, he is a person who has a reasonably strong link with the University.
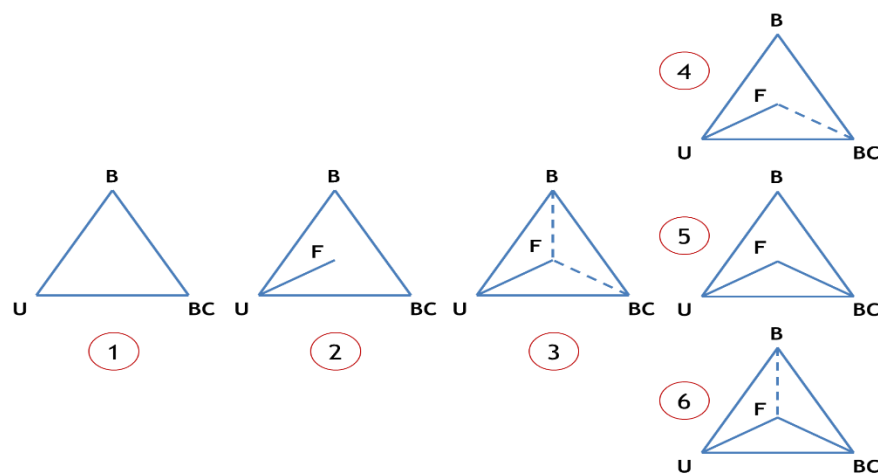
Figure 5-15: Triads or tetrad configuration generated by new actor
Source: Author's development

Figure 5-15 considers that a first iteration towards the service innovation has occurred and consequently there are already three dyadic interactions representing triad "1". The "focal dyad" (B-U) agrees to invite a supplier's supplier F to deliver the service in which individuals from the Bank and from several of the firms of the Bank's customers participate. At the beginning, the tetrad is represented by "2". After delivering the programme (the service innovation studied), F might establish

new direct relations with the Bank (its executives) and with the Bank's customers (their executives), that is tetrad "3" or the set of four triads. One with three strong links (B-U-BC); two triads with two strong links and one weak link (B-U-F) and (U-BC-F); and a fourth triad with two weak links and one strong link (B-BC-F). Note that regardless of the characteristics of the links, even when considering any of the triads, a fourth actor is present in these interactions.

Depending on the experience of each participant in the programme, the initial links established by F may derive in any of the remaining tetrads "4", "5" or "6". There are other potential tetrads determined by different strengths of the links, but those were not observed in this research.

Up to this point, the argument has been that the triads change as a result of a service innovation. However, as it has been suggested both in the literature (Hanf and Dautzenberg, 2006) and by the findings, changes in the triads, in terms of changes in the interactions, may generate an environment or context that fosters innovation. One of the issues explored in the research was the balance between the different actors within the supply network. The answers support what Hanf and Dautzengerg (2006) presented: greater communication increases trust, and trust diminishes or eliminates opportunistic behaviours. Such a condition is also aligned with the characteristics found in how consulting firms manage service supply chains (Giannakis, 2011b). In addition, in an ecosystem characterised by loose linkages, service innovation flourishes (Lusch, 2011).

Accordingly, the changes observed in some of the triads facilitated further service innovation. For instance, the involvement of Bank customers as speakers or lecturers in programmes delivered following their own participation, allowed them to interact through a different role, enabling them to also identify "new" business opportunities that, if successfully exploited, could become a service innovation. Again, the definition of innovation in services has been accepted as broad: something new to the individual, the market or the industry is considered an innovation. In many cases, it is the result of an incremental process rather than a disruptive innovation.

5.3.3.3.   Triads and new actors' roles

A third situation that emerges from the findings is that triads also change because the roles of one, two or even all three actors change.
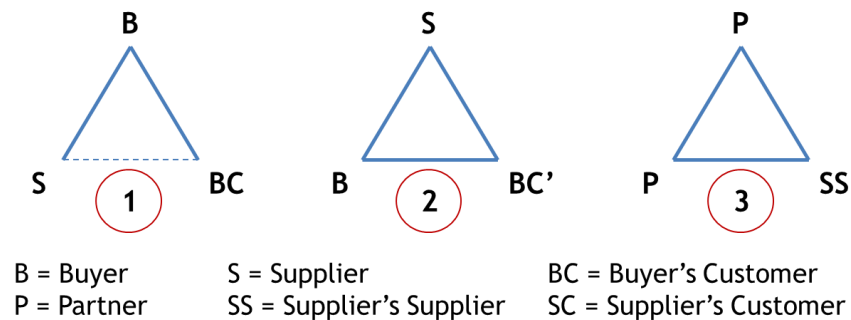
Figure 5-16: Changes in a triad as actors' roles change
Source: Author's development

Figure 5-16 illustrates changes in the triads caused by changes in actors' roles. The first triad in the diagram represents the focal triad studied at the beginning of the relationships (2005), which later led to the service innovation studied. At that time, the supplier was the Bank and the University was the buyer. It is likely that some of the buyer's customers were also customers of the Bank; but at the time, there was no deliberate effort made to activate this particular triad and network.

The second triad in Figure 5-16 shows the same actors, but the roles of buyer and supplier are reversed. In addition, in the context of the service innovation, BC represents Bank customers and the role is buyer's customers. At some point in 2005-2010, the three interactions were balanced in terms of the intensity of the interaction in each dyad.

The third triad shows the result of strengthening the relationship between the buyer and supplier to the point that both become partners around the service innovation. In addition, a former buyer's customer becomes a supplier's supplier in following versions of the "Linking and Development" programme, and in other initiatives that grew as further service innovations.

In addition to the role changes, a variation associated to "thicker" interactions is that either an individual belonging to an actor plays more than one role, or several

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people within an actor play the roles required. Consequently, just to mention one example, in the "focal dyad" for this research, the Bank plays the following roles: buyer of educational programmes, supplier of financial services, partner in specific endeavours, and funds provider for some initiatives. The same actor plays more than one role in some interactions, while in other interactions several actors play the different roles. The University plays the following roles: buyer of financial services, supplier of educational programmes, facilitator of the Bank's businesses (ATM, banking for students, etc.), partner in specific endeavours and searcher for opportunities (research, employment for alumni, consulting projects for students and funding). Similarly to the Bank, in most situations different actors played each role.

Afrazeh and Zarinozv (2010) mentioned the following roles when the main objective is knowledge sharing: manager, conveyer, broker, user and receiver. In the context of the service innovation, the roles played by people go beyond the labels given to the actors (buyer, supplier, partner, customer, competitor, etc.). In addition, Harland et al (2004), in developing their conceptual model for researching supply networks, mention several roles played in healthcare sector supply networks: "network structuring agent coordinator, advisor, information-broker, relationship-broker and innovation sponsor" (p.4); and among the broker roles they mentioned: "the architect, the lead operator and the caretaker" (p.6).

Appendix 5 outlines the different roles identified and played by the interviewees: promoter, facilitator, agitator, seeker, explorer, discloser, builder, manager, guest, host, supervisor, agent, etc. The richness of the roles played yields a diverse set of triads, thus explaining why the data shows a flexible environment, willingness to try, adapt and change, and consequently generate service innovation. It also represents stress and challenges for the key people in the two focal organisations.

The findings show examples of the changes that the triads were facing around the service innovation studied. The first changes analysed were based on the weight, strength or broadness of the relationships among the actors of a triad. The second set was described in terms of the emerging triads that resulted from the involvement of a new actor; and the third type of change was caused by the roles played by the actors. Changes lead to movement and movement, by definition, is evidence of dynamics.

What is stated above: "a triad is never stable" (Holma, 2010, p.75), means that it is dynamic. Holma addressed the different roles and the development of the business relationship rather than the changes. She noticed how the different roles are key in fostering co-operation and highlights that the triads go through periods of deep structure, equilibrium and revolution thanks to their "relationship energy" (p.78). She also states "critical events are drivers that set the stage for radical change" (p.78). However, she pointed out that further research is required to understand how relationship energy can be transferred to other triads, and how co-operation can enhance the industry. Therefore, this research takes a complementary approach by looking at the changes and how those changes, which can be seen as dynamic triads, are drivers for service innovation. The findings in this research are encouraging; there is evidence of incremental innovation.

5.3.4 Service innovation and triads

As mentioned in Chapter 2, the researcher found that the integrative approach to service innovation, proposed by Gallouj and others (Gallouj and Weinstein, 1997, Gallouj and Savona, 2009), best suited this research. Specifically, because it fits in the service-dominant logic which states that "everything is service" (Glushko and Tabas, 2008). Based on the literature review, it seems to the researcher that the findings may contribute to the de Vries (2006) model. The conceptualization emerging from this research is also aligned with the interpretation of what innovation is. Innovation is defined as a process in which models such as: "radical, improvement, incremental, ad hoc, recombination and formalization" (Gallouj and Savona, 2009, p.164-165) can be identified.

$$((P_1C_1..P_1C_q)..(P_nC_1..P_nC_q))$$
provider competencies

$(CC_1.. CC_q)$
client competencies

$(O_1.. O_q)$
outcome characteristics

$(CT_1.. CT_q)$
client technology

$$((P_1T_1..P_1T_q)..(P_nT_1..P_nT_q))$$
provider technology
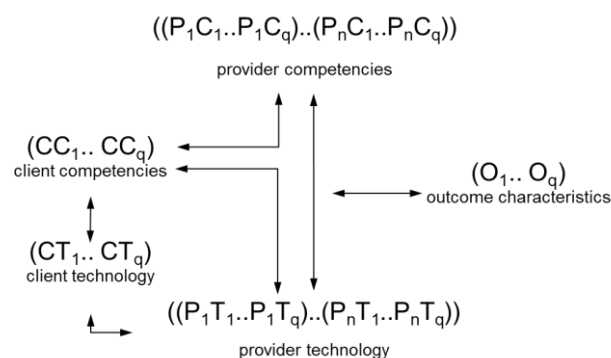
Figure 5-17: Service system of characteristics and competencies
Source: de Vries (2006, p.1040)

The system described in Figure 5-17 is derived from the interaction of the dyad provider-client proposed by Gallouj and Weinstein (1997). De Vries enriches the previous model by opening the possibility of several providers interacting. Consequently, it offers a valuable framework in which the competencies of the actors are simultaneously engaged / combined to produce a desirable outcome. Based on this framework, and considering the findings, the researcher considers that the model can be enriched and used to better understand and describe a service process and, specifically, a service innovation process. This would require: first, to consider its application in a triad such as buyer-supplier-client; second, to maintain the scope of a network in which several buyers, several suppliers and several clients interact simultaneously; and third, to open the possibility that the outcomes could vary and be multiple. Therefore, the characteristics and competencies need to be presented as matrix arrangements, instead of vectors. See Figure 5-18
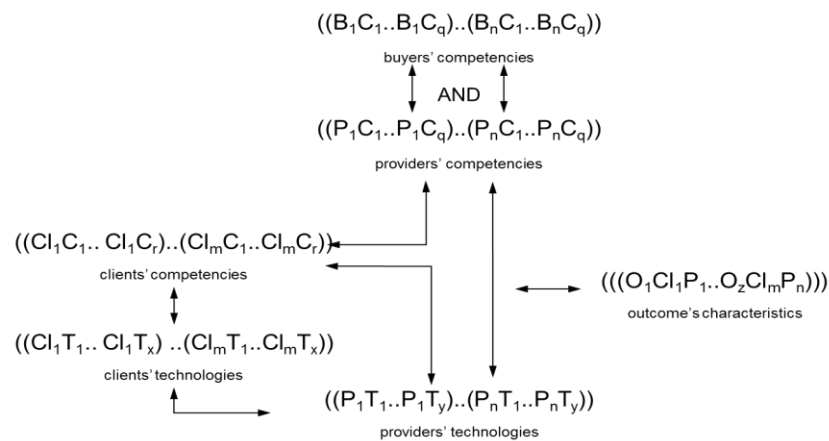
Figure 5-18: Service system within a supply network
Source: Author's development

As noted in the previous subsection that analyses the triads, there is a risk and a fear that a particular interaction (connection, link or relationship) also known as a bridge may decay (Li and Choi, 2009); meaning it may get weaker / thinner or even disappear. For instance, the buyer-customer relationship disappears and is replaced by a relationship mediated by the supplier from whom the buyer outsources a service. However, what has been pointed out before is that a relationship may go into a dormant mode, while other interactions are vibrant. Therefore, for a service innovation, taking place within a supply network, the value of networking relies on the dynamism of other interactions within a particular triad, with existing triads or with new generated triads.

The model presented in Figure 5-18 responds to the integrative approach (Gallouj and Savona, 2009) in which both products and services converge in what is now called service ecology (Spohrer, 2011).

5.3.5 Service-Dominant Logic framework

Both supply chain management and service innovation literature consider technology as a key element for innovation. In fact, some papers refer to innovation in terms of the "new" technology emerging or developed. However, the service science literature and the service-dominant logic framework build on a wider concept of innovation. That is why, for this research, what has been understood as innovation is a process characterised by the "successful exploitation of new ideas" (Paton and McLaughlin, 2008, Schwarz et al., 2012). The new idea could be "new" to a market, an organisation, a customer, an actor within a supply network, a dyad, a triad, etc. Discussed above are some of the quotations in which the interviewees identified both new business opportunities and limitations that may hinder service innovation processes.

Stories recounted by interviewees do not employ academic terminology or the jargon used in academic papers. This, in itself, shows the researcher did not prompt responses, or channel stories in a particular direction. In addition, it could also mean that practitioners might sense language barriers in what is proposed and stated by academics.

This said, the labels employed to cluster the data show that an element acknowledged in different ways is value creation, co-creation and/or distribution of benefits. Again, the interviewees did not use these words, but their stories communicate that which took place among them during the service innovation process. Some stories show S-D logic behaviours.

Finally, the relationships between people and firms evolved and changed over the period of time analysed. That again communicates the dynamics of the supply network studied and as shown before, the dynamics at triad level.

5.4   Summary

This chapter takes the core of this research, the data, from where theoretical concepts emerge, and distils them into findings. At the beginning of the chapter, the researcher introduces the conceptualization, analysis and synthesis processes by using a diagram resembling a gas turbine (see Figure 5-1). The labelling of the data represents the intake. The process is described as an iterative one through which the data is read and re-read several times, opening new trajectories for data collection and allowing labels to emerge. The new labels are then used to re-label previous data and then for clustering. Consequently, the labels (the air and gas) are expanded and then compressed into theoretical concepts that narrow down the analysis.

The findings are the theoretical concepts, and the chapter presents them in three sets: those related to the network structure, those related to the particular service innovation studied, and those related to the interactions. With service innovation at the heart of this research, the findings are grouped in two sets. First, the ones associated to value co-creation (a key concept in the service-dominant logic debate); and second, those associated to changes in roles and relationships which are used to explore, identify and communicate the dynamics within the supply network.

Finally, the chapter presents the analysis around the network, the focal dyad and the triad. The analysis of the triad is expanded into three conditions that generate the changes: the intensity of the dyads, the inclusion of a new actor, and the presence of new roles. These elements stress the dynamic condition of the supply network studied, and in particular highlight the mutual influence of the dynamism observed in the triads and the service innovation. The service innovation drives changes in the triads, but the flexibility and "movement" of the triads also fosters and generates conditions that energise service innovation processes. The analysis continues by looking at the previous dynamic triads and the influence that condition could have in a model that describes a service system process. That analysis brings a proposal to enhance the de Vries (2006) model by including multiple actors, multiple competencies, multiple characteristics and multiple outcomes.

The analysis closes with a brief reflection on the role S-D logic concepts had in this research as it highlights the fact that in the raw data, the S-D logic academic terminology is not used, even if some S-D logic behaviours were observed. This said, S-D logic framework was supported in terms of the value generated for the benefit of others in the system and by recognising the importance of collaborative interactions in creating value propositions.

Chapter 6

Conclusions and Contributions: Dynamic Triads

"Why should we be in such desperate haste to succeed and in such desperate enterprises? If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away."
Thoreau, H.D. (1854, Walden: Or, Life in the Woods and on the Duty of Civil Disobedience, Conclusion)

6.1   Overview

This chapter presents conclusions drawn from the findings of this research journey. It ends by introducing a theoretical framework in which elements relating to the SCM field and to the SI agenda are articulated. The contribution to SCM research is that supply networks relationships can be organised in a multidimensional space — a path explored by scholars when addressing goods supply networks, but as previously mentioned, little studied in relation to services.

This research focuses attention on services rather than goods. As mentioned in the introductory chapter and developed in the literature review, services account for a growing proportion of world employment, and represent over 70% of GDP in developed countries. Moreover, SCM literature studies services to a lesser extent than it does goods. Accordingly, as presented in Chapter 3, the supply network analysed placed a service company at its core: a bank in which services are considered intangible goods. The actors and the roles they play in the bank's analysed supply network were likely to change in time and space, i.e., the map of relationships that are established during the time a service innovation evolves.

The study of this particular service innovation provides answers to the three research questions, as shown in subsection 6.3. Data collected offer evidence that over time, relationships between actors (people and organisations) within the supply network fostered a service innovation. The same data show that changes in roles and relationships were key in enabling service innovation processes, and that although the buyer-supplier dyad was at the core of the innovation, it was the triad level that allowed viewing network changes that could be hidden had the focus been only on the dyad.

Therefore, on one hand, the evolution of the supply chain concept is confirmed, and has passed from a linear conception to a complex multidimensional network arrangement. On the other, an innovation space may be created and innovation could be fostered if those involved in a supply network facilitate connectivity beyond contractual engagements. Despite this promising panorama, the fact that a public university is the core supplier related to the service innovation explored, may generate a particular relationship and context that may not necessarily emerge when all the actors within the supply network are private firms. Accordingly, further research is needed in different contexts.

6.2   Conclusions based on the findings

The previous chapter set the stage for the conclusions, based on the findings and analysis related to triads. Following the conclusions, theoretical contributions to two academic fields are offered: one presenting an addition to the de Vries (2006) model; another in relation to the role triads may play in fostering service innovation within a supply network.

As noted in Chapter 2, most SCM studies follow a positivistic approach, in which models aiming to optimise the supply function are developed. The literature review chapter shows how the supply chain concept evolved over recent decades; indeed, one may argue that although scholars had in the past foreseen complexities associated to supply chains, most of them opted to address the problem in a simplified manner (Anderson et al., 1994), thus fostering a deeper understanding of how practitioners and academics address issues associated to the movement of goods across the "chain" (Harland, 1996, Larson and Halldorsson, 2002, Cecere et al., 2004). Nonetheless, the simplified models had mostly followed a linear understanding of the value chain, in which value is added step by step from sources of raw materials to end consumers (Kemppainen and Vepsäläinen, 2003). This research confirms such an understanding even for a service firm (a bank) and its supply network, yet it also provides an alternative understanding in which triads play a key role in the value co-creation process.

As described in Chapter 4, data collection took place among people who were actors in a supply network. Some people were employees of a bank, others were employees of a university, others were customers of the bank, and others were part of the network connected through other relationships. The linear approach that was described above was the kind of picture of the relationships interviewees had in their minds. Just as a reminder and background, the Bank (as the buyer) and the University (as the supplier) were the core actors of the network analysed, the core dyad. With this background information, in the following pages, two conclusions derived from the findings are presented. First, in relation to the linear concept predominant in SCM, the findings confirm that the concept has evolved and is evolving into a more complex network approach. Second, in relation to service innovation, the dynamism observed in the relationships and structures within the supply network facilitates a space for service innovation.

During the interviews, most people answered the questions within a framework that involved a relationship between two actors. It seems that each interviewee identified with one of the following dyads: buyer-supplier, customer-buyer, and supplier-customer. In such a situation, the researcher was expecting to find a reference to triadic and/or network structures, but what was found was the predominant linear idea of someone adding value to what others do, based on a mutual understanding of needs and opportunities. Even in such a dyadic relationship, interviewees did not see the possibilities of value co-creation, as their mind-set was mainly focussed on adding value to an offer for a customer.

As stated earlier, the traditional supply chain approach has been linear, where the idea of a value chain and value added are illustrated; specifically, the linear approach has been a representation commonly used in the case of a goods supply chain. In such a case, the chain is originated with the extraction of raw materials that are then processed and passed from one tier of suppliers to the next until parts and materials reach a manufacturer, an assembler or integrator. Such a firm then sells or distributes its goods to either industrial customers or to a variety of intermediate and/or final consumer markets. During the industrial revolution and for most of the 20th century, this linear representation was very useful to firms implementing a vertical integration strategy that granted them competitive advantages. But the competitive landscape in today's world has changed. Globalisation, together with communications featuring the possibility of real time

information sharing, have pushed firms to depart from an integration pattern and search for alternative links among members of their supply chains; hence firms and people are currently pursuing ways to enhance their networking capabilities.

As a result of changes in the business context during recent decades, interactions in value chains have become more complex. Both practitioners and scholars have started to see multiple interactions that constitute supply networks rather than chains. However, studies of those networks have been simplified in time and space. Most studies have shown "stable" supply networks that follow "a positivistic paradigm that often portrays a specific and quite delimited phenomenon that captures the static patterns of a specific market or service phenomena" (Tronvoll et al., 2011, p.571). One aspect emerging from this research is that supply networks may go beyond a two dimensional space. As noted in Chapter 5, supply networks are based on multidimensional and multilevel relationships that are better understood in a complex space, in which even several supply networks may interact.

The previous observations drive the first conclusion derived from the findings: actors (people) in a service supply network view their business relationships in the same way as people in a goods supply network; they are focused on dyadic linear relationships by means of which they may obtain added value from others or add value to others.

Therefore, people interviewed for this research, from both manufacturing and service firms, saw most of the relationships in the supply environment analysed as following a linear pattern. However, they also recognised that a chain arrangement and a linear interaction fall short in describing the space in which businesses, business opportunities and service innovations were happening. They noticed simultaneous interactions among several actors and interactions at different levels, generating a multidimensional and multilevel supply network space.
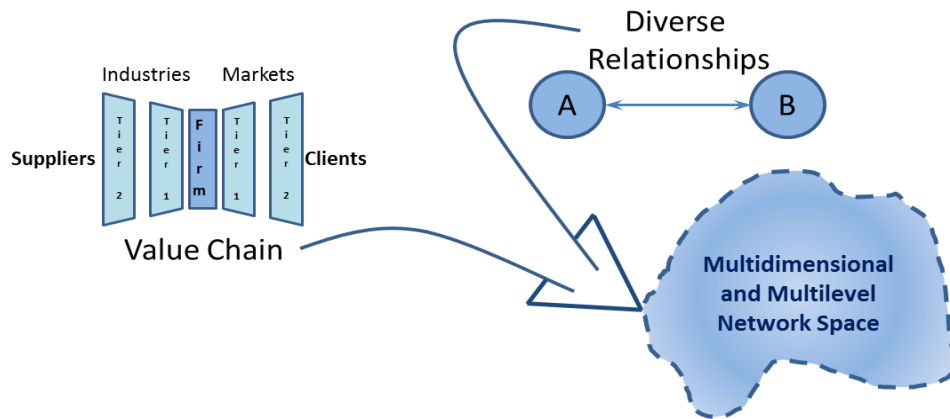
Figure 6-1: Evolution of the supply chain conceptualization: From chain to network
Source: Author's development

In Figure 6-1, the blurred borders of the space represent the "limits" of the business ecosystem (Lusch, 2011) in which a service supply network develops its interactions and relationships. Actors within a supply network will have diverse relationships depending on factors such as distance, location, size, ownership and context in which their activities take place. As a result of those differences in relationships, a multidimensional and multilevel space is formed. When referring to the actors' ownership, organisations participating in the network space may be private, state-owned or non-profit. Private entities could include large public corporations, family-owned businesses or small- and medium-size enterprises (SME). Factors influencing the way family businesses deal with their relationships within a network may include the family generation charged with management, or the transition process from one generation to another.

In this thesis, the researcher does not study different types of organisations. Nevertheless, organisations of several kinds are represented among the actors involved in the service supply network researched. They include state-run institutions such as the University and one of its partners, medium-size public organisations such as the bank that belongs to a larger global corporation, and either family-owned or publicly owned SMEs. The main two actors were a public university and a private bank; this ownership condition may have influenced the findings. Therefore, as stated above, more research on service supply networks, involving different types of organisations is needed to extend the theoretical framework to other scenarios and assess whether the ownership variable affects the findings.

The multidimensional and multilevel network space just described is the space where actors of supply networks interact. Although the literature review chapter showed that the service innovation field is relatively new, policies fostering geographical proximity to stimulate innovation have been in place for over thirty years (Hollenstein, 2003, Humphries et al., 2007, Porter, 2000); indeed, the past five years have witnessed exploration of the idea of innovation clusters (Engel and del-Palacio, 2009, Visser, 2009). However, most work on innovation has analysed manufactured goods. It has even been said that services almost resemble Third World countries, which passively benefit from real technical innovations developed by manufacturing industries (Gallouj and Djellal, 2010b). Gallouj and Djellal also state, based on economic theory, innovation follows a linear approach in which researcher, producer and seller are likened to specialists trapped in silos. These elements opposed the very nature of services that are developed and delivered in active interactions among those involved. The same occurs when innovation is taking place in services. Innovation is sustained by both internal and external actors; in that sense, Sundbo (2010) states that "innovation in service firms is a social activity involving many actors and having many trajectories" (p.279). These behaviours were observed in the stories told by the interviewees in this research, showing a non-systematic process and allowing innovation to arise from practice. The innovation also resembles some of the elements introduced and developed in open innovation (Chesbrough, 2011).

In terms of the issues identified in this research that are directly related to the service innovation selected, the actors within the supply network played key roles. In particular, the findings support the following by Spohrer (2011, p.200):

> "The starting-point concept in service science is the ecology of generic actors. We prefer the term ecology over ecosystem to emphasize that populations of entities come and go. One measure of the robustness, resilience, and health of the ecology is their diversity. Further, we think that service ecology is a suitable generalization of a market from a systems perspective."

The service environment and particularly the service supply network analysed, showed actors who come and go, change roles, move from an active to a dormant state, and vice-versa. These changes mentioned in the interviews were presented in subsection 5.2.2.2. They reflect flexibility in the conditions for developing contextual relationships among the actors and the possibility of varying roles. Flexibility and the possibility of change seem to foster a loose network that generates an innovative space. More work is needed to better understand how changes take place and how the innovation space is created.

The reader may consider the innovation space in terms of geographical location and proximity; that framework may lead to concepts such as clusters, science parks, innovation parks, industrial parks, business incubators and other forms of association that may nurture interactions, dialogues, and creativity, to mention a few. The innovation space identified in this research is not related to geographical proximity. The supply network studied and the actors within it were located across the UK, mostly in Scotland; but the service innovation identified transcends geography, and in some events is influenced by the relatively close proximity of some actors.

The findings also support Edvardsson et al. (2010a): the changing role of the customer in general, and the particular role played in value creation when companies become service-centred by embracing a service dominant logic. Although the Bank and the University did not deliberately choose such an approach, some of their practices narrated in the interviews were aligned with those expected when following S-D logic.

Changes in some of the triads within the supply network observed during the 2005 to 2010 period of analysis may be noted. The dynamism of those structural elements of the network seems to drive, at least in part, the service innovation identified. Data analysis pointed in that direction, although, as already mentioned, the interviewees did not necessarily identify the triads. However, interpreting the dyadic relationships they described, the researcher noticed changes in the triads, some of which were the result of changes in the roles of the actors involved.

Consequently, a second conclusion is that the findings show the interviewees were not aware of the presence of an innovation space within the service supply network they were part of. However, they did notice that where networking fostered, value creation had more potential than in traditional bilateral relations; in particular, changes in triads, fostered interactions that led to innovations. As stated above, the findings confirm what is mentioned in the literature in terms of collaboration benefits in service innovation (Edvardsson et al., 2010a, Hipp, 2010), and extend them to a more complex network arrangement in a multidimensional and multilevel space not restricted to geographical proximity. In addition, the changes faced and embraced by supply network actors were the kind that supports the ecology systems

approach that better describes the environment for services and for service innovations.

Figure 6-2 represents a first approach to describe what this thesis identifies as enablers and perhaps drivers of a service innovation that allows for on-going value co-creation. Those enablers are the flexibility of the actors within the supply network, the dynamism of some triads within the supply network, and the realisation of an innovation space in which supply networks operate. Again, a space that is not restricted to geographical proximity, but one that requires further research to better clarify its characteristics and determine how service innovations affect the nature of core firms within a supply network.
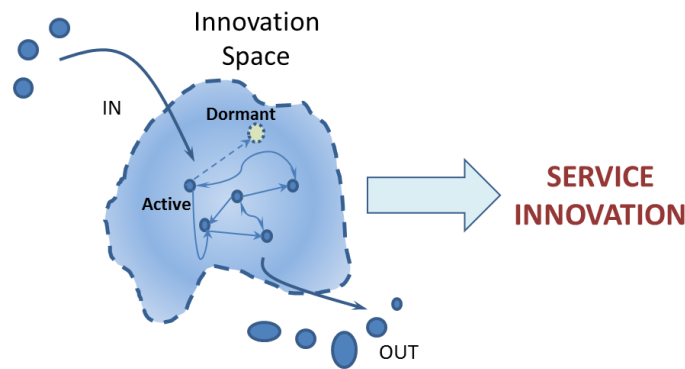
Figure 6-2: Enablers of Service Innovation: A Dynamic Innovation Space
Source: Author's development

6.3.   Answers to the research questions

In the following subsections, each research question is addressed and answered with findings from this research. The reader will notice that the answers are confined to the particular case in which this research took place. The answers will help to develop the theoretical contributions in the following section. Further research is required to determine how the current findings and contributions are seen in other contexts, other supply networks, other types of organisations and other innovation spaces.

6.3.1 Answer to the first research question

The main research question is: How does service innovation take place in a supply network? Research findings may appear simple to the reader, yet give the following answer: the service innovation took place through the interactions among supply network members and relationships built over time. Relationships mentioned were among people, not just organisations; they grew in trust and in willingness to allow other actors within the network to participate. Steps identified in a particular service innovation process were the following:

1. A person from the potential supplier approaches the potential buyer offering a service that may add value to its executives. This first contact took into account the long-run business relationship between the two organisations, where the University (in this case, the supplier) had been buying financial services from Wasat Bank (in this case, the buyer), but had not sold any service to them. That first step was an attempt to change roles in the bilateral relationship between the Bank and the University, and the points of contact were at senior level.

2. After more than a year, another division within the buyer (the Bank's marketing unit), aware of previous contacts and the connection between the two institutions (buyer and supplier), approached the supplier (the University) with an idea to develop a service for the Bank's corporate clients. The idea came from another part of the bank's business network, and was embraced as worthy of exploration by a particular unit and specific people willing to take the idea further.

3. The buyer built on previous experiences that others, within its business network, had had in developing a service to benefit its customers. After reviewing proposals previously requested from several suppliers, the buyer considered that the University of Shaula Business School was more willing to develop a tailor-made service and build a long-term relationship with the Bank.

4. The supplier presented a first proposal, based on the buyers' interests, developed by the supplier's service providers (faculty members) who became involved by invitation. Before the first service was delivered several meetings and exchanges of ideas took place, and the basis for the contract was co-developed by both organisations.

5. During the first iteration of delivering the service, some of the supplier's providers were "surprised" to find that the people they were providing the service to were not all employees or executives from the Bank but a mix of customers and financial service executives.

For a few people within the supplier's arena, this service was an innovation; but most of the supplier's providers (professors and lecturers) considered it a standard service. In their opinion, the teaching and learning experiences as well as the possibilities for networking were not new. However, the fact that the buyer (a bank) was hiring its supplier (a university) to enhance the competitive position of its customers was new to the market in which they operated, and it was new as well for the bank. In that sense, it was an innovation for both the market and the buyer. Furthermore, the way the service was developed also includes innovation (new practices) for the supplier (the University).

How did the service innovation take place? By developing the relationship between the Bank, its customers, and the University; and allowing the participation of different people. However, as stated in the previous chapter, the service innovation process takes time. This particular finding is aligned with what is noted by Vargo and Lusch: "it is about relationship understood from the perspective of the co-creation of value over time" (2010, p.175). In Appendix 5, the reader can review the list of people participating in this research; most were directly involved in the service exchange and development that fostered a service innovation during the 2005-2010 period. As already stated, relationships evolved and the processes developed, as actors within the supply network changed (either people change or roles change).

Particularly, the relationship between buyer and supplier evolved towards a "partnership" in which both organisations were interested in creating value for themselves, their customers and beyond. This was the expectation from the initial dialogues. It started with an interest from a person in the university and evolved to a value proposition developed jointly through several iterations. In 2011, the relationship between the University (supplier) and the Bank (buyer) included, but was not limited to:

- Student projects and internships hosted by the Bank and client organisations

- MBA scholarships offered by the University to the Bank and client organisations

- Research and consulting projects managed by the University developed with the Bank's corporate clients (e.g., Pollux Systems, Mizar Construction Group, The Marquis' Bakery)

- Bank internal initiatives (e.g., community banking project reviews) benefitted from a contribution by the University

- Co-branded press releases in the Herald and other outlets

- Bank branded lecture space used for events beyond the Bank

At the time (2011-2012), additional discussions took place between buyer and supplier in order to find new ways of adding more value to the Bank's customers; there was a spirit of inquiry, exploration and innovation. They were looking at service propositions that in addition to bringing value for the customers would also bring a sustainable stream of value for the buyer and the supplier as well as to other actors in the supply network. The researcher found in the people "representing" the Bank and the University an attitude that was to go beyond transactional culture to a culture of value co-creation.

6.3.2 Answer to the second research question

The previous paragraphs show how the service innovation took place and how it evolved. The second research question was: What enables service innovation within a supply network?

Two phenomena account for the service innovation that took place in the service supply network; first, changes in the roles played by actors within the supply network; and second, the dynamic nature of both the actors' participation in the network and the relationships among actors. Both could be described as part of a dynamic condition, because they imply movement and change. However it was not just change among the actors; some triads within the supply network also changed and were dynamic.

Many of the interactions among suppliers and buyers are framed by contracts where the responsibilities, expectations and consequences of failing to follow the contract are established. Mostly in services, a service level agreement is recognised within the contract. In that sense, part of the understanding is that the actors will keep and honour their roles; although in most cases, they are not anticipating changes in the roles they play. In the supply network studied, it was observed that ties between the actors, although supported by signed contracts, were relatively loose. Those ties allowed changing roles, exploring opportunities, and starting new relationships with those in the network. Therefore, the freedom that such loose ties provided was an enabler for dynamic triads that, in turn, fostered or facilitated the co-creation of on-going value by means of a continuous service innovation. Building on Toivonen (2010), innovation in this particular case follows both rapid application and practice-driven models. Incremental innovation can be shown by a concept of newness in what a firm is doing, or by what a particular market is experiencing.

Additionally, when studying the supply network it was noticed that it is a complex, multidimensional and multilevel space in which relationships are diverse and not controlled by a single firm. Some scholars have found that ego-centred networks are the most common. In this case, however, it is closer to a distributed network classified as a core-periphery network (Todeva, 2006) because the level of interaction and connection varies among the actors. At the core, the connectivity and interactivity between the Bank and the University is stronger and bidirectional. Also, some triads involving these core actors show a higher level of interaction and change than other triads in the periphery.

Perhaps a key factor that enables this service innovation is the fact that the buyer was looking, from the beginning, not just to get benefits for itself but for its customers. It was the idea of value generation for the system, rather than just for a single actor in the network. This mind-set fits with the definition of service by Vargo and Lusch (2004a), "… for the benefit of another entity or the entity itself" (p.2).

Accordingly, two elements have been identified as enablers for this service innovation: first, the dynamic condition of both actors and relationships, expressed in dynamic triads; and second, the initial attitude towards searching for benefits that go beyond a single actor.

6.3.3 Answer to the third research question

The answer to the first "how" question seems simple enough: "through the actors' relationships". The second answer, about the enablers, sheds more light: key factors fostering service innovation seem to be dynamic triads, and relationships which enable service innovation as well as the initial and on-going purpose of benefitting others.

A third area of exploration in this research is related to the level of analysis. The research question posed is: Does the level of analysis (dyad, triad or network) hide or highlight elements related to service innovation within a supply network?

The findings suggest that, as expected, the level of analysis brings to light different elements. For instance, most interviewees, even when interacting in a triad, see the links and works between each of them, and each of the other two members of the triad, as almost two independent dyads. Therefore, if the questions and the analysis had remained at the dyad level, some of the dynamics within the triad would be hidden, as shown in subsections 5.2.1, 5.3.1 to 5.3.3.

Another element that the findings suggest is that within a supply network, given its complexity, number of actors involved, diversity of actors and relationships, and variety of business opportunities that flourish through the networking, the shape of the innovation space changes, several triads may evolve in different ways at the same time, and some actors maintain their position, role and level of activity over time. Therefore, if the network is not analysed as a whole, the pictures or snapshots taken may communicate only part of the story. In addition, a network interaction does not mean that every actor is involved. As Choi and Wu (2009a) indicate, the smallest unit in a network is a triad, not a dyad; therefore, when as many as three or more actors are interacting, a network level analysis is required.

Having stated the above, depending on time and space, particular relationships and links which are involved in a service innovation may be seen as remaining the same

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regardless of the level of analysis. The reason is that among the possibilities in a dynamic, multilevel and multidimensional innovation space, actors and their links may be static for periods of time and in given contexts. Static, meaning that the kind of interaction taking place is "the same"; but nonetheless, it might be said that:

> "No man ever steps in the same river twice, for it's not the same river and he's not the same man" Heraclitus (535 BC - 475 BC).

Consequently, the level of analysis may determine the findings that can be observed. If any of the actors change —a new actor comes into the network or an existing one leaves it, or if an actor changes its role or level of activity, or if the nature and purpose of the relationship changes— a particular level of analysis allows us to see elements that other levels may hide. On the other hand, if the conditions remain "the same" the level of analysis might not bring differences into the findings.

In the following subsections the researcher establishes a dialogue with approaches that have been explored in the past by other academics. Through the dialogues, the theoretical contributions will emerge. Some contributions can be seen as significant, although small, while others may be seen as marginal. All of them certainly welcome further research.

6.4   Contributions to theory and practice

Establishing a dialogue between the research findings and previous studies and publications poses the challenge: what works should the researcher select. Given the interdisciplinary leanings of this thesis it was decided to focus on extant research that adopted a wider perspective rather than a discipline, or silo, mentality. Accordingly, contributions made by this thesis are framed by interdisciplinary works, regardless of the particular field of study of discipline.

For decades, interdisciplinary research has been promoted, across different fields, as a way to enhance the understanding of complex phenomena (D'Antonio, 1963, Glass, 1977, Jarke et al., 1998). However, challenges to pursue an interdisciplinary approach have been identified (Golde and Gallagher, 1999, Cheng et al., 2009, Rafols

et al., 2012). Among the challenges, finding the appropriate academic community to interact with could top the list. Each intellectual community almost has its own rules, jargon, methods and ways of socializing knowledge generation and the processes towards building and accepting knowledge. Therefore, the findings emanating from interdisciplinary research may often not fit with any of the academic communities contributing to it. To some extent, this thesis faces that challenge; for it adapted the method from the broader field of social sciences, found literature gaps in the fields of supply chain management and service innovation, and framed part of its discussion in the emerging discipline of service sciences and the debate on service-dominant logic promoted by marketing academics.

Should the theoretical contributions claimed by this thesis be deemed disciplinary or intertwined with other disciplines? The answer is far from obvious. Most readers might be discipline-based scholars, and may not feel altogether comfortable with statements that are beyond their field of expertise. The following paragraphs offers bridges to facilitate the understanding and judging of the contributions made.

A number of contributions are presented in the following pages. They begin with some methodological contributions, followed by contributions that may better fit the SCM field, although they also include elements related to the fields of service innovation and service science. The researcher aims to contribute to service innovation debates with a holistic approach; therefore, a general label for this thesis is the title itself: service innovation within supply networks.

6.4.1 Methodological contributions

Chapter 3 offers a comprehensive description of both research design and methodology. Grounded Theory (GT), introduced by Glaser and Strauss (1967/2008), in the 1960s, offers an interpretative process to concepts used by social actors as a "reaction against extreme positivism" (Suddaby, 2006, p.633). After some years, GT founders diverge; in the 1990s Glaser favours creativity in interpretations while Strauss stresses the routines for analysis (Locke, 1996). This shows that GT methodology is far from being tight; constant comparison of continuous iterations drawn from data collections and analysis make for a complex and messy path.

Most GT methodologists (Charmaz, 2006) suggest writing memos to advance in the process of coding, defining and refining conceptual categories, and adopting theoretical concepts. The researcher, however, preferred creating diagrams through which the concepts and theoretical categories emerged. Instead of the twelve steps recommended by Charmaz (2006, p.11), the researcher used eight (see Figure 3-3). Accordingly, in this thesis the researcher claims inductive theory building as the methodology used. The pragmatic decision of compressing the steps reduced the time that is generally required for GT research and led to the following methodological contributions:

a. Helping the researcher to better control the process.
b. Focusing reflexion on what is observed, together with the influence the researcher's previous knowledge and experience brings to bear on creating the reality observed.

6.4.2 A holistic contribution to Supply Chain Management, with considerations related to Service Innovation

When an ecosystem is studied in the natural sciences, researchers look at changes and interactions over time: how populations or relationships change, whether they increase or decrease, become stronger or weaker. Astronomers, for instance, compare snapshots of space and observe the presence or absence of an object (planet, asteroid, comet or star), or the process a star or galaxy may undergo. Similarly, in the case of a service ecosystem, it is possible to observe the system's development over time by comparing snapshots, as noted by Vargo and Lusch (Lusch et al., 2010, Vargo and Lusch, 2010), or even Spohrer (2011), who prefers the concept of ecology to emphasize the idea of populations moving. That is how the researcher approached the supply network studied for this thesis.

As mentioned in the chapter regarding research methodology, the unit of analysis the researcher looks at within a particular service supply network is service innovation. The supply chain concept has evolved from a linear conception towards a more complex network arrangement, as noted in the literature review chapter. Findings in

this thesis show that such a conceptual evolution seen in goods supply networks also applies to service supply networks.

Galaskiewicz (2011) endeavoured to extend a bridge towards a more comprehensive understanding of supply networks by using a technique, such as social network analysis (SNA). Although he recognised that awareness about the topic expressed in SCM literature could be tracked to 2008, his emphasis was on pointing out the dynamic characteristics of networks and the "underlying social meanings of the relationships" (Galaskiewicz, 2011, p.7). Holding that his research was interdisciplinary, he noticed that behavioural psychology offers numerous theories to explain behaviours in networks, including change, effectiveness, or benefitting one node over others. His focus was on mapping relationships, not analysing flows — particularly content flows. Two aspects of his work are of particular interest to this thesis: concern for trust, and the contextual basis of relationships.

Figure 6-3 shows a first snapshot of the supply network studied, representing concepts emerging from the research, particularly the critical role that time (t) has in the configuration, transformation and development of a supply network.

Figure 6-3: Initial Stage for the Service Supply Network
Source: Author's development

At a point in time t_1, a supply network is already in place and actors within it interact in multiple ways. In the case of the supply network studied, the following condition was identified: at the core of the supply network is a buyer – B - (a private bank), and a supplier – S - (a public university); each of the two core actors has its own supply/business networks in which other suppliers (s) and customers (c) participate. In some cases, as shown in Figure 6-3, the actors have bidirectional links; in others, the ties are unidirectional.

At the beginning of the period studied, in 2005, a unidirectional commercial interaction between the buyer and the supplier took place and has been running for decades, whereby the bank provided financial services to the university. Nonetheless, at the time of informal discussions brought about a change in roles of the two core actors. By October 2006, even though the previous roles were also maintained, the bank had become the buyer and the university, the supplier. Following 2006 interactions happened concurrently at different levels and units in each organisation, and new dimensions evolved.

The later roles—the Bank as a buyer and the University as a supplier—are the ones from which a service innovation emerged. The analysed supply network was developed from these actors' business networks, one that had changed over the 2005 – 2010 period, when the interviewees framed their answers. Based on the initial diagram (Figure 6-3), which presents a snapshot of t_1, the researcher noticed changes in the network. Those changes are reported in Chapter 5. Figure 6-4 presents a representation of the new stage for the supply network in which the analysis was conducted.
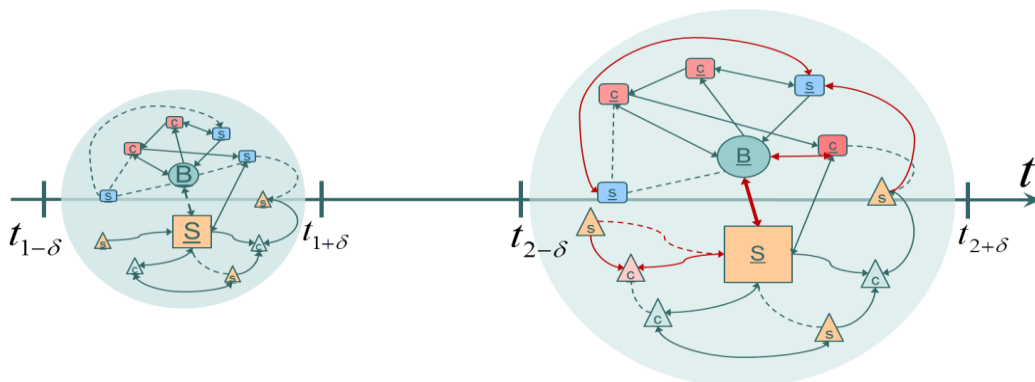
Figure 6-4: Transformation of the Service Supply Network
Source: Author's development

In t_2 another snapshot was taken, and Figure 6-4 shows several changes:

- A new actor became part of the network, as a customer to the supplier
- An actor changed its role from supplier to buyer (B) and became a customer of the bank
- Several interactions and relationships changed, from unidirectional to bidirectional, and from strong to weak

- New links were established among actors of the supply network
- New structures were present in the supply network

In the supply network studied, relationships among actors go through stages in which non-formal discussions take place, and stages are characterised by formal interactions. In the non-formal stages, the actors allow and facilitate new relationships, new actors, and build new ways of interacting. The actors were willing to consider alternatives that could lead to new value propositions for them and for the system. In the formal stages, relationships were characterised by contracts and transactions that place boundaries to what was or was not possible. The length of each stage in time depends on the actors involved, the nature of the relationships, and the characteristics of the supply network.

As mentioned earlier, trust is an issue raised by Galaskiewicz (2011) as it has by others (Molina-Morales and Martínez-Fernández, 2009, de Vries and Huijsman, 2011, Giannakis, 2011b). These authors in particular addressed the role of trust in building relationships and networking, as well as challenges and risks that emerge in a supply network as trust grows. In the case of the supply network studied, and for the relationship between the bank and the university, trust became a cornerstone for generating momentum towards innovation. The findings confirm that trust played a key role in terms of the actors' willingness to welcome and interact with new actors who may enrich the creative process. Following are two quotes that support this statement:

> "Well, what is crossing my mind in particular around these sort of, um, sort of triads and dyads is the, the level of trust, the, um... and the sort of relationship changes over time as trust is, is, is generated and, and then the relationship sort of start off as being imbalanced and over time as that trust develops becomes more balanced."
>
> *(Corporate Development Director, University of Sure)*

> "I would say trust is an, an openness in dialogue, um, sharing of information. And a level of confidence that [short pause] the person you're dealing with won't do anything underhand. And I think probably that, if you get that it's something you can build up over time but I think the, I think an openness in terms of information sharing between the two organisations and the, the principal stakeholder I think is the way forward on that.
>
> *(Operations and Strategy Manager, Global Process Services, IZAR)*

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Reading beyond the words and lines, and looking at the big picture associated to this supply network, the quotes stress the value of trust, especially during the non-formal stages described previously. However, considering the complexity of the network and the diversity of its actors, at a particular moment in time t_i, the two stages could be present simultaneously. Some subsets of a supply network could be in a non-formal stage while other subsets are in a formal (contract-transaction) stage. This combination of dialogues and attitudes among the actors brings additional stress to the network, meaning that trust becomes even more critical in cementing the relationships.

In theorising triads, Choi and Wu (2009b) hold that when a cooperative relationship is characterised by a buyer-supplier dyad, a higher level of commitment and trust is present. Conversely, in a competitive situation, the context developed is a win-lose relationship. That conceptual approach is also confirmed in this research, going beyond the dyad and extending towards the triad and the network. Cooperation and networking facilitate and foster service innovation.

Two additional elements can be noted in the previous two quotes. First, developing trust is a matter of time; second, trust is contextual. However, while a relationship is evolving, openness and balance are conditions that will be reached over time. Based on these observations, the researcher argues that once those conditions are present in the relationship, they allow for more flexibility and willingness to engage in more complex contexts and dynamic situations.

Accordingly, this thesis extends to triads and networks what Choi and Wu (2009b), as noted, hold regarding the "trust" concept for a particular buyer-supplier dyad. It also extends the work of Galaskiewicz (2011), where Social Network Analysis — SNA is used to complement a supply network's contextual feature; more precisely, the context that characterises a network subset when facing either a non-formal or formal (contract-transaction) stage.

As mentioned earlier, in t_1 each of the core actors, some of whom formed the supply network studied, brought their business network with them. Again, a different subset

of supply network actors can spark stages of non-formal and formal conditions where events, interactions, discussions and processes may lead to a service innovation. That observation allows the researcher to conceptualize that the path towards innovation is non-concurrent, as shown in Figure 6-5.
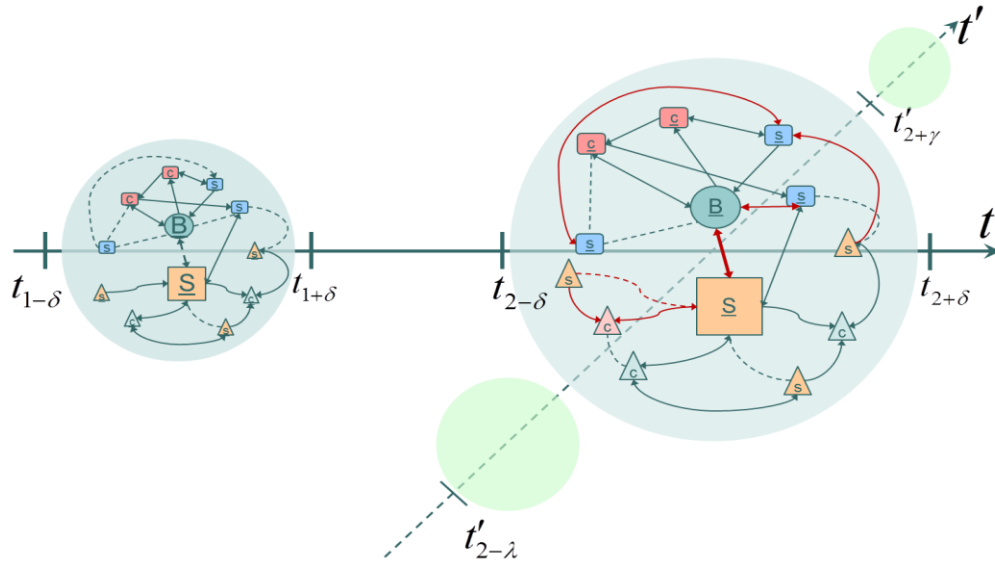
Figure 6-5: Non-concurrent path for Service Innovation in a Service Supply Network
Source: Author's development

Although there is only one time vector, a network's subsets, actors, and other networks may be experiencing a different stage. Accordingly, while some actors are engaged in non-formal discussions, others may be interacting through formal instruments such as contracts and transactions. With that in mind, it is possible to realise that non-formal conversations, or observations to formal contracts, may trigger changes in other network subsets, generating service innovations and ongoing value creation solutions. Based on what was observed in this research, service innovation is not predictable; but flexible and dynamic spaces enhance the possibilities for service innovations to occur.

It was noted above that interviewees, generally speaking, framed their answers within the dyadic relationships they were witnessing. Choi and his colleagues (Li and Choi, 2009, Choi and Wu, 2009a, 2009b, Wu et al., 2010), argue that a triad is a network's minimum unit of analysis, based on research that goes beyond the buyer-supplier-supplier triad or the buyer-supplier-buyer's customer triad. A valuable contribution in Choi's works is highlighting the structural holes that can be identified and how the bridge position may move while an outsourcing relationship develops.

They noted the differences between a goods triad and a service triad, where relationships may evolve following different paths, as shown in Figure 6-6. Nevertheless, their work was focused on "stable conditions" — without considering changes in roles, value propositions, actors involved, or services delivered.
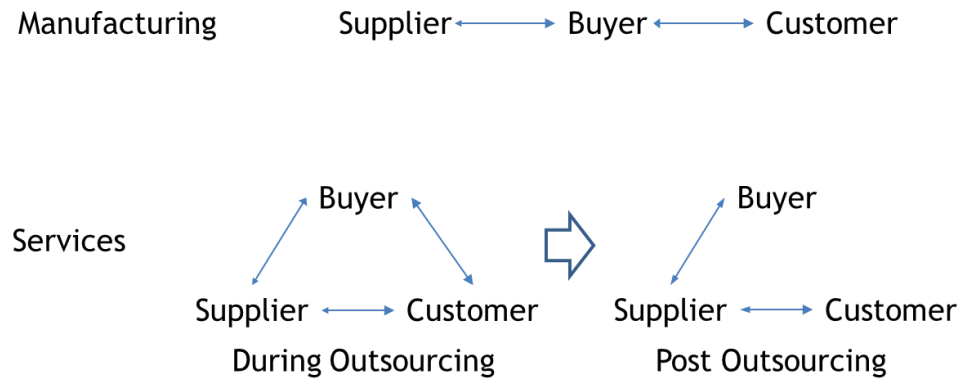
Figure 6-6: Outsourcing Triads in Manufacturing and Services
Source: Author's development based on (Li and Choi, 2009)

The triads described in Figure 6-6 also suggest how they evolved in time. However, the analysis has been restricted to the same actors, without changes. Figure 6-7 introduces triads that were noticed in this research, which became sources for new business opportunities once they experienced a change in actors and, consequently, were transformed. Five are "centred" on the buyer and one on the supplier. In the following pages, the dynamics observed and adequately supported in the findings are conceptualised, enhancing successive findings by Choi and his colleagues (Wu and Choi, 2005, Choi and Wu, 2009a, Choi and Wu, 2009b, Li and Choi, 2009, Wu et al., 2010). In the following subsection, a theoretical bridge between supply chain management studies and service innovation approaches is proposed.
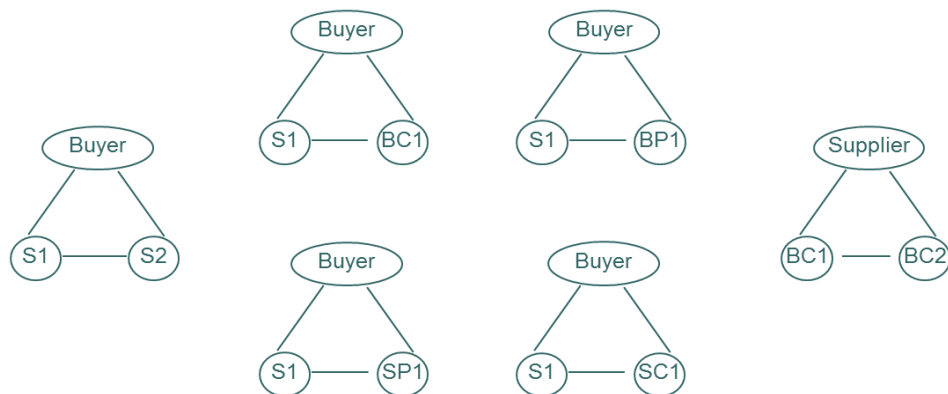
Figure 6-7: Some Triads within the Supply Network Studied
Source: Author's development

As noted, most work in supply chain management focuses on goods. Li and Choi (2009) study is one of the few where the outsourcing of services was considered and examined how the buyer-supplier-customer triad changed over time. Building on this milestone, this thesis seeks to take the analysis and understanding of service supply networks a step further. In services, actors within a supply network may follow a traditional supply chain or, alternatively, an outsourcing model, as developed by Li and Choi. Figure 6-8 depicts the two choices:
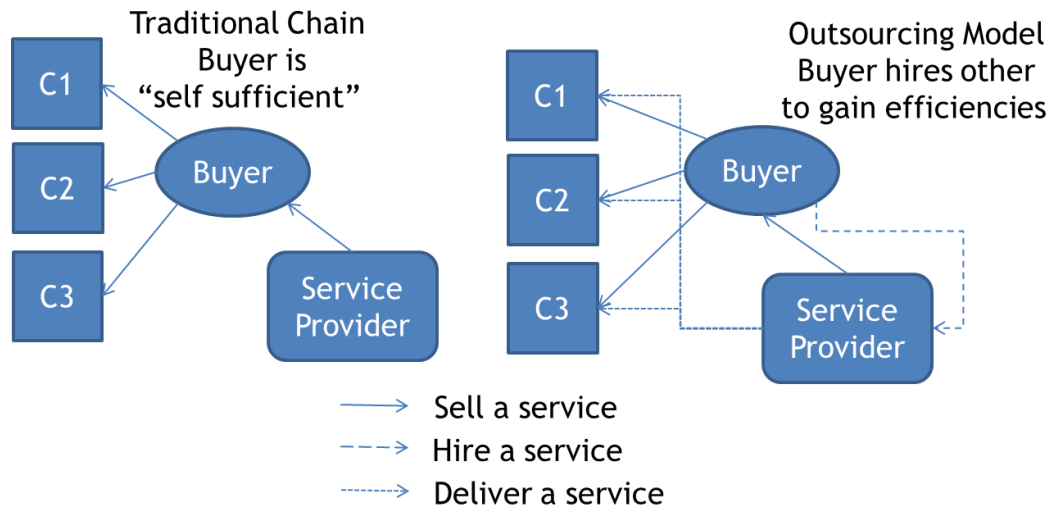
Figure 6-8: How services are portrayed
Source: Author's development

The outsourcing model may better capture the situation experienced in the supply networks studied, as the findings suggest the innovation took place through a diverse set of relationships — some developed simultaneously at different levels, and others both multidirectional and multidimensional. Some previously presented relationships were part of triads, and others were confined to dyads.

To illustrate the Dynamic Triad concept, Figure 6-9 portrays two of the movements seen among actors within triads in this research. One is related to changing roles, and the other to the involvement of new actors. In both cases, the idea that synthesizes the phenomena in the triads is a sense of movement, of being dynamic.

Figure 6-9: Core actors change roles
Source: Author's development

The first triad noted by the researcher comprised core network actors and bank customers, who participated in a dynamic process where actors changed their roles. As mentioned before, the dyadic relationship between the Bank and the University, through which the Bank provided financial services to the University, began to change when the Bank asked (hired) the University to deliver services to its customers. From that moment on, the roles of these two actors changed to the point that they came to consider each other as partners. However, this qualification is seen only among people in certain units within the two organisations. People belonging to the rest of each organisation perceived them as either a buyer or a supplier, depending on the business at hand. Figure 6-9 presents the triad and its change over time.

The triad's transformation is not just a matter of changing roles, for it centres on the kind of interactions taking place among the actors involved. In this particular case, the non-formal stage of discussions allowed the co-creation of value propositions benefitting the three actors and beyond. Relationships evolved over time, in search of on-going value creation, rather than getting stuck in previous contracts or agreements. This observation can be related to and contribute to Madhavan et al. (2004), who explored the steel industry and demonstrated the value of triadic analysis by showing a tendency to form transitive triads within blocks. This research on service innovation took into account findings in a manufacturing context; in exploring a service supply network, it noted a transitive triad not only provides links, but can also be extended to the changing roles of actors. Therefore, those interested in pursuing quantitative analysis using the p* model should also consider transitions in actors' roles, not just those present in links between actors.

A point of reflexion, as well as a conclusion — is the nature of the University, compared to other options the Bank might have at hand to provide the service sought for its customers. The findings have shown that people related to the University were willing to listen to others; although interested in selling its services, the University's agenda featured a higher order of interests, e.g., to look for research opportunities, enhance student learning, and develop models to be assessed in other environments. In the process of developing the service delivered, this particular supplier, as compared to competitive alternatives, was willing to individualise its offer by involving as well the buyer and later its customers.

In addition, the relationship between Bank customers and the Bank was totally respected. The fact that the service outsourced to the University was not part of the Bank's business may have facilitated the transparency and trust developed under this particular triad. The whole idea of providing value for customers is characteristic of the service-dominant logic that enhances opportunities for value creation and co-creation.

The second triad shows a new actor invited into the supply network. Interaction with an actor in a particular triad leads to a new triad that, in turn, becomes part of the innovation space. In this situation, as presented in Figure 6-10, the supplier also delivers a service to a customer's partner. Previous interactions remain in place, but the changing context generates additional business opportunities for those involved in the supply network.
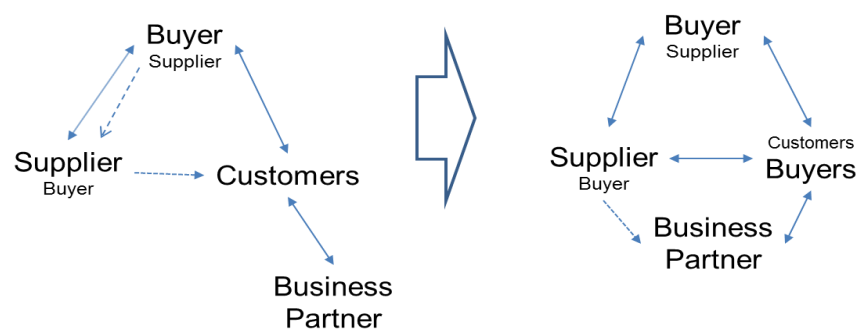
Figure 6-10: A new actor generates a new triad
Source: Author's development

As shown in subsection 5.3.2, the presence of a new actor not only develops new triads but also a tetrad. Also to be noted is that findings discussed in the previous two pages contribute to work by the IMP group: (Holma et al., 2009, Holma, 2010, Harrison et al., 2012, Håkansson and Waluszewski, 2013).

Issues noted above also contribute to findings on triadic sourcing strategy by Dubois and Fredriksson (2008), mentioned in Chapter 2, describing a buyer taking advantage of both cooperation and competition among its suppliers. Their research focuses on seat suppliers for Volvo vehicles. One element noted is that the difficulties of handling the two behaviours can be solved if responsibilities are assigned to units that are partially independent. This research adds to their finding that people representing an actor may change roles or simultaneously play different roles. Such a situation may offer a different solution to the apparent conflict of competing and collaborating simultaneously. In addition, similar to what has been said regarding research by Choi and his colleagues, this research extended the analysis and findings to other triads in which service innovation is fostered.

6.4.3 Contributions to conceptualization and practices on Service Innovation

Changes in a triad within a supply network may generate the context, environment and conditions to foster a service innovation. Figure 6-11 presents a first service innovation SI_1 whereby changes in actors' roles and the characteristics of the service hired by the buyer allowed for delivering value to the buyer's customers together with willingness to engage in open communication.
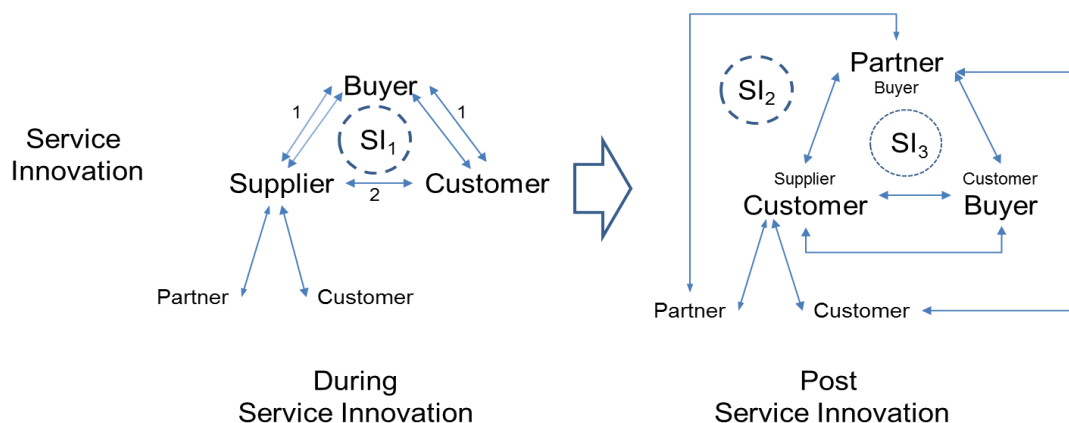
Figure 6-11: Effects of a service innovation on a triad
Source: Author's development

The service innovation, in turn, triggered innovations SI_2 and SI_3 among other actors of the supply network that were not initially involved in the core triad. These events confirm what was stated earlier in the chapter: the service innovation follows a non-concurrent path and the conditions of non-formal discussions also contribute to foster innovation.

The above elements may enrich the work on service innovation and the models to describe a service presented in the literature review chapter. The researcher proposes the following addition to the de Vries (2006) model as the basis to describe a service innovation within a supply network.

$$((B_1C_1..B_1C_q)..(B_nC_1..B_nC_q))$$
buyers' competencies

AND

$$((P_1C_1..P_1C_q)..(P_nC_1..P_nC_q))$$
providers' competencies

$$((CI_1C_1.. CI_1C_r)..(CI_mC_1..CI_mC_r))$$
clients' competencies

$$(((O_1CI_1P_1..O_zCI_mP_n)))$$
outcome's characteristics

$$((CI_1T_1.. CI_1T_x) ..(CI_mT_1..CI_mT_x))$$
clients' technologies

$$((P_1T_1..P_1T_y)..(P_nT_1..P_nT_y))$$
providers' technologies
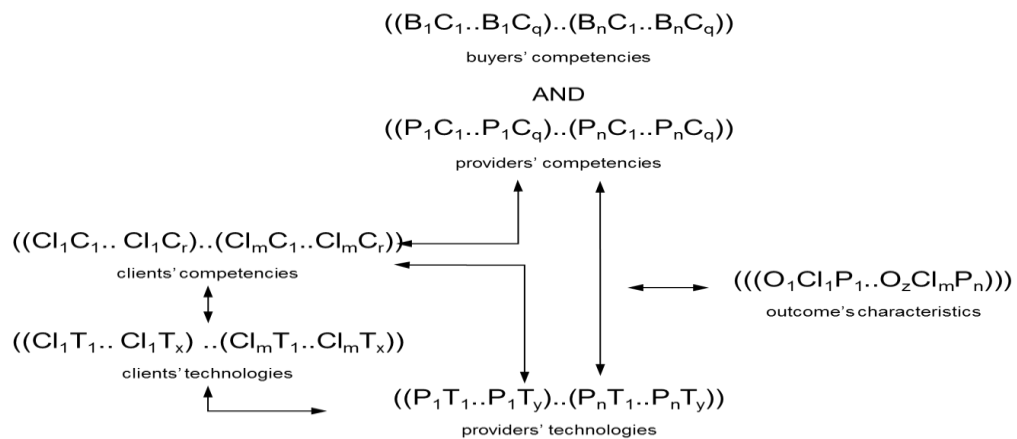
Figure 6-12: Service innovation within supply networks extending a service competencies model
Source: Author's development

The first point to highlight in the model is that interacting with providers (suppliers) and the competencies of the buyer's clients enable a buyer or buyers to generate outcomes (services) that are the result of service innovations. The model allows us to consider interactions and relationships from many to many with many, producing many outcomes. In the case of the supply network studied, the buyer (a bank) holds the role of an agency that facilitates networking, foresees business opportunities that may come from the interactions among clients and suppliers, and is willing to facilitate resources needed (in particular financial resources).

Although de Vries (2006) includes the network dimension by using vectors of multiple providers and one client, and Windrum and García-Goñi (2008) also keep the network dimension by introducing policy makers, both fall short in considering interactions among other members of a business or supply network. As shown above, a service innovation space is by nature multidimensional and multilevel, and hosts supply networks.

The information presented in Figure 6-11 was validated during the third stage of the research. One of the changes identified was a change in roles. Six of the seven people interviewed in the validation stage stated that they had observed, either in the analysed service innovation, or in other events, that an actor (buyer, supplier or client) became a partner and/or its role was transformed. Following are some of their statements:

> "I think that kind of relationship moves on, um, not necessarily sort of on a supplier, buyer and customer, but more into a partnership, um, basis."

> *(Corporate Relations and Projects Manager, University of Sure)*

> "the different relationships that we have and I think what came through was key to the service innovation I think you're going back to the things that I said earlier; it's the, it's the relationship with the stakeholder and for them to have the trust to let you do transformation first."

> *(Operations and Strategy Manager Global Process Services, IZAR)*

The previous validating statements also show that when relationships and interactions become closer and deeper among members of a supply network, the interaction of their competencies allow the development of service innovation processes. Following is another statement from a different experience that also shows the importance of agents or brokers. As presented in the findings, the Bank played such a role at different points throughout the interactions.

> "The example showed the supplier-buyer customer try-out. One thing about a try-out you bring your service supply network and you see... you think fostering that service innovation. I'm trying to think of... let me go back to a situation, to some of these, um, partnerships ... Now I remember setting up an MBA programme in Hong Kong ... the buyer would be a Hong Kong private college, right. We were the supplier; we were supplying an MBA programme ... I guess the students would be the customers, so were the try-out, yes, but the people

that are actually very important in ensuring that that thing works to begin with, were senior people in the Hong Kong establishment. In other words, senior figures that could be trusted by ourselves and the Chinese partners. You know, when these… there was a… they were honest brokers who could… who were able to bring… to ensure that the… you know, that both parties observed the rules.”

(Supplier's supplier, University of Shaula)

As shown by these statements, the validation stage confirmed the proposed addition to de Vries' model as well as the findings presented in Chapter 5.

6.4.4 Contributions to practice

The current business environment, as previously noted, is characterised by multidirectional and multilevel interactions within a supply network. Although triads are not new, evidence from this research shows that many practitioners still perceive business relationships and interactions as those where only two actors participate. Given this complexity, triads help to better understand the effects of one's actions in the system. Therefore, awareness of potential changes and the dynamics of these organisational structures should contribute to decision making by considering some of the possible effects beforehand. Triads operating in ways similar to those described in this research may extend beyond geographical proximity.

6.4.4.1.   Contributions to managers

Although challenging, the fact is that actors within a supply network simultaneously play more than one role. Consequently, and just as an example, a buyer could at the same time be a supplier, a competitor and a partner, or the person in charge of the relationship could be different in each case or be stressed by playing and managing potential conflicting information. Within these conditions, communication, trust, and collaboration need to be regular, open and carefully managed to avoid, reduce and eliminate short-term opportunistic behaviours that destroy value for the system.

The dynamic condition of the triads creates opportunities to discover and develop new business endeavours. Therefore, management can facilitate interactions to allow changes in roles, different actors and benefits to others. These features, as

shown in this research, are enablers of innovation and can be part of services in co-creating value.

6.4.4.2. Contributions to policy makers

Policy makers may direct funds and efforts to facilitate interactions that do not require infrastructure. For instance, interactions among actors occurring simultaneously at different levels while different roles are also tolerated will facilitate collaboration and value creation. Unfortunately, current regulations limit some interactions in order to prevent collusion and corruption in the system. The proposal is to move into an open and collaborative approach in order to co-create value for the system.

By understanding the current dynamic conditions in business as well as the increasing need for flexible relationships among business actors, policy makers may redefine regulations that hinder flexibility. Among the fields requiring changes are labour, intellectual property and trade agreements. Services are assessed in light of service agreements; however, as showed in this research, service innovation takes place when less formal agreements are allowed to take place. Consequently, those involved in policy making could start introducing some degree of flexibility in the regulations in order to foster dynamics that, in turn, facilitate innovation.

6.5   Limitations of this research

As already stated, the context in which the research was developed is a limitation. The researcher recognises that, as an exploratory study, the possibility is offered to observe how a service innovation takes place within a complex supply chain. However, questions related to the characteristics of the actors involved must be addressed with other sets of players. Outcomes will help determine whether the findings apply to the higher education system at large, to financial institutions, and/or to large corporations.

Another limitation associated with the context relates to people's demographic characteristics, especially in terms of culture (country of origin). The social and

psychological issues of the relationships and interactions described were not explored.

In relation to the research method used and the researcher's level of engagement, the reader may question the researcher's objectivity. As mentioned in Chapter 3, the nature of the method is subjective. Although the researcher constantly stepped back to reflect on what was influencing the process, a limitation of this research is that the conditions in which questions and answers took place cannot be identically replicated. People's memories fade over time, interest in the topic changes, and moods vary. In addition, the fact that the researcher used and interpreted the data by building on his analysis, experiences and judgment, can also be seen as a limitation.

Nonetheless, the validation stage helped to ponder the findings by looking at them through the experiences and knowledge of the participants and an external reviewer. The seven people who validated the findings agreed on the dynamics observed in the triads studied. Therefore, even though the findings are limited to a particular context, people beyond the researcher also identified what was found and presented by the researcher.

6.6   Future Research

As mentioned throughout the different chapters in this thesis, triads have scarcely been studied in the SCM field and even network studies have focused largely on dyads. Therefore, this being an exploratory study, many research paths may follow. However, the researcher would like to point out the paths which he considers crucial to better understand dynamic triads and their effects on service innovation.

First, considering the intensity of personal level interactions, a study of service innovation from a social networking perspective will help complete the picture. Especially, how social networks may impact triads in a supply network setting.

Second, the concept and dimensions of an innovation space were only partially identified. What is and what makes, or not, an innovation space, are questions that beg an answer. Which triads and what changes should be stimulated or discouraged are also questions that need further research, as does the role played by the nature of core firms in fostering the space. The answers may contribute to the generation of innovation spaces.

Third, the research could be replicated in other contexts and with different types of organisations to evaluate whether the findings are confirmed or whether new paths are identified to enrich theory building around innovation spaces, dynamic triads and service models in which multiple actors participate with different roles.

6.7   Summary

In this chapter, the researcher presented two main findings derived from this study. First, the fact that the linear concept generally used to describe supply chains has evolved into a more complex multidimensional and multilevel network space; and second, despite the lack of awareness of relationships taking place at a network level, value creation is fostered when triads and networks are operating in a collaborative, open and flexible environment.

Another part of the chapter comprises direct answers to the three research questions posed. Service innovation takes place through the interactions of the actors in a network. The main enablers of the service innovation studied were actors' changing roles over time, change in triads, and the buyer's aim to benefit its customers rather than just its own business. Also, the level of analysis may either hide or highlight issues related to a service innovation.

This final section looks at the contributions of this study. First, by reducing the steps proposed by GT, the researcher used an inductive theory building approach through which stronger control and reflexivity were achieved. Second, the supply network evolves over time; by taking snapshots at different moments, change can be

detected. Those changes may have various origins and are enhanced by trust and balance in the relationships. Such a flexible and dynamic environment may trigger service innovations in a non-concurrent path across the supply network. Third, changes in structures, particularly introducing the dynamic triad concept, become the expression of a service innovation space in which the findings are rooted. At the end, the researcher proposed an extension to the de Vries (2006) competencies model, in which triads and complex supply networks can be represented. Such a model allows multiple customers, multiple buyers and suppliers, and multiple outcomes that may represent service innovations to be analysed.

APPENDICES

Evolving Topic:
- Service innovation a key lever for a secure and resilient supply network
- Service innovation within supply chain networks

Disciplines:
- Supply Chain Management – SCM
- Information and Communications Technology – ICT
- Services Science, Management and Engineering – SSME
  - Marketing
  - Innovation
  - Strategy
  - Knowledge Management
  - Security
  - Operations
  - Logistics
  - Management Science
  - Risk Management
  - Entrepreneurship
  - Procurement
  - Purchasing
  - Services
  - B2B Relationships
  - Organizational Theory
  - Organizational Behaviour
  - Management
  - Production
  - Industrial Engineering
- Service Innovation
- Business Networks

Limits:
- Knowledge Transfer
- Networks
- Since 1991: Opening of the Colombian economy
- Languages: English, Spanish, Portuguese
- Networking
- Turbulence

Key words
- Agile
- Agility
- Alliances
- B2B
- Buyer-supplier relationships
- Capabilities
- Change
- Co-development
- Co-creation
- Collaborative relationships
- Competencies
- Competitive Advantage
- Competitiveness
- Contractors
- Co-production
- Disruptions
- Disruptive innovation
- Dynamic capabilities
- Extended enterprise
- Flexibility
- Flexible
- ICT enablers
- Information sharing
- Innovation
- Innovative
- Intangible relationship value
- Integrated supply chain
- Integration
- Interactive strategy
- ISO / PAS 28000
- Knowledge creation
- Knowledge driven
- Knowledge economy
- Knowledge management
- Knowledge sharing
- Knowledge transfer
- Knowledge-based
- Lean
- Logistics
- Managing relationships
- Mass customization
- Materials management
- Network(s)
- Network relationships
- Open innovation
- Openness
- Organizational learning
- Partnerships
- Procurement
- Productivity
- Purchasing
- Resilience
- Resilient supply chain
- Resource management
- Resource-based theory
- Science of services
- Security
- Security management
- Security programs
- Sense and respond organizations
- Service economy
- Service encounters
- Service science
- Service system
- Service-dominant logic
- Service-dominant mindset
- Service-exchange
- Service procurement
- Services science
- Strategic alliances
- Strategy
- Supplier development
- Supplier integration
- Supplier performance
- Suppliers
- Supply chain management
- Supply chain security
- Supply network(s)
- Sustainability
- Trade
- Trust
- Turbulence / Turbulent
- Uncertainty
- Value chain
- Value co-creation
- Value constellation
- Value network
- Value-in-exchange
- Value-in-use
- Vendors

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- Wealth
- Web 2.0

Authors

- Bitner, Mary Jo
- Brown, Stephen W.
- Chesbrough, Henry
- Choi, Thomas
- Christensen, Cleyton
- Croom, Simon
- de Vries, Erik
- den Hertog, Pim
- Edvardsson, Bo
- Ellram, Lisa
- Gallouj, Faïz
- Giannakis, Minhalis
- Grönroos, Christian
- Gummesson, Evert
- Gustafsson, Anders
- Håkansson, Håkan
- Harland, Christine
- Lambert, Douglas
- Larson, Paul
- Lusch, Robert F.
- Maglio, Paul P.
- Maul, Roger
- Miles, Ian
- Ng, Irene
- Normann, Richard
- Paton, Robert A.
- Ramirez, Rafael
- Rice Jr., James
- Romano, Pietro
- Sheffi, Yossi
- Spohrer, Jim
- Tan, Keah Choon
- Vargo, Stephen L.

Journals

- **Academy of Management Review**
- Air Force Journal of Logistics
- British Journal of Management
- Business Process Management Journal
- **California Management Review**
- Electronic Commerce Research
- Electronic Markets
- European Journal of Information Systems
- European Journal of Purchasing and Supply Management
- European Management Journal
- **Harvard Business Review**
- **IBM Systems Journal**
- IEEE Transactions on Knowledge and Data Engineering
- Industrial Management and Data Systems
- **Industrial Marketing Management**
- Information & Management
- Information Management and Computer Security
- Information Systems Journal
- International Business Review
- International Journal of Electronic Commerce
- International Journal of Information Management
- International Journal of Integrated Supply Management
- International Journal of Logistics Research and Applications
- **International Journal of Management Reviews**
- International Journal of Production Research
- **International Journal of Purchasing and Materials**
- International Journal of Service Industry Management
- International Marketing Review

- Journal of Business
- **Journal of Business Logistics**
- Journal of Business Strategy
- Journal of Business to Business Marketing
- Journal of Information Systems
- Journal of International Business Studies
- Journal of Knowledge Management
- Journal of Management
- Journal of Management Studies
- Journal of Marketing
- **Journal of Operations Management**
- **Journal of Service Research**
- **Journal of Services Marketing**
- Journal of Strategic Marketing
- **Journal of Supply Chain Management**
- Logistics Management
- Management International Review
- Management Science
- McKinsey Quarterly
- MIT Sloan Management Review
- Organizational Dynamics
- **Production and Operations Management**
- Production, Planning and Control
- R&D Management
- SAM Advanced Management Journal
- Service Industries Journal
- Services Marketing Quarterly
- Siliconindia
- **Strategic Management Journal**
- Strategy+Business
- **Supply Chain Management Review**
- Supply Chain Management: An International Journal
- Technology Analysis and Strategic Management
- The Amfiteatru Economic Journal
- The International Journal of Logistics Management
- The Journal of Business and Industrial Marketing
- The Journal of Information Technology
- The Journal of Supply Chain Management
- Thunderbird International Business Review
- World Customs Journal

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Other Possible Journals

- Industrial and Corporate Change
- International Journal of the Economics of Business
- Journal of Economics and Business
- Journal of Economics and Management Strategy
- Journal of Risk and Uncertainty
- Journal of World Trade
- Managerial and Decision Economics
- Quarterly Journal of Business and Economics
- Economics of Innovation and New Technology
- Entrepreneurship and Regional Development
- Industry and Innovation

- International Journal of Entrepreneurial Behaviour
- International Journal of Entrepreneurship and Innovation
- Advances in Strategic Management
- American Business Review
- Business Strategy Review
- European Business Review
- European Management Review
- Journal of General Management
- Journal of Managerial Issues
- Journal of World Business
- Scandinavian Journal of Management
- Strategic Change
- Journal of Change Management
- Advances in International Marketing
- Knowledge and Process Management
- Environment and Planning A

Additional topics related to services and to Colombia

- Tourism Economics
- Annals of Tourism Research
- Journal of Leisure Research

- Journal of Travel Research
- Tourism Management

Databases identified

- Business Source Premier
- EBSCO
- Emerald
- FT Intelligence
- Google Scholar
- IEEE Xplore

- JSTOR
- ProQuest – Dissertations & Thesis
- Science Direct
- Web of Knowledge – WoK
- Web of Science

Searching strings

University of Glasgow | Business School

Semi-structured interview guide

Title of Project: Service Innovation within Supply Networks

Name of Researcher: Mr. Javier YANEZ

With people form a focal firm within the supply network identify service innovations that fits the research purpose, based on those identify the people to start with and from the research waves will start to propagate until theoretical saturation is reached.

⇒ Interview guide – key topics (questions)

- Ask every interviewee in relation to a particular service innovation to:
  - Map the supply network involved
  - How was s/he involved in the service innovation process
  - Why he/she classifies it as an innovation
  - What have been the benefits and who were benefit from/with that particular service innovation
  - If present, how value co-creation takes place
  - Which issues s/he thinks help and which ones constraint the service innovation process
  - Does he/she share the experiences coming out of the service innovation process with others, how is it done
- What other innovations in service he/she identifies within its network
- In relation to the supply network ask he/she to explain how the supply network
  - was created / developed
  - operates
  - is assessed

27 April 2010

The University of Glasgow, charity number SC004401

Consent Form

Title of Project: **Service Innovation within Supply Networks**

Name of Researcher: **Mr. Javier YANEZ**

1. I confirm that I have read and understand the Plain Language Statement for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

3. I consent to interviews being audio-taped and that in any publications arising from the research I will be referred to by pseudonym.

4. I agree / do not agree (delete as applicable) to take part in the above study.

Name of Participant	Date	Signature

Researcher	Date	Signature

1 for subject; 1 for researcher

27 April 2010

University of Glasgow | Business School

The University of Glasgow, charity number SC004401

Letter of Invitation to participate in the research

Title of Project: **Service Innovation within Supply Networks**

Dear Mr/Ms Xxxx,

Currently I am doing my PhD research at the University of Glasgow, Business School – Department of Management. I have witnessed the pace that services are taking in the global economy, the turbulent business environment in which everyone is working in and, the possible influence that supply networks have to both innovate and gain competitiveness. Therefore, I would be very grateful if you would be willing to share your experiences, observations, opinions and thoughts around a particular service innovation process in which you were directly involved at any time in the period July 2007-July 2010. I realize how tight your diary could be, but I would appreciate very much if we could agree for an interview that will last about 45 minutes.

My research is focused on three complementary issues: understanding the innovation processes associated to service(s) within supply networks, exploring service innovation at the network level, and studying if unstable business conditions have effects on the service innovation process. Your insights will be a valuable input to my modest contribution to the fields of supply chain management and service innovation, both at the theoretical level and for the management practitioners. I do believe that a better understanding of how service innovation takes place at the network level could help members of a network to approach in a systematic way the co-creation of value for the benefit of the network.

I do not anticipate any risks associated with your participation in this research by means of the interview you agree to give; however, I assure that your responses will not be identified with you personally, will be held strictly confident, use only for the purpose of my PhD work and in case of quoting one of your statements you will be referred to by pseudonym.

I trust you will support this effort and I will be very thankful if you decide to do so.

If you have any question or doubt about being part of this research, please do not hesitate in contacting me so I could clarify any point.

Truly yours,

Mr. Javier Yanez, BSc, MSc
Doctoral Researcher in Business and Management
Faculty of Law, Business and Social Sciences
Department of Management
Gilbert Scott Building, West Quad
University of Glasgow
Glasgow, G12 8QQ, Scotland, UK
j.yanez.1@research.gla.ac.uk

27 April 2010

Appendix 5 – List of Participants

Inter-view	Date and Hour	Type	Interviewee Location	Gender	Company	Position	Role in SI	Name Interviewee
						STAGE 1 – Exploration		
1	Aug 5, 2010 9:50 to 10:40	Face to Face	Town Scotland	Male	IZAR	Service Consultant	Facilitator	Carlos Cuellar
1	Aug 5, 2010 9:50 to 10:40	Face to Face	Town Scotland	Male	IZAR	Operations and Strategy Manager Global Process Services	Facilitator	Francisco Ruiz
2	Sep 1, 2010 15:00 to 16:05	Face to Face	City Scotland	Male	Wasat Bank	Marketing Consultant	Promoter	Daniel Silva
2	Sep 1, 2010 15:00 to 16:05	Face to Face	City Scotland	Male	Wasat Bank	Strategic Partnerships Manager Marketing Manager	Main Buyer Contact	Sergio Triviño
3	Sep 9, 2010 10:00 to 10:50	Face to Face	Town Scotland	Male	IZAR Global Services	Support Leader for Data Migration	Link with City Council Initiatives	Rito Sanchí
4	Sep 9, 2010 11:00 to 11:55	Face to Face	Town Scotland	Male	IZAR Global Services	Procurement Outsourcing Manager	Facilatator	Luis Lucas
5	Oct 13, 2010 10:00 to 10:40	Phone	City France	Male	Arkab	Sourcing Director	Instigator	Andrés Correa
6	Nov 3, 2010 10:00 to 10:45	Phone	City England	Male	Merak	Chief Technologist Portfolio Research & Development	Facilitator	César Mora

Appendix 5 – List of Participants

Inter-view	Date and Hour	Type	Interviewee Location	Gender	Company	Position	Role in SI	Name Interviewee
					STAGE 2 - In-depth Research			
7	Nov 23, 2010 11:15 to 11:45	Phone	City Scotland	Male	University of Shaula	Retired Professor	First contact with Wasat	Dario Vivas
8	Nov 24, 2010 10:30 to 11:15	Face to Face	City Scotland	Male	University of Shaula	Professor	Supplier's supplier	Gabriel Merino
9	Nov 29, 2010 12:00 to 13:00	Face to Face	City Scotland	Female	University of Shaula	Executive Development Programmes Manager	Operational links with clients	Berta Lozano
10	Nov 30, 2010 16:00 to 16:30	Phone	City Scotland	Male	University of Shaula	Former Director	Initial Promoter	Antonio León
11	Dec 1, 2010 11:00 to 11:25	Face to Face	City Scotland	Female	University of Shaula	Research Fellow	Supplier's supplier	María Ferrer
12	Dec 2, 2010 11:00 to 11:25	Face to Face	City Scotland	Male	University of Shaula	Professor	Supplier's supplier	Marcos Leal
13	Dec 2, 2010 15:00 to 15:20	Face to Face	City Scotland	Male	University of Shaula	Professor	Shaula's students opportunities	David Iglesias
14	Dec 3, 2010 13:00 to 14:00	Face to Face	City Scotland	Male	University of Shaula	Executive Education Director	Supplier main contact	Martin Ramírez
15	Dec 6, 2010 13:00 to 13:25	Face to Face	City Scotland	Female	Wasat Bank	Learning & Performance Manager HHRR	New Opportunities Searcher	Sonia Ordoñez
16	Dec 7, 2010 11:15 to 11:45	Phone	City Scotland	Male	Becrux Partnership	Account Director	Bank's Supplier	Ricardo Aguilar
17	Dec 8, 2010 10:30 to 11:20	Phone	City Scotland	Male	University of Shaula	Research Fellow	Supplier's supplier	Miguel Martínez
18	Dec 8, 2010 14:30 to 14:55	Face to Face	City Scotland	Male	Wasat Bank	Director Corporate Banking Financial Services	Customers' Link	Julio Yepes

Appendix 5 – List of Participants

Inter-view	Date and Hour	Type	Interviewee Location	Gender	Company	Position	Role in SI	Name Interviewee
19	Dec 9, 2010 09:30 to 10:40	Face to Face	Town Scotland	Male	Wasat Bank	Managing Partner Financial Services	Customers' Link	Guillermo Medina
20	Dec 10, 2010 09:30 to 10:00	Face to Face	City Scotland	Male	University of Shaula	Professor	Supplier's supplier	Pedro Bueno
21	Dec 13, 2010 14:00 to 14:40	Face to Face	City Scotland	Male	University of Shaula	Executive Education Director	Supplier main contact	Martin Ramírez
22	Dec 13, 2010 15:00 to 15:35	Phone	City England	Male	Zaurak Bank	Senior Marketing Consultant	Bank's Sister Company	Germán Falla
23	Dec 16, 2010 09:00 to 10:00	Phone	City England	Male	University of Sure	Corporate Development Director	Bank's Supplier	Freddy Rosas
23	Dec 16, 2010 09:00 to 10:00	Phone	City England	Female	University of Sure	Corporate Relations and Projects Manager	Bank's Supplier	Sara Martínez
24	Dec 16, 2010 11:00 to 12:05	Face to Face	City Scotland	Male	Wasat Bank	Marketing Consultant	Promoter	Daniel Silva
24	Dec 16, 2010 11:00 to 12:05	Face to Face	City Scotland	Male	Wasat Bank	Strategic Partnerships Manager Marketing Manager	Main Buyer Contact	Sergio Triviño
25	Jan 7, 2011 11:15 to 12:45	Face to Face	City Scotland	Male	University of Shaula	Professor	Supplier's supplier	Patricio Romero
26	Jan 17, 2011 11:30 to 11:55	Face to Face	City Scotland	Female	University of Shaula	Honorary Professor	Supplier's supplier	Sofía Segovia
27	Jan 20, 2011 13:00 to 13:30	Phone	City England	Male	Wasat and Zaurak	Divisional Director	Initial Bank's Promoter	Cristobal Franco
28	Feb 1, 2011 11:40 to 12:20	Face to Face	City Scotland	Male	Pollux Systems	CEO	Bank's customer	Roberto Sanclemente
29	Feb 2, 2011 08:30 to 08:50	Phone	Town Scotland	Male	Mira Farms	CEO	Bank's customer	Juan Trujillo
30	Feb 9, 2011 09:30 to 10:00	Phone	City Scotland	Male	Avior Helicopters	CEO	Bank's customer	Josué Fernández

Appendix 5 – List of Participants

Inter-view	Date and Hour	Type	Interviewee Location	Gender	Company	Position	Role in SI	Name Interviewee
31	Mar 9, 2011 11:30 to 12:00	Phone	City England	Male	University of Sure	Professor	Supplier's supplier	Hugo Carreras
32	Mar 23, 2011 10:00 to 10:15	Phone	City Scotland	Male	Wasat Bank	Strategic Partnerships Manager Marketing Manager	Main Buyer Contact	Sergio Triviño
33	Mar 25, 2011 14:00 to 15:00	Phone	City Scotland	Male	Person	Contracts Manager	Bank's employee link	Diego Pérez
34	Apr 6, 2011 10:00 to 10:20	Phone	City Scotland	Male	Wasat Bank	Business Development Partner	Bank's link to customers	Manuel Cruz
35	Apr 8, 2011 09:30 to 10:10	Phone	City England	Female	Wasat Bank	Head of ifs Marketing	Initially responsible for proposal	Diana Caicedo
36	Apr 8, 2011 10:15 to 10:45	Phone	Town Scotland	Male	Errai Accountants	Managing Partner	Bank's customer	Silvano Díaz
37	Apr 11, 2011 12:00 to 12:20	Phone	Town Scotland	Male	Nunki Ltd	Managing Director	Bank's customer	Samuel Esguerra
38	Apr 12, 2011 10:00 to 10:20	Phone	Town Scotland	Male	Rukbat Solicitors	Partner and Head of Private Client	Bank's customer	Darío López
39	May 16, 2011 15:15 to 16:00	Face to Face	City Scotland	Male	The Marquis' Bakery	CEO	Bank's customer	Marcos Gómez
40	May 20, 2011 11:40 to 12:15	Phone	City England	Female	Regional Acrab Bank Europe	Business Capability Manager Direct Banking	Call Centre Wasat	Diana Arias
41	Jun 8, 2011 11:40 to 12:15	Face to Face	City Scotland	Male	Shaula City Marketing Bureau	CEO	Supplier's partner	Tomás Serna
42	Aug 5, 2011 15:30 to 15:50	Phone	Town Scotland	Male	Rodnim	Director	Former Senior Partner Wasat	Federico Jerez

Inter-view	Date and Hour	Type	Interviewee Location	Gender	Company	Position	Role in SI	Name Interviewee
	STAGE 3 – Validation							
43	Jan 6, 2012 14:00 to 14:30	Phone	City England	Male	University of Sure	Corporate Development Director	Bank's Supplier	Freddy Rosas
	Jan 6, 2012 14:00 to 14:30	Phone	City England	Female	University of Sure	Corporate Relations and Projects Manager	Bank's Supplier	Sara Martínez
44	Jan 6, 2012 16:00 to 16:30	Phone	City Scotland	Male	University of Shaula	Professor	Supplier's supplier	Gabriel Merino
45	Jan 12, 2012 15:00 to 15:25	Phone	City Scotland	Male	University of Shaula	Executive Education Director	Supplier main contact	Martin Ramírez
46	Jan 12, 2012 16:00 to 16:25	Phone	City Scotland	Male	University of Shaula	Research Fellow	Supplier's supplier	Miguel Martínez
47	Jan 13, 2012 16:00 to 16:30	Phone	Town Scotland	Male	IZAR	Operations and Strategy Manager Global Process Services	Facilitator	Francisco Ruiz
48	Jan 20, 2012 16:00 to 16:40	Phone	City Scotland	Male	Wasat Bank	Former Marketing Consultant	Promoter	Daniel Silva

Questions for people "within" Wasat Bank (A)

BUYER

CONTEXT
- When was your first contact with the WB/UShaula initiative?
- How did you heard about the initiative? How was it described to you? Who was the one talking to you about the initiative?
- What has been your involvement over time?
  - How is the decision making process, for this kind of initiatives, within the bank?
  - **What changes in the structures for decision making have you seen over time?**

PERCEPTION
  - **What is your current understanding of the initiative?**
- Over time, from your perspective or engagement: what has shaped the initiative?
  - Has the initiative evolved to become a key asset for the Bank?

Triggers
  - What do you think triggered the initiative? Why?
- What has helped to keep the programme running? Why?
- What are the current drivers? What is "pushing" change? Do you see innovation?

Barriers
  - From your point of view what difficulties or barriers do you consider the initiative has faced?

Outcomes
  - What value have you perceived from the programme, for you, for your colleagues, for the university, for the bank, for Wasat's clients, for the participants in the initiative in general?
- Do you have any proof / measurement of the value mentioned?

- Do you consider that what was developed between the Bank and the University was an innovation? Why? How were you involved in the innovation process?
- Have you shared or developed the experiences coming out of the initiative or process with others? In what ways?
- Have you witnessed or been aware of other initiatives as a result of the interactions between different stakeholders?

- Some people have mentioned that it seems that there are difficulties, on the bank side to get participants for every cohort. What do you think about that statement?

- What do you know about the Zaurak – Sure initiative? Last time I got the impression that for you it was not as successful as the Wasat – Shaula one. Why? Support?

- Something new from the Shaula's Chamber of Commerce issue you raised in our last meeting?

- Is there any particular process that you would like me to use in order to contact some of the clients and referral partners to interview them (between 12 and 15)? Any particular procedure to contact them for a survey?

Questions for people "within" Wasat Bank (B)
BUYER

<u>CONTEXT</u>
- When was your first contact with the WB/UShaula initiative?
- How did you heard about the initiative? How was it described to you? Who was the one talking to you about the initiative?
- What has been your involvement over time?
  - How is the decision making process, for this kind of initiatives, within the bank?
  - **What changes in the structures for decision making have you seen over time?**

<u>PERCEPTION</u>
  - **What is your current understanding of the initiative?**
- Over time, from your perspective or engagement: what has shaped the initiative?
  - Has the initiative evolved to become a key asset for the Bank?

Triggers
  - What do you think triggered the initiative? Why?
- What has helped to keep the programme running? Why?
- What are the current drivers? What is "pushing" change? Do you see innovation?

Barriers
  - From your point of view what difficulties or barriers do you consider the initiative has faced?

Outcomes
  - What value have you perceived from the programme, for you, for your colleagues, for the university, for the bank, for Wasat's clients, for the participants in the initiative in general?
  - What kind of reactions or feedback have you received from your members?
- Do you have any proof / measurement of the value mentioned?

- How do you present the initiative to your members?
- Do you consider that what was developed between the Bank and the University was an innovation? Why? How were you involved in the innovation process?
- Have you shared or developed the experiences coming out of the initiative or process with others? In what ways?
- Have you witnessed or been aware of other initiatives as a result of the interactions between different stakeholders?
- Are you aware of new business opportunities or business initiatives among your members who participated in the initiative?

- Some people have mentioned that it seems that there are difficulties, on the bank side to get participants for every cohort. What do you think about that statement?

Questions for people "within" Wasat Bank (C)
BUYER

<u>CONTEXT</u>
- I was told you were the one who started the whole process towards the current relationship between WB and the UoShaula. Would you please tell me how was that? When was your first contact with the WB/UShaula initiative?
- How did you heard about the initiative? How was it described to you? Who was the one talking to you about the initiative?
- Since then, what has been your involvement over time?
  - How is the decision making process, for this kind of initiatives, within the bank?
  - **What changes in the structures for decision making have you seen over time?**

<u>PERCEPTION</u>
  - **What is your current understanding of the initiative?**
- Over time, from your perspective, what has shaped the initiative?
  - Has the initiative evolved to become a key asset for the Bank?
- How do you think, the changes in the marketing area at the bank could affect or change the relationship or the initiative?

Triggers
  - What do you think triggered the initiative? Why?
- What has helped to keep the programme running? Why?
- What are the current drivers? What is "pushing" change?
- Looking backwards, do you think innovation was present in the process that lead to the connecting for growth programme? Do you see innovation?

Barriers
  - From your point of view what difficulties or barriers do you consider the initiative has faced? Or faced at the time when you were closer to it?

Outcomes
  - What value have you perceived from the programme, or from the WB – UoShaula relationship, for you?
  - Are you aware of any value that has been received by colleagues, by the bank, or by Wasat's clients?

  - What kind of reactions or feedback have you received from your members?
- Do you have any proof / measurement of the value mentioned?

- How do you present the initiative to your members?
- Do you consider that what was developed between the Bank and the University was an innovation? Why? How were you involved in the innovation process?
- Have you shared or developed the experiences coming out of the initiative or process with others? In what ways?
- Have you witnessed or been aware of other initiatives as a result of the interactions between different stakeholders?
- Are you aware of new business opportunities or business initiatives among your members who participated in the initiative?

Questions for members Wasat Bank

BUYER'S CUSTOMERS

<u>CONTEXT</u>
- When was your first contact with the WB/UShaula initiative?
- How did you hear about the initiative? How was it described to you? Who was the one talking to you about the initiative?
- Did you have any previous contact / relationship with the UShaula?
- Before attending the programme, what was your perception about the UShaula and the BS in particular in relation to possibilities for engagement with your business?
- What has been your involvement over time?
- Would you please describe the business environment when you decided to attend the programme?

<u>PERCEPTION</u>
- What is your current understanding of the initiative?
- Over time, from your perspective or engagement: what has shaped the initiative?

Triggers
- Why did you decide to accept the invitation from the bank to participate in the programme? What were your expectations?
- What has helped to keep the programme running? Why?
- What do you think were the triggers to lunch the initiative between WB/UShaula?
- What are the current drivers? What is "pushing" change? Do you see innovation?

Barriers
- From your point of view what difficulties or barriers do you consider the initiative has faced?

Outcomes
- What value have you perceived from the programme, for you, for your business, for others you engage with, for the university, for the bank, for the participants in the initiative in general?
- After attending the programme, how have evolved your business relations with the bank, with the university (if any) and with other participants?
- Have you shared or developed the experiences coming out of the initiative or process with others? In what ways?
- Have you witnessed or been aware of business initiatives as a result of the interactions you had with other participants?
- Do you have any proof / measurement of the value mentioned?

- Did your business network change or was affected somehow by your participation in the programme? If so, how?
- Do you consider that what was developed between the Bank and the University was an innovation? Why?

- Some people have mentioned that it seems that there are difficulties, on the bank side to get participants for every cohort. What do you think about that statement?

- Do you know about similar programmes or initiatives developed by other banks?

Questions for people "within" UoShaula Business School – WB/UoShaula initiative

SUPPLIER

To every one:
Set of questions to understand the context, in time and space, of the interviewee, as well as his/her general perception of the programme.

CONTEXT
- When was your first contact with the WB/UShaula initiative?
- How did you heard about the initiative? How was it described to you? Who was the one talking to you about particular aspects of the initiative?
- What has been your involvement over time?
- Who were the people involved in the process? Do you recall their names or positions? What people have you met from the bank, that you believe are involved in the decision making process for this initiative?
- What changes in the structures for decision making have you seen over time?

PERCEPTION
- Why do you think most of the other people I have interviewed have given me your name when mentioning people involved, somehow, in the delivery and evolving process of the initiative / the programme?
- What is your current understanding of the initiative? How do you think the initiative will be in the near future?
- Over time, from your perspective or engagement: what has shaped the initiative?
- What were your expectations when you first decided to get involved in the initiative? How those expectations have changed or evolved?
- How has the initiative evolved in terms of its value for the school's activities, development or strategies?
- Thinking in people rather than firms or businesses, how would you describe a network fostered by this initiative?
- Who do you consider advocates for the initiative, both in the bank and in the university?

To directorate / lecturer:

Given that, to a certain extent, engagement with this initiative was and is 'voluntary':
- What interested you about the initiative / the programme?
- Did you prepare specially for this – any differences to the norm?
- What did the stakeholders bring to the session – pre / during / post?
- What value did you derive?
- Has this been sustained?

Triggers
- What triggered the initiative? Why?
- Would you please describe how the initiative, the programme, the whole relationship between WB and the UoShaula was first developed?
- What has helped to keep the programme running? Why?
- How has the initiative evolved or developed? Did the triggers / drivers change?

Barriers
- What difficulties have you faced in the process of managing the programme, the initiative, the relationship? If today you would have the opportunity of doing "the same", would you do it? What would you change? Why?

Outcomes

- What has been the main outcome of the programme for you? Why?
- What "new" projects, initiatives have been, somehow, promoted by the interactions among people / firms related to the initiative?
- What value have you perceived from the programme, for you, for your colleagues, for the university or department, for WB, for WB's clients, for the participants in the programme in general?
- Do you have any proof / measurement of the value mentioned?
- While you were the MBA director, how the WB-UoShaula initiative was used?

- Have you shared or developed the experiences coming out of the initiative or process with others? In what ways?
- Have you witnessed or been aware of other initiatives as a result of the interactions between different stakeholders of the initiative?
- Do you consider that what was developed between the University and the Bank was an innovation? Why? How were you involved in the innovation process?

Questions for people "within" Sure

OTHER ACTOR(s) IN THE NETWORK

- I understand Zaurak Bank has been running an initiative with the University of Sure, would you please describe it? When did it start? What has been your involvement?
- Hugo, for how long have you been part of Sure Business School?

CONTEXT

- When was your first contact with the ZB/USure initiative?
- How did you heard about the initiative? How was it described to you? Who was the one talking to you about the initiative?
- Have you been involved with the ZB/USure initiative over time?
- How is the decision making process, for this kind of initiatives, within the bank?
- What changes in the structures for decision making have you seen over time?

PERCEPTION

- What is your current understanding of the ZB/USure initiative?
- Over time, from your perspective or engagement: what has shaped the initiative?
- Have you seen differences depending on who are the people in charge of the initiative?
- What were your expectations when you first decided to get involved in the initiative? How those expectations have changed or evolved?
- Has the initiative evolved to become a key asset for the Sure?

Triggers

- What do you think triggered the initiative? Why?
- Would you please describe how the initiative, the programme, the relationship was first developed?
- What has helped to keep the programme running? Why?
- How has the initiative evolved or developed? Did the triggers / drivers change?

Barriers

- From your point of view what difficulties or barriers do you consider the initiative has faced?
- If the initiative was on your hands, what would you change? Why?

Outcomes

- What has been the main outcome of the initiative? Why?
- What value have you perceived from the programme, for you, for your colleagues, for the university, for the bank, for Zaurak's clients, for the participants in the initiative in general?
- Do you have any proof / measurement of the value mentioned?

- Do you consider that what was developed between the Bank and the University was an innovation? Why? How were you involved in the innovation process?
- Have you shared or developed the experiences coming out of the initiative or process with others? In what ways?
- Have you witnessed or been aware of other initiatives as a result of the interactions between different stakeholders?
- What do you know about the WB/UShaula initiative? How does it influence the ZB/USure one?

University of Glasgow | Business School

Mr. Javier Yanez MSc.
Doctoral Researcher in Business and Management
Tel: +44 (0)141 330 2363 or j.yanez.1@research.gla.ac.uk

09 July 2010

Company A
Mr XYZ
Position
Address, United Kingdom

Re: Service Innovation: unleashing the genie in the box

Dear Mr. Y,

I am currently engaged in a doctoral research linked to services innovation at the University of Glasgow Business School. Along with my supervisors, Professors Paton and MacIntosh, we have identified your organisation as being both a leader and promoter within the services research arena. As such we would like to enlist your support in our endeavours.

As an Assistant Professor, Universidad de los Andes School of Management, in Bogota, with international experience, Wharton Business School and the Iacocca Institute in Pennsylvania, and the International Trade Centre in Geneva, I and the Glasgow team have witnessed the accelerating pace of servitisation within manufacturing and the growth of the solutions driven enterprise.

Of particular interest to myself is the role and impact that supply chains may have upon, especially in turbulent times, the service innovation processes and outcomes: linked, of course, to a sustainable competitive position/advantage.

After an extensive literature review, it seems to me that there are gaps in our understanding of how best to stimulate, exploit and embed service innovation: how do the 'actors' within a supply chain network interact to co-create value, indeed do they? Consequently, my research is focused on three complementary issues: understanding the innovation processes associated with service(s) within supply networks; examining service innovation at the network level; and, exploring if unstable business conditions impact upon the service innovation process.

Therefore, I would be very grateful if you can agree in having a 20 to 30 minutes meeting with me, at your earliest convenience. The purpose of the meeting will be to identify service innovations in the period July 2007 – July 2010, in which people from your company interacted with members of your supply network in order to "develop" service innovations. Based on the service innovation(s) selected, I would appreciate very much your help in introducing me to your colleagues or suppliers who I will contact to interview as initial "actors" involved in the innovation process. They, in turn, will introduce me to other members of the network till the point the whole picture is completed.

During the semi-structured interviews I would ask the interviewees to share experiences, observations, opinions and thoughts around the particular service innovation process in which they were directly involved at any time in the period July 2007-July 2010. Their insights will be a valuable input to my modest contribution to the fields of supply chain management and service innovation, both at the theoretical level and for management practitioners.

In return for your cooperation I will ensure that you receive an executive summary of my findings and recommendations. All contributors will remain anonymous as will all responses, data will remain confidential and will be held securely. All contributors will be given the opportunity to 'sign-off' on the validity and accuracy of any inputs prior to analysis.

I trust you will agree that this research is needed and will contribute to both the practitioner and academic understanding of service innovation. Your support would be most welcome and greatly appreciated.

If you have any questions, doubts or suggestions then please do not hesitate to contact me directly.

Yours sincerely,

Javier Yañez

Professor Robert A Paton
Director - Complex Services Innovation Research Network (CSIRN)
Tel: +44 (0)141 330 5037 or r.paton@mgt.gla.ac.uk

Node	Name			Sources	References
1	Service Innovation			41	134
2		Benefits to another		40	136
3		New ideas		40	127
4			Awareness	28	77
5			Previous experiences	32	74
6			Exploration	27	69
7			new to market	17	23
8			new to firm	13	18
9			Exploitation	11	15
10			new to industry	9	12
11		Limitations		27	79
12			Communications	18	38
13			Structure	9	25
14			Resources	7	20
15			Response to limits	9	15
16			Lack of	11	14
17			People	6	12
18			Policies	2	5
19			Business size and limits	3	4
20			Distance	2	2
21		Enablers		21	50
22			Involvement - engagement	14	23
23			Long term	14	20
24			Location	8	14
25			Business size as enabler	8	10

Node	Name			Sources	References
26			Response to enable	5	10.
27			Flexibility	6	8
28			Spend time together	5	6
29			Visibility	2	2
30			Forums	2	2
31		Business purpose		18	25
32			Expectations	14	22
33			Needs	16	20
34			Objectives	7	14
35			Follow ups	7	13
36			Outcomes	9	11
37		Relation of Power		5	23
38		Additional Example		5	17
39			New element	6	24
40		Whats to SI		9	16
41		Changes		2	13
42			Context based	4	6
43			Time	1	4
44			Space	1	4
45			Actor	2	4
46			Roles change	1	3
47			Unpredictable	1	1
48			Negotiated	1	1
49		Hows to SI		8	10
50	SDL concepts			23	68

Node	Name	Sources	References
51	Collaboration	34	126.
52	Operant Resources	11	28
53	Co-creation	12	27
54	Integration	11	18
55	Operand Resources	3	9
56	GDL mind set	24	52
57	Tangible transactions	15	19
58	Discrete transactions	13	17
59	Add value	9	13
60	Direct Competition	5	5
61	Time Line	17	46
62	Environment	11	16
63	Business conditions	12	16
64	Instability or turbulence	5	9
65	Complexity in relationships	3	4
66	General concepts	12	16
67	Trust	19	56
68	Communication	22	43
69	Reputation	24	31
70	feedback	11	30
71	Positioning	17	26
72	Expectations	15	25
73	Branding	17	25
74	Measurements	13	23

Node	Name		Sources	References
75		Cost	13	26.
76		Performance	8	12
77		Profit	10	10
78		Effectiveness	8	10
79		Customer Satisfaction	8	10
80		Returns	9	10
81		Savings	5	9
82		Investment	7	8
83		Accountability	2	2
84	Differentiation		14	19
85	Being Equals		6	16
86	Opportunism		13	15
87	Learning in General		10	12
88	Growth		8	8
89	Heterogeneity		7	7
90	Alignment		2	3
91	Control		3	3
92	Facilitate		1	1
93	Technology		6	14
94	Characteristics		1	3
95	Building blocks		5	8
96	Value		43	274
97		Value perceived	28	105
98		Relevance	18	48
99		Contacts	16	40

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Node	Name			Sources	References
100		Information		13	23
101		Ideas		10	22
102		Value judgement		5	13
103		Problem solving		1	2
104	Evolution of relationship			38	217
105		Whats to build		19	32
106		Time perception		20	29
107		Changing roles		10	27
108		Hows to build		15	25
109		Distribution of benefits		1	1
110	Evidences of Networking			42	160
111		No develop		5	6
112		Complexity		2	4
113	Dependence on individuals			33	128
114		Characteristics of those involved		17	39
115	Connectivity			17	33
116	Story			13	22
117		Starting point		34	101
118		Level		31	96
119			Network	30	95
120			Dyad	33	93
121			Triad	16	34
122			Roles	6	12
123			Move - Dynamic	5	8
124		Emphasis		16	26
125			Building relationship	26	79

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Node	Name			Sources	References
			s		s
126			Strengthening relationship	15	30
127			Learning Exp	10	13
128			Internal Politics	6	10
129			Change of thought	4	8
130			Social responsibility	3	3
131			Central coord	1	2
132			Iterative process	1	1
133			Change of focus	5	7
134			Boundaries	1	4
135		Chain disruption		7	12
136			Shake - turbulence	1	4
137	Asymmetric information			2	2
138	Obvious			1	1

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December 2011

Re: Research Project - Service Innovation within Supply Networks

Dear Participant,

Thank you very much for participating in this research on service innovation and for your time when answering the survey sent you two weeks ago. Most participants, based on the survey, prefer what can be called an "off-line" interaction to give their comments to the findings. Consequently, in the next paragraphs you will see the research purpose and process, some background, main findings and the topics in which I would appreciate your comments.

Research purpose
Investigate how and why a service innovation had taken place within a supply network.

Research process
- Phase I
  - 5 focal firms approached to explore interest in participating in the research
  - 8 people from 4 different supply networks interviewed
  - Interviews and documents analysed to identify potential service innovations and judge feasibility for the research
- Phase II
  - A service innovation and a supply network selected to develop an inductive study
  - 35 people interviewed including buyer, suppliers, competitors, partners stories
  - 35 interviews and over 150 documents analysed at the network level
  - Findings structured in a service innovation process
- Phase III
  - Participants comment on findings based on their own experiences

Background
Within a supply network, the minimum unit of analysis is the triad. The interactions amongst the three actors of a triad are often unbalanced. For example, in manufacturing usually the loop is not closed, while in services a buyer's customer may end not be directly interfacing with the buyer due to outsourcing.

Figure 1
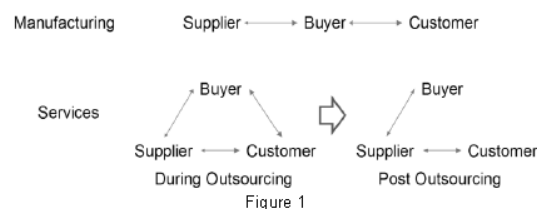
Main Findings
Considering one triad within a supply network, the following was observed.
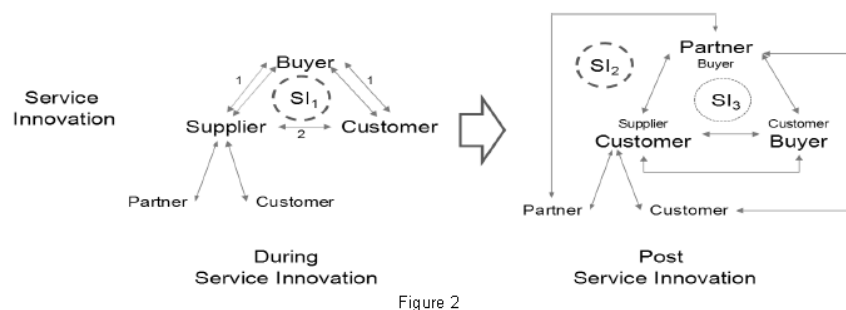
Figure 2

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1. Interactions both at the dyad (one-to-one) and the triad were, generally speaking, balanced and simultaneously bidirectional and multidirectional.
2. Although within each firm (actor) a main contact (key person) was identified, the interactions take place at multiple levels at the same time and within the same space.
3. The service innovation is co-created through interactions characterised by multiple constructive dialogues based on trust, sense of being equals and the expectation of benefit as a consequence of others be benefited before.
4. The service innovation may trigger:
    a. Changes in the roles the actors' play. The figure presents an example in which the relationship supplier-customer although is kept, a new relationship emerges where the customer now acts as buyer and the supplier as customer.
    b. New relationships and interactions exploring and exploiting new business opportunities. From the figure, the buyer partners with a supplier's partner and among the three, another service innovation is triggered; and a supplier's customer becomes a direct customer to the buyer.
    c. Non-synchronic events / interactions / relationships among actors who were not directly involved in the "initial" service innovation.
5. Actors involved in the service innovation process integrate resources to co-create value rather than just exploiting other's resources for their exclusive benefit.

Topics for your Comments
1. Do the findings relate to what you have experienced and defined as a service innovation? Why?
2. Looking back on the interactions between people and/or firms involved in a service innovation, would you say those were balanced in the sense that none of the parties involved was dominating? Any example?
3. Would you agree that the benefits derived from a service innovation transcended those directly involved, and distributed value into the system / the supply network? Why?
4. Is there any additional characteristic to the relationships fostering a service innovation, you can think about, missing from the three mentioned (trust, being equals, indirect benefits expected)? Which?
5. The example showed a supplier-buyer-customer triad. What other triad within your service supply network have you seen fostering a service innovation?

Thanks in advance for your comments. I would appreciate if they are as they are. No elaboration is expected. Please just give up 5 to 10 minutes for each topic. As with the interviews, all the answers will be anonymised.

Truly yours,

Mr. Javier Yañez

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Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	2	8	9	10
Networks	¶110: And we were trying to think... I guess you could call that co-creation. It wasn't just about the benefit to us as a bank, for our customers to come and get a course that was delivered from academics.	¶193: there was a lot of, I mean a lot of interaction with the client and, and initially the guy who headed up the programme from the Wasat's perspective, erm, [draws breath] forgotten his name, nice guy, Irish guy, erm, there was, he sat through nearly all of the courses, he, erm, and he had a, you know, constantly feeding back what was working, what wasn't working, er, and so on and so forth. So there was, er, in the, both in the initial design of the programme about what was going to be relevant - potentially relevant - and in the early stages of the programme we had a lot of interaction with the client,	¶41: whereas on the Wasat Bank course, it's senior business banking partners and usually the clients that they bring are managing directors or they own their own businesses, so for themselves they're quite important and for the bank they're quite important, so we really treat them, we go out of our way to treat them, to roll out the red carpet for them.	¶232: it was a good example of how a university and an organisation with a large, a large business client base could work together to deliver value to both parties as well as to, as well as to client organisations.

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	2	8	9	10
Networks	¶112: The bank has introduced you to us, but we may take that relationship forward, and that's what we granted the university as well,	¶201: The business development managers there basically to show that they were interested and understood the problems of the client, so it was a sales exercise for them as well as the learning.	¶77: They see the value in this external relationship that the university has.	
Networks	¶114: So the customers like us better, because we've just paid for a course that they have been delivered. They have taken some form of strategy or business acumen away with them after two days, templates that they can use in their business, and they've sharpened their saw in essence. They're not headlong in their business every day. They've stepped back and went, right, let's look at the landscape, so they think we're better.			

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	2	8	9	10
	¶120: the third one then, was what we call referral partners. So these are your solicitors, accountants…			
Networks	¶122: SERGIO Professional services [overtalking].			
	¶124: DANIEL You know, anyone who introduced business to the bank.			
Networks	¶224: And the relationship deepened. Take that a stage further, we now bank the City marketing Bureau, so they were with, I believe, Bank of Norte before, didn't really like the service they were being offered by them.			

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	2	8	9	10
Networks	¶228: They do alarm systems, um, the lady is Sandra Ruiz… is her name. She's the Managing Director. They're a family business, have been around a long while. We brought them on Linking and Development, and they were our relationship. We introduced them to the university and then we stepped back. And the university and our customer did some business together.			
Networks	¶234: So the university and Pollux worked together to deliver a strategy or some form of consultancy that Pollux could use, and we just stepped back.			

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	2	8	9	10
Networks	¶332: Rodolfo Madrid has put down a proposal to run a two day strategy workshop. But instead of just having individuals from a firm, what it will try and do is have, say, one or two people from the… a firm… have a fewer number of businesses in the room, but maybe have a couple of people from that, a couple of directors from a firm, um, a couple of senior decision-makers. So what they'd do is, they'll just focus two days on strategy, uh, but fewer… fewer people in the room, um, they'll contact… Rodolfo… Rodolfo will contact the firms before the course so that they can actually tailor the delivery to the individual firms in the room. ¶396: we have a cohort of graduate MBA's who finish every year.			

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	2	8	9	10
Networks	¶398: They still need a project. They need something to, you know, cut their teeth on if you like, consultancy, whatever you want to call it. So the last two years, we have supported the university with their cohorts to come into the bank.			
Networks	¶506: Sometimes we do this, we take them all offsite, and we explain to them our next strategy; where we're going to, and what part they can play in that. Uh, and we did introduce Shaula University and University of Sure, and they were quite thankful for that, because they maybe hadn't met their counterparts etcetera. I… I think they had promised at one point, look, we may do something together and it… we never really… that's the only bit where a different relationship would've been quite useful. We didn't really pursue that much further, um, and it's maybe a bit of a shame, because I think that there could've been something there as well.			

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	2	8	9	10
Networks	¶648: because some banks did do that three, four years ago, and they made a big deal out of seminars and things I guess. But we genuinely have never stopped that, where we get them in front of people to say, here's where we are. Here's where we're going to, and yes, I'm sure there are some awkward questions that are raised within that, but by and large, we have been pretty much unscathed with a lot of the stuff that's… that's come out.			

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	13	14	15	18
Networks	¶44: their overall kind of strategy is very heavily driven by the parent group, Regional Acrab	¶58: asked a previous participant to come back along and say, listen, I was on this programme six months ago or last year, or…and, these are some of the things that I took away from the programme, and here are the things that we've been doing in my business since then, so to try and get them to see some connection between the academic theory and somebody who they would see as more credible, and one of them, who had uh, taken material away, done something, got value from it,	¶131: You know, and the intention is that those that are attending, they try to keep them from… or try to keep them within industries who would collaborate, to allow that networking to happen as well.	¶78: I know there's one particular, it's a lady, Sandra Ruiz from Pollux Systems, came on the programme with me, and the guys at the business school have since had Sandra come back to address different groups at the university. And what she took from it, um, and how she's, you know, changed things at her business, um, you know, whether that's added… specifically added pounds to the bottom line, but it will hopefully help in running the business in whatever aspect she implements the learnings from the course or programme.

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	13	14	15	18
Networks		¶62: Here's how we've, you know, made the connections work for us.		¶158: Um, and also there will be like-minded people as yourselves, there will be opportunities for you to network, not only with the lecturers, the university, but also other businessmen, in other fields who may… um, who you may get to know and, um, ultimately do to business with.

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	13	14	15	18
Networks		¶66: for businesses where the bank wanted to really deepen their relationship with them, and in a way the bank is then becoming involved in the development of the strategy of their client, which I think is quite an unusual but quite a valuable thing for them to do,		¶238: No, nothing that's anecdotal. I can only speak about, you know, the good feedback we got from the Lady, Sandra Ruiz from Pollux, and I think she has used the university subsequently – so that's a positive thing for the programme. You know, at the time that was, um, a new account I'd just taken on from the Bank of Norte. Um, I knew that… I knew Sandra a little bit but this helped me get to know her a lot better, and for him to get to know the bank and really understand a bit more of what the bank was about in an essentially non-banking environment. And she was able to mix with, um, other customers and, you know, to say, you know, how did you get on with the bank? So if it's anecdotal, I don't know, but it's certainly sort of helped in that perspective.

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	13	14	15	18
Networks		¶104: You know, we've built relationships as a Business School to parts of the business community that we would not have reached without this partnership, and I think that's been really useful for us.		
Networks		¶112: in our MBA programme, we've introduced a consultancy week project, so about two thirds of the way through the academic year, once the students have done the core part of the programme, that is this strategy and marketing, finance and so on, they're divided up into groups of four or five students in each group, and paired with a business, and the business is asked to say to them on a Monday morning, look, I have this particular current problem.		

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	13	14	15	18
Networks		¶242: Uh, but the things that have occurred during the programme have definitely fed over into other areas of my work, so my MBA teaching, just finished in session 2010/11, has changed quite dramatically, based on the work that I've done on this Wasat programme.		

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	19	21	22	23
Networks	¶94: I took the managing partner of the largest accountancy firm in Rinshire who at that stage didn't bank with us either personally or business um and that was one of the key things that really cemented that relationship, we now bank him personally and we now, we now get all, all his new business referrals come in to us, whereas two, three, four years ago they would go to a competitor. So, that, it's part of a relationship building. So, I would see this programme as, I've talked about two younger guys stepping up to be MDs of very large businesses, I've talked about bringing prospects who we are keen to, to perhaps re-bank them from another competitor or um , and the connecting piece. And I've also talked about how you could build the relationships.	¶98: So there was, in one of the cohorts where I was doing the delivery, there was a guy who ran a butcher's shop, or chain of shops, in the North East, near Bardnee, and he was interested in, ah, online sell, sales of butcher meat, which was vacuum packed, and, you know, chilled. And he set up a conversation after the programme, with somebody else who had done online distribution of another type of product, and they had a conversation during the session, during the strategy session about how the distribution process worked, what the costs were, where the source of competitive advantage came from, how big the target market could be, and so on, based on two very different starting points, and I think they then had a meeting afterwards, to, to follow that up, so shared learning. There were cases where customer supplier relationships were struck in, in and around the programme, so businesses who hadn't met each other, who realised that they could do business with each other.	¶42: And, so we're, um, uh, Wasat Bank, Zaurak Bank are part of the Regional Acrab Bank Group, and one of the banks that Regional Acrab Banks took over was the Bank of Naos, and it really originates from there.	¶209: I think what's nice about this sort of arrangement is, as Sebastian says, the seminars. I think the workshops we provide to their retail clients... um, I'm not aware of other... with my limited knowledge of business schools, I'm not aware of business schools that are doing similar sort of things, but I'm sure it must go on.

QUOTES on NETWORKS NODE classified by interview and paragraph identification

19	21	22	23
Networks	¶130: the interesting model, where actually the person paying the bill is not the recipient. So the bank is saying, I'd like to understand my clients better, and deliver them something of value, and so I'll pay you, if you'll educate them.	62: Then, we, um, changed it to Linking and Development, and lastly, probably the last 12 months ago, New Ideas to Trade. I mean, the concepts pretty much remained the same all the way through, with the prime objectives of being really adding value to our business customers, by um, introducing them to, you know, cutting edge academic research and thinking, um, which will help them run a business there.	
Networks		¶64: but we couldn't get the benefit of a real regional connecting people, like minded businesses together. You know, if you've got someone in Tlecas, and they don't necessarily do that much business with somebody in Birma, so what we did is we actually made the course portable,	

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	19	21	22	23
Networks			¶68: So, you've got, and hopefully there's a few occasions it has actually promoted business. So, for example, when we took it up to Hamdur, um, one of the guys there was a carpet wholesaler, who came along as a customer to learn, and he ended up actually, um, creating some business opportunities for himself, and uh, supplying carpets to another of the customers who was on the course who had, I think it's an office premises. So, you just get the advantage that way of connecting people together.	
Networks			¶70: and you know, we used the Naos experience and our experience to uh, uh, see if Shaula University could actually do something similar	

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	19	21	22	23
Networks			¶90: one of those executives there, who had actually been involved in the programme in Naos, who actually brought the concept across with him.	
Networks			¶98: unique parts of that proposition was connecting people together and adding value, and so it was really relayed on that sort of basis, that it was the opportunity to, you know, we say that we do this, you know, connect people and add value, but by doing something with the university, then it's a real opportunity to actually demonstrate that we do do that.	

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	19	21	22	23
Networks			¶162: I think the initiative itself has been really positive, in terms of the…it's given us the evidence to back up our proposition, so when we're saying, you know, we want this to add value and connect people, then you know, by doing something like this, free of charge, then you know, we can go out and say, well, you know, we are different to other banks, and uh, all right, we can't do it for everybody, but uh, we're there, we're interested in your business, to our customers, and we want to work with you, in identifying opportunities to enhance your business.	

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	24	25	28	29
Networks	¶301: But it was interesting, one guy who came to the course in June he's from, I think he works up in the north. He's a business partner up, right at the top of Scotland and he brought along somebody from Sirius Harbour which is, you know, the main fishing area with the Ferry port and they're an LBN customer, you know. Brought them along because he'd been talking to them and he's now, he got to the point where he's pretty confident that the bag to draw down, you know, £8 million worth of deal banking transaction to fund this [unclear] and they weren't even a customer and it's not just because of the fact that he came on this course. But it's, it was great that he actually got in touch with me, you know, because I chased him a few times. But he finally and he got pretty hacked off with me contacting him. But when it got to the point when he actually had something to say he remembered or something had happened with that deal, you know. So we do have that kind of feedback which is how we judge our returns. So I can probably get you some of the PIR. I don't know about all of it but we can try to do that. Have a look at it and we'll see.	¶140: So the focus had changed quite dramatically from being one of staff development to one of relationship-building, for both parties – for all three parties, if you include their clients.	¶110: I think the bank recognised, the University recognised it was not... there's probably little point in discussing growth, more about, how do you adjust to this, this environment?	¶24: Um, gosh I can't remember anyway, it was just a, um, a course to try and see if we could build relationships, a stronger relationship with each other. It would be fair to say it that way, yes. And meet some other, other Wasat bank businesses and possibly interact with them and, um, find out a bit more about their businesses and hopefully relaxed, away from... away from your own business atmosphere. I think that was how it was sold to me anyway.

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	24	25	28	29
Networks		¶142: I think you would need to speak to Antonio but it was a different beast that came out. It was one about... ¶144: Initially, it was very centred on could the university provide training for your staff? And then it went to, could the university, with you, come up with something which offers benefits to both parties? So it did change very much under Antonio.	¶126: Um, is it the University? I, I think it probably depends, who's making the introduction here? The Bank. So it probably depends how the Bank, the Bank's representatives, presents what the university is offering. And if they understand their clients, and their clients' strengths and their weaknesses, then surely, they should be able to explain it to the clients in such a way that they're comfortable with the idea of, yeah I'll go for two days.	¶32: Yes, we've been in touch with a couple of other customers or clients that were on the course, um, one who now we have a trade relationship with; one of them now, which is good. Unfortunately one of the other ones we've kept in touch with here, he has gone into receivership, which was, um, sad news.

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	24	25	28	29
Networks		¶182: at the moment, there, the programmes have been designed so that essentially, the benefits are possibly implicit rather than explicit, you know. So you'll know the bank better, the bank'll know you better, you will network with other like-minded individuals. If something bubbles to the surface during this event and we can foster the relationship further, we will.	¶172: I don't think the course and the relationship with the Bank are interconnected, they don't appear to be.	¶50: Yes, yes more value definitely. I mean we may have... We may have made out with the course by the fact that we had, ah, two or... you know two or three days together. Again a relationship developed there. A business one, nothing else.
Networks		¶190: The Wasat survived the financial crisis relatively well and the programme development that we have seen coincided with a deliberate business strategy of theirs, which was to get closer to their corporate clients. They also didn't simply get closer but they promoted more joint ventures so it was a joint bank/client risk.	¶200: Only in the sense that some of the, the initiatives that we were developing while we were in the course, they were being developed at the time I attended the course, um, allowed us to get a, a, a different focus on it. There, there were new suppliers' product lines coming along, so it allowed us to think about that slightly differently. So it's not, maybe not a direct connection.	¶52: We're a supplier to him and he's a customer. He's actually in a waste... food waste disposal business. So we supply him with waste paper and waste food and he composts it.

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	24	25	28	29
Networks		¶304: I think one of them we got to the grant stage – I'm trying to think – but I'm not the one who saw that through because when they come in, I field them to the appropriate academics	¶204: Um, well I think that the, the exercise that we went through subsequently about our training department is probably one of them. Where we, we obviously, um, there was a potential opportunity that we were trying to see if we could take advantage of, um, which subsequently didn't happen. So that's probably, that's probably one of them.	¶62: I think it would be more of the development of relationships, with, ah, per people who were on the course, companies who were on the course and possibly with bank staff.

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	24	25	28	29
Networks		¶334: So empathy, benefits for me; um, as I've said before, that it's the expanding my own network. Um, I don't know how many trees I suppose you need to cut down until you find the perfect one so it's nice to bring, you know, a group, half dozen or so different companies in rather than go out and try and see six. So it gives me that sort of opportunity there.	¶216: So they do something, then they analyse what they've done, and then they change, based on the lessons they've learned. So they, they, they spend a huge... Security's a new market to them, they look at it as a billion-dollar opportunity. They look at it as one of the opportunities of having moved into the phone market, because Castor went from zero market share in the phone market to 25% of the IP phone market in the, in the space of a decade. They're looking at security, saying, we can do the same thing, principally based around video.	

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	24	25	28	29
Networks			¶226: Um, I understand from the Wasat, their thinking is, how do we add value to our package? How can we make something that, that adds value to our package? Um, equally, they'll be looking at it saying, how can we leverage a relationship with somewhere like the University of Shaula? So, that's a win-win for them, um, in theory there should be a win-win for their customers. Um, and they might find that their customers wouldn't ordinarily do something like that, but they're making it possible.	
Networks			¶242: Um, we're viewed in Castor-land at the moment as one of their top-five physical security integrators in Europe. We're probably viewed as their number one in mainland UK. So, are we at the top table? Certainly in Europe we are. The States is slightly different. Do we know the key people within physical security globally? Yes. We've, we've met them all, they know who we are, we're highly thought of.	

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	24	25	28	29
Networks			¶248: Um, the obvious one is, what's the follow up? So you go on the course once, now, does it all stop there? Or, or how does it, how does it move forward? Is there a way in which it could be moved forward, if people want to, in a, a way that adds some value for everyone? Is it a way of, of, ah, people learning, learning more? Because obviously in two days, we don't, we scratch the surface. So maybe there's something more that could be, be put on the table. Or indeed, be offered. It may be there's a charge for it, it may be it's part-subsidised by the Bank, I don't know. But is, is there, a bit where you go, because where we're trying to get to, we're trying to raise the overall performance of the Wasat Bank's customers. Wasat Bank wins a big watch, the customers win a big watch, and hopefully the University gets a big watch, because it's interacting with businesses, um, locally. So, that would be mine is, we've done a one-off, what do we do next?	

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	30	35	36	38
Networks	¶36: a... an opportunity to, um, er, network and, um, to, um, er, participate in some, um, in... in learning some key skills for... for business and a combination of things, in terms of, um, um, er, communication skills, so sales and marketing, um, um, er, almost like a, um, er, like a... like a... a business skills refresher.	¶19: which gave two things; one was the, the networking element, so that, um, obviously we, we got to know our customers that bit better, um, and the other thing was to actually say, these… because originally it was very much businesses that were looking to grow that kind of needed maybe a little bit of guidance and help and support, and obviously on the back of that, hopefully, we were hoping they were going to either borrow more or do more with us.	¶25: I do a lot of business improvement work with my clients, um, so you're always on the lookout for things that would complement what you're already doing. Um, so that itself, you know, it just fitted well, um, and Benito told me who else was going so I did just that. The two people he had invited to come along are both clients of my firm as well, so there was a good fit there, as well, just to get closer to these guys and find out a bit more about their business issues too.	¶197: DARIO I would say, yes, in a positive manner, in that it gave me the chance to, erm, meet other people, it gave me a chance to, er, reinforce my relationship with, er, the Wasat Bank and also some of the, the other guests from Dedun that they had invited along.

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

QUOTES on NETWORKS NODE classified by interview and paragraph identification

	30	35	36	38
Networks	¶290: Yes. I... it was actually, um, one of the participants, um, had a, er, um, a Scottish based, Highland based hotel. ¶294: JOSUÉ And, um, we... we had a dialogue about, er, um, er, us providing helicopter services to... to the hotel. ¶298: JOSUÉ And, er, after that dialogue it actually didn't... it didn't end up coming to anything, but it did... it did at least, er, create another... another contact for us.	¶21: so there was a, the business reason, business rationale, where hopefully we would get more from it, although there was no... that wasn't a condition or anything for people to attend. Um, and so, so that was one of the, one of the key things. And, obviously, the other thing was, um, building further ties and links in with the university as well, um, because I think the, the relationship with Wasat and the university across that period of time had been, um... you know, we'd done various, different little bits and pieces and those sorts of things together, but it was actually: how do we actually cement everything, um, together?	¶35: around that time, sparked a little bit of activity between the firms which has been good, and which continues – so yes, there's definitely a benefit there.	
Networks		¶67: we basically were looking at alternative ways of actually deepening relationships with customers,		

SELECTED QUOTES on NETWORKS NODE to find patterns and identify meanings given to "network"

	Interview 28	Interview 29	Interview 38
Networks	¶172: I don't think the course and the relationship with the Bank are interconnected, they don't appear to be.	¶24: Um, gosh I can't remember anyway, it was just a, um, a course to try and see if we could build relationships, a stronger relationship with each other. It would be fair to say it that way, yes. And meet some other, other Wasat bank businesses and possibly interact with them and, um, find out a bit more about their businesses and hopefully relaxed, away from... away from your own business atmosphere. I think that was how it was sold to me anyway	¶195: your business network change or was affected somehow by your participation in the programme?

¶197: DARIO I would say, yes, in a positive manner, in that it gave me the chance to, erm, meet other people, it gave me a chance to, er, reinforce my relationship with, er, the Wasat Bank and also some of the, the other guests from Dedun that they had invited along. |
| Networks | ¶226: Um, I understand from the Wasat, their thinking is, how do we add value to our package? How can we make something that, that adds value to our package? Um, equally, they'll be looking at it saying, how can we leverage a relationship with somewhere like the University of Shaula? So, that's a win-win for them, um, in theory there should be a win-win for their customers. Um, and they might find that their customers wouldn't ordinarily do something like that, but they're making it possible. | ¶32: Yes, we've been in touch with a couple of other customers or clients that were on the course, um, one who now we have a trade relationship with; one of them now, which is good. Unfortunately one of the other ones we've kept in touch with here, he has gone into receivership, which was, um, sad news. | |

SELECTED QUOTES on NETWORKS NODE to find patterns and identify meanings given to "network"

	Interview 28	Interview 29	Interview 38
Networks		¶50: Yes, yes more value definitely. I mean we may have... We may have made out with the course by the fact that we had, ah, two or... you know two or three days together. Again a relationship developed there. A business one, nothing else.	
Networks		¶62: I think it would be more of the development of relationships, with, ah, per people who were on the course, companies who were on the course and possibly with bank staff.	

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

SELECTED QUOTES on NETWORKS NODE to find patterns and identify meanings given to "network"

	Interview 2	Interview 14	Interview 21
Networks	¶112: The bank has introduced you to us, but we may take that relationship forward, and that's what we granted the university as well,	¶66: for businesses where the bank wanted to really deepen their relationship with them, and in a way the bank is then becoming involved in the development of the strategy of their client, which I think is quite an unusual but quite a valuable thing for them to do,	¶98: So there was, in one of the cohorts where I was doing the delivery, there was a guy who ran a butcher's shop, or chain of shops, in the North East, near Bardnee, and he was interested in, ah, online sell, sales of butcher meat, which was vacuum packed, and, you know, chilled. And he set up a conversation after the programme, with somebody else who had done online distribution of another type of product, and they had a conversation during the session, during the strategy session about how the distribution process worked, what the costs were, where the source of competitive advantage came from, how big the target market could be, and so on, based on two very different starting points, and I think they then had a meeting afterwards, to, to follow that up, so shared learning. There were cases where customer supplier relationships were struck in, in and around the programme, so businesses who hadn't met each other, who realised that they could do business with each other.

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

SELECTED QUOTES on NETWORKS NODE to find patterns and identify meanings given to "network"

	Interview 2	Interview 14	Interview 21
Networks	¶224: And the relationship deepened. Take that a stage further, we now bank the City marketing Bureau, so they were with, I believe, Bank of Norte before, didn't really like the service they were being offered by them.	¶104: You know, we've built relationships as a Business School to parts of the business community that we would not have reached without this partnership, and I think that's been really useful for us.	
Networks	¶228: They do alarm systems, um, the lady is Sandra Ruiz… is her name. She's the Managing Director. They're a family business, have been around a long while. We brought them on Linking and Development, and they were our relationship. We introduced them to the university and then we stepped back. And the university and our customer did some business together.		

SELECTED QUOTES on NETWORKS NODE to find patterns and identify meanings given to "network"

	Interview 2	Interview 14	Interview 21
Networks	¶506: Sometimes we do this, we take them all offsite, and we explain to them our next strategy; where we're going to, and what part they can play in that. Uh, and we did introduce University and University of Sure, and they were quite thankful for that, because they maybe hadn't met their counterparts etcetera. I... I think they had promised at one point, look, we may do something together and it... we never really... that's the only bit where a different relationship would've been quite useful. We didn't really pursue that much further, um, and it's maybe a bit of a shame, because I think that here could've been something there as well.		

SELECTED QUOTES on NETWORKS NODE to find patterns and identify meanings given to "network"

	Interview 25	Interview 19	Interview 9	Interview 35
Networks	¶140: So the focus had changed quite dramatically from being one of staff development to one of relationship-building, for both parties – for all three parties, if you include their clients.	¶94: I took the managing partner of the largest accountancy firm in Rinshire who at that stage didn't bank with us either personally or business um and that was one of the key things that really cemented that relationship, we now bank him personally and we now, we now get all, all his new business referrals come in to us, whereas two, three, four years ago they would go to a competitor. So, that, it's part of a relationship building. So, I would see this programme as, I've talked about two younger guys stepping up to be MDs of very large businesses, I've talked about bringing prospects who we are keen to, to perhaps re-bank them from another competitor or um , and the connecting piece. And I've also talked about how you could build the relationships.	¶77: They see the value in this external relationship that the university has.	¶21: so there was a, the business reason, business rationale, where hopefully we would get more from it, although there was no… that wasn't a condition or anything for people to attend. Um, and so, so that was one of the, one of the key things. And, obviously, the other thing was, um, building further ties and links in with the university as well, um, because I think the, the relationship with Wasat and the university across that period of time had been, um… you know, we'd done various, different little bits and pieces and those sorts of things together, but it was actually: how do we actually cement everything, um, together?

Appendix 10 – Samples of tables and matrix arrangements used for clustering, analysis and synthesis

SELECTED QUOTES on NETWORKS NODE to find patterns and identify meanings given to "network"

	Interview 25	Interview 19	Interview 9	Interview 35
Networks	¶182: at the moment, there, the programmes have been designed so that essentially, the benefits are possibly implicit rather than explicit, you know. So you'll know the bank better, the bank'll know you better, you will network with other like-minded individuals. If something bubbles to the surface during this event and we can foster the relationship further, we will.			¶67: we basically were looking at alternative ways of actually deepening relationships with customers,

List of quotes linking Networking and Dyads

<Internals\\Wasat interviews\\Phone\\Ricardo Aguilar> - § 1 reference coded [0.12% Coverage]

Reference 1 - 0.12% Coverage

provider

<Internals\\Wasat interviews\\Phone\\German Falla (Zaurak)> - § 1 reference coded [2.18% Coverage]

Reference 1 - 2.18% Coverage

I think the initiative itself has been really positive, in terms of the…it's given us the evidence to back up our proposition, so when we're saying, you know, we want this to add value and connect people, then you know, by doing something like this, free of charge, then you know, we can go out and say, well, you know, we are different to other banks, and uh, all right, we can't do it for everybody, but uh, we're there, we're interested in your business, to our customers, and we want to work with you, in identifying opportunities to enhance your business.

<Internals\\Wasat interviews\\Phone\\Diana Caicedo> - § 1 reference coded [1.60% Coverage]

Reference 1 - 1.60% Coverage

so there was a, the business reason, business rationale, where hopefully we would get more from it, although there was no… that wasn't a condition or anything for people to attend. Um, and so, so that was one of the, one of the key things. And, obviously, the other thing was, um, building further ties and links in with the university as well, um, because I think the, the relationship with Wasat and the university across that period of time had been, um… you know, we'd done various, different little bits and pieces and those sorts of things together, but it was actually: how do we actually cement everything, um, together?

<Internals\\Wasat interviews\\Face to face\\Guillermo Medina> - § 1 reference coded [1.35% Coverage]

Reference 1 - 1.35% Coverage

I took the managing partner of the largest accountancy firm in Rinshire who at that stage didn't bank with us either personally or business um and that was one of the key things that really cemented that relationship, we now bank him personally and we now, we now get all, all his new business referrals come in to us, whereas two, three, four years ago they would go to a competitor. So, that, it's part of a relationship building. So, I would see this programme as, I've talked about two younger guys stepping up to be MDs of very large businesses, I've talked about bringing prospects who we are keen to, to perhaps re-bank them from another competitor or um , and the connecting piece. And I've also talked about how you could build the relationships.

<Internals\\Wasat interviews\\Face to face\\Alicia(O) Yepes> - § 1 reference coded [2.61% Coverage]

Reference 1 - 2.61% Coverage

No, nothing that's anecdotal. I can only speak about, you know, the good feedback we got from Roberto Sanclemente from Pollux, and I think he has used the university subsequently – so that's a positive thing for the programme. You know, at the time that was, um, a new account I'd just taken on from the Bank of Norte. Um, I knew that… I knew Roberto a little bit but this helped me get to know him a lot better, and for him to get to know the bank and really understand a bit more of what the bank was about in an essentially non-banking environment. And she was able to mix with, um, other customers and, you know, to say, you

List of quotes linking Networking and Dyads

know, how did you get on with the bank? So if it's anecdotal, I don't know, but it's certainly sort of helped in that perspective.

<u><Internals\\Validation\\Gabriel Merino></u> - § 1 reference coded [3.47% Coverage]

Reference 1 - 3.47% Coverage

I remember setting up an MBA programme in Hong Kong. Now there was… We were the… If you like there was the… ah, you know, difficult to talk about, but it was a [unclear]. Even if it's a supplier, the buyer would see Hong Kong private college, right. We were the supplier; we were supplying an MBA programme and two teaching… two teachers for that programme and accreditation, yes. I guess the students would be the customers, so were the try-out, yes, but the people that are actually very important in ensuring that that thing works to begin with, were senior people in the Hong Kong establishment.

<u><Internals\\Shaula interviews\\Phone\\Dora(O) Martinez></u> - § 1 reference coded [0.97% Coverage]

Reference 1 - 0.97% Coverage

they become part of an ongoing network and community for us, for example, last year we did some, ah, research under the banner of our new Paths Award with Pollux Alarms, and that was very good, and I think our first introduction to Pollux was through, ah, that programme. And we're talking with one or two others about, you know, research possibilities in the future.

<u><Internals\\Shaula interviews\\Face to face\\Saul(A) Segovia></u> - § 1 reference coded [2.17% Coverage]

Reference 1 - 2.17% Coverage

It was the same people, the client relationship managers from the Wasat Bank who were coming in with their customers. It was the same faces, the same people, from the University side delivering their sessions. So, there wasn't much evolution or development, I would say, of the course from my limited perspective.

<u><Internals\\Shaula interviews\\Face to face\\Rodolfo Madrid 1></u> - § 1 reference coded [0.64% Coverage]

Reference 1 - 0.64% Coverage

so , uh, going forward, by you know, I've been to a couple of meetings, I've briefed them, I've read their documentation and I was doing that this morning actually.

<u><Internals\\Shaula interviews\\Face to face\\Patricio Romero></u> - § 2 references coded [0.82% Coverage]

Reference 1 - 0.52% Coverage

The Wasat survived the financial crisis relatively well and the programme development that we have seen coincided with a deliberate business strategy of theirs, which was to get closer to their corporate clients. They also didn't simply get closer but they promoted more joint ventures so it was a joint bank/client risk.

Reference 2 - 0.29% Coverage

 I think one of them we got to the grant stage – I'm trying to think – but I'm not the one who saw that through because when they come in, I field them to the appropriate academics

<u><Internals\\First Stage\\WASAT\\Daniel and Sergio 1></u> - § 5 references coded [2.31% Coverage]

List of quotes linking Networking and Dyads

Reference 1 - 0.98% Coverage

just looking at our supply chain, we've radically changed the way that we, you know, we manage suppliers in the last sort of, three or four years anyway, by bringing… we've outsourced it for a start, you know? We've… we've brought in a third-party procurement company, so it might be that we just introduce you to… that we'll potentially introduce you to people within the organisation that can perhaps talk through some of the, you know, some of the, uh, the businesses that's been done there really, you know? I'm thinking of exchanging and those kind of things, you know, rather than just purely focusing on what… Daniel and I area of expertise is marketing, so we'll… we work with the university in… in our marketing projects,

Reference 2 - 0.37% Coverage

We'll also bring what we call members, or customers. That's basically, our customers, so these are our existing clients, to say, well actually, you already bank with us. We would like to offer you this type of course so that you will walk away and that your business will better.

Reference 3 - 0.28% Coverage

the third one then, was what we call referral partners. So these are your solicitors, accountants…

SERGIO Professional services [overtalking].

DANIEL You know, anyone who introduced business to the bank.

Reference 4 - 0.28% Coverage

And the relationship deepened. Take that a stage further, we now bank the City marketing Bureau, so they were with, I believe, Bank of Norte before, didn't really like the service they were being offered by them.

Reference 5 - 0.40% Coverage

we have a cohort of graduate MBA's who finish every year.

They still need a project. They need something to, you know, cut their teeth on if you like, consultancy, whatever you want to call it. So the last two years, we have supported the university with their cohorts to come into the bank.

<Internals\\Clients interviews\\Phone\\Juan Trujillo> - § 3 references coded [4.44% Coverage]

Reference 1 - 2.10% Coverage

Yes, we've been in touch with a couple of other customers or clients that were on the course, um, one who now we have a trade relationship with; one of them now, which is good. Unfortunately one of the other ones we've kept in touch with here, he has gone into receivership, which was, um, sad news.

Reference 2 - 0.70% Coverage

he's another business in this area, we happened to be in the same car and being taken down to Shaula.

Reference 3 - 1.65% Coverage

Yes, yes more value definitely. I mean we may have... We may have made out with the course by the fact that we had, ah, two or... you know two or three days together. Again a relationship developed there. A business one, nothing else.

<u><Internals\\Clients interviews\\Phone\\Josue Fernandez></u> - § 1 reference coded [2.03% Coverage]

Reference 1 - 2.03% Coverage

Yes. I... it was actually, um, one of the participants, um, had a, er, um, a Scottish based, Highland based hotel.

      JY   Hhmm.

JOSUÉ And, um, we... we had a dialogue about, er, um, er, us providing helicopter services to... to the hotel.

      JY   Hhmm. Hhmm.

JOSUÉ And, er, after that dialogue it actually didn't... it didn't end up coming to anything, but it did... it did at least, er, create another... another contact for us.

Appendix 11 – Samples of intermediate analysis with raw data, NVivo queries and matrix arrangements

— Relationships → Interactions) MEANS

— Triggers (SI)

Increase Links

OUTCOMES

Integrate resources

New opportunities

		43	44	45	46	47	48	
1	87 : Service Innovation	5	4	6	5	5	2	27
2	90 : Benefits to another	2	0	5	4	2	7	20
3	126 : New ideas	5	0	3	0	0	1	9
4	127 : Awareness	0	0	1	0	0	0	1
5	133 : Previous experiences	1	0	1	1	1	0	4
6	129 : Exploration	3	0	2	0	0	0	5
7	132 : new to market	0	0	0	0	0	0	0
8	130 : new to firm	1	0	0	0	0	1	2
9	128 : Exploitation	0	0	0	0	0	0	0
10	131 : new to industry	0	0	0	0	0	0	0
11	116 : Limitations	0	3	0	1	0	0	4
12	118 : Communications	4	1	4	0	0	0	9
13	125 : Structure	0	0	0	0	0	0	0
14	123 : Resources	0	0	0	0	0	0	0
15	124 : Response	0	0	0	0	0	0	0
16	120 : Lack of	0	1	0	0	0	0	1
17	121 : People	0	1	1	0	0	0	2
18	122 : Policies	0	0	0	0	0	0	0
19	117 : Business size	0	0	0	0	0	0	0
20	119 : Distance	0	0	0	0	0	0	0
21	105 : Enablers	4	2	6	0	0	3	15
22	109 : Involvement - engagement	2	1	2	1	0	1	7
23	111 : Long term	2	2	0	0	0	0	4
24	110 : Location	0	0	0	0	0	0	0
25	106 : Business size	0	0	0	0	0	1	1
26	112 : Response	0	0	0	0	0	0	0
27	107 : Flexibility	0	0	1	0	0	0	1
28	113 : Spend time together	0	0	0	0	0	0	0
29	114 : Visibility	0	0	0	0	0	0	0
30	108 : Forums	1	0	1	0	0	0	2
31	91 : Business purpose	0	0	1	0	0	0	1
32	92 : Expectations	0	0	0	0	0	1	1
33	94 : Needs	0	0	0	1	0	0	1
34	95 : Objectives	0	0	1	0	0	1	2
35	93 : Follow ups	0	0	0	0	0	0	0
36	96 : Outcomes	0	0	0	0	0	0	0
37	134 : Relation of Power	7	6	2	3	0	5	23
38	88 : Additional Example	5	4	4	2	2	0	17
39	89 : New element	3	3	1	9	5	3	24
40	135 : Whats	0	0	0	0	0	0	0
41	97 : Changes	0	0	12	1	0	0	13
42	99 : Context based	0	2	2	1	0	1	6
43	103 : Time	0	0	4	0	0	0	4
44	102 : Space	0	0	4	0	0	0	4
45	98 : Actor	0	0	3	0	0	1	4

Appendix 11 – Samples of intermediate analysis with raw data, NVivo queries and matrix arrangements

Conditions from Links

44	102 : Space	0	0	4	0	0	0	4
45	98 : Actor	0	0	3	0	0	1	4
46	101 : Role	0	0	3	0	0	0	3
47	104 : Unpredictable	0	0	1	0	0	0	1
48	100 : Negotiated	0	0	1	0	0	0	1
49	115 : Hows	0	0	0	0	0	0	0
50	81 : SDL concepts	1	2	1	1	0	0	5
51	83 : Collaboration	9	7	1	1	1	1	20
52	86 : Operant resources	0	0	0	0	0	0	0
53	82 : Co-creation	2	1	0	0	0	0	3
54	84 : Integration	1	2	0	1	0	0	4
55	85 : Operand resources	0	0	0	0	0	0	0
56	48 : GDL mind set	3	1	1	0	3	0	8
57	52 : Tangible transactions	1	0	2	0	1	0	4
58	51 : Discrete transactions	2	0	0	0	3	0	5
59	49 : Add value	0	0	0	0	0	0	0
60	50 : Direct competition	0	0	0	0	0	0	0
61	138 : Time Line	1	1	2	0	0	0	4
62	44 : Environment	0	0	0	0	0	0	0
63	45 : Business conditions	0	0	0	0	0	0	0
64	47 : Unstability or turbulence	0	0	0	0	0	0	0
65	46 : Complexity in relationships	0	1	0	0	0	0	1
66	53 : General concepts	0	0	0	0	0	0	0
67	79 : Trust	14	12	1	1	8	2	38
68	57 : Communication	1	0	0	2	0	0	3
69	78 : Reputation	0	0	1	0	0	0	1
70	62 : feedback	0	0	0	0	0	0	0
71	77 : Positioning	0	0	1	0	0	0	1
72	60 : Expectations	0	0	0	0	0	0	0
73	56 : Branding	0	0	0	0	0	0	0
74	66 : Measurements	0	1	0	0	0	0	1
75	68 : Cost	1	0	0	0	1	0	2
76	72 : Performance	0	0	0	0	0	0	0
77	73 : Profit	0	1	0	0	0	0	1
78	70 : Effectiveness	0	0	0	0	0	0	0
79	69 : Customer Satisfaction	0	0	1	0	0	0	1
80	74 : Returns	0	1	0	0	0	0	1
81	75 : Savings	0	1	0	0	0	1	2
82	71 : Investment	0	0	0	0	0	0	0
83	67 : Accountability	0	0	0	0	0	0	0
84	59 : Differentiation	0	0	1	0	0	0	1
85	55 : Being Equals	4	3	1	2	2	4	16
86	76 : Opportunism	0	0	0	0	0	0	0
87	65 : Learning	0	0	0	0	0	0	0
88	63 : Growth	0	1	0	0	0	0	1
89	64 : Heterogeneity	0	0	0	0	0	0	0

MULTIDIRECTIONAL

MEANS

BALANCE

Appendix 11 – Samples of intermediate analysis with raw data, NVivo queries and matrix arrangements

89	64 : Heterogeneity	0	0	0	0	0	0	0
90	54 : Alignment	0	0	2	0	0	1	3
91	58 : Control	0	1	0	0	0	0	1
92	61 : Facilitate	0	0	1	0	0	0	1
93	136 : Technology	0	0	0	0	0	0	0
94	137 : Characteristics	0	0	0	0	0	0	0
95	2 : Building blocks	0	0	0	0	0	0	0
96	36 : Value	3	5	3	0	1	3	15
97	43 : Value perceived	1	0	2	1	0	0	4
98	41 : Relevance	1	0	0	0	0	0	1
99	37 : Contacts	0	0	1	0	0	1	2
100	39 : Information	0	0	0	0	0	1	1
101	38 : Ideas	0	0	1	0	0	0	1
102	42 : Value judgement	0	0	0	0	0	0	0
103	40 : Problem solving	0	2	0	0	0	0	2
104	11 : Evolution of relationship	4	4	3	6	10	9	36
105	16 : Whats	0	0	0	0	0	0	0
106	15 : Time perception	0	0	1	2	1	0	4
107	12 : Changing roles	1	0	2	1	3	4	11
108	14 : Hows	0	0	0	0	1	0	1
109	13 : Distribution of benefits	0	1	0	0	0	0	1
110	8 : Evidences of networking	3	6	6	3	0	2	20
111	10 : No develop	0	0	0	0	0	0	1
112	9 : Complexity	0	0	3	0	0	1	4
113	6 : Dependence on individuals	2	3	0	3	1	2	11
114	7 : Characteristics of those involve	0	1	0	3	0	0	4
115	5 : Connectivity	0	0	1	0	0	0	1
116	17 : Story	0	0	0	0	0	0	0
117	35 : Starting point	0	0	0	0	0	1	1
118	29 : Level	1	1	5	2	2	2	13
119	32 : Network	1	1	3	3	1	4	13
120	30 : Dyad	1	2	2	2	2	0	9
121	34 : Triad	2	1	3	1	6	1	14
122	33 : Roles	0	0	2	0	4	1	7
123	31 : Move - Dynamic	0	0	3	2	0	1	6
124	20 : Emphasis	0	0	0	0	0	0	0
125	21 : Building relationships	1	2	1	0	0	0	4
126	28 : Strengthening relationship	0	1	1	0	0	0	2
127	26 : Learning	0	0	0	0	0	0	0
128	24 : Internal Politics	0	0	0	0	0	0	0
129	23 : Change of thought	0	0	0	0	0	0	0
130	27 : Social responsibility	0	0	0	0	0	0	0
131	22 : Central coord	0	0	0	0	0	0	0
132	25 : Iterative process	0	0	0	0	0	0	0
133	19 : Change of focus	0	0	0	0	0	0	0
134	18 : Boundaries	0	0	0	0	0	0	0
135	3 : Chain disruption	0	0	0	0	0	0	0
136	4 : shake - turbulence	0	0	0	0	0	0	0
	1 : Asymetric information	0	0	0	0	0	0	0
	80 : obvious	0	1	0	0	0	0	1
		106	97	132	66	66	70	

Handwritten annotations:
- OUTCOMES / Benefits
- Change of roles
- ¿ Benefits of networking?
- Level of analysis
- Directions of Links
- Validation Cluster Inicial

Appendix 11 – Samples of intermediate analysis with raw data, NVivo queries and matrix arrangements

different roles. Looking at the network described in figure 5.7 the supplier (University of Shaula) was also a buyer, a partner, a customer. Each role opens some opportunities and closes others. Like this example are others that rose from the data. The word change and other expressions close to it were used in the interviews more than three-hundred (300) times; in a frequency table of 1000 words with more than three characters, the word change comes in place 169; and among the data labelled (coded), statements showing change were noticed more than seventy (70) times. These figures, just confirm that the element of change was relevant in the answers given by the people in their construction of this reality.

Although in some cases relationships change over time while the roles were the same, in other cases role changes were the ones triggering changes in the relationships. At this point, when referring to relationships, are the "connection or linkage between nodes, actor of other network units" (Todeva, 2006, p.217).

"I think the most valuable thing is if we could keep it going, because in lots of institutions, lots of universities these relationships come and go, they don't last and you don't build up any longitudinal and deep relationships with people – it goes back to the thing I said about individuals moving around. I think if we could prove that we've done this for a while and it's been sustained because people get benefit from it, then that would be good. ... it [the relationship with the bank] almost got institutionalised at the business school level, but it didn't quite get there, it's still too dependent on particular individuals."

(Professor David Iglesias, University of Shaula)

I don't know what triggered it. Um, I think there was a realisation that here we are, in Shaula, head office in Shaula, they're a big institution and there's Shaula University, a customer of the bank, another big institution, and we should look to see what we can do differently that will benefit us mutually, enhance our relationship with existing customers, what will bring in new customers.

(Director Corporate Banking, Financial Services, Wasat Bank)

"... in the case of the Wasat programme I think in the areas of training and education the university is very much just a supplier. And actually the power wholly with the bank because they paid for the services and we were hoping to get them to buy from us so they were very powerful in relation to us. ... But, over time, we, we developed specialist knowledge and capability which the bank began to find useful. Any client with the Wasat Bank would find it quite

hard to replicate what we had been doing for them straightaway with A N other business school. And so the balance of power shifted from being powerful bank, weak customer in the university, to being more of a partnership."

(Executive Education Director, University of Shaula)

"I just was there and delivering my stuff, that's all."

(Professor Marcos Leal, University of Shaula)

"It was really just taking a two day seminar and then after that, erm, there was nothing after, that."

(Business Development Partner, Wasat Bank)

"... the university has met over 100 businesses, not all of them but some of them have hosted student projects for us, or participated with research. You know, we've built relationships as a Business School to parts of the business community that we would not have reached without this partnership, and I think that's been really useful for us."

(Executive Education Director, University of Shaula)

"So I've probably been quite active, either directly or indirectly, in pursuing potential links, both during and after each of the programmes."

(Professor Patricio Romero, University of Shaula)

"... so I've spent quite a bit of time in helping the team within the bank that are reviewing the bank's strategy, uh, going forward, by you know, I've been to a couple of meetings, I've briefed them, I've read their documentation and I was doing that this morning actually."

(Executive Education Director, University of Shaula)

"... they were the university's banker, they had a number of ideas they were interested in talking to us about, collaborating on;"

(Former Director, University of Shaula)

"So we were always partners in delivering the service innovation, so I think, um, you know, with the partnership and certainly the point about trust, um,

Appendix 11 – Samples of intermediate analysis with raw data, NVivo queries and matrix arrangements

		2	7	8	9	10	11	12	13	14	15	16	17
1	Networks	¶110: And we were trying to think... I guess you could call that co-creation. it wasn't just about the benefit to us as a bank, for our customers to come and get a course that was delivered from academics.		¶193: there was a lot of, I mean a lot of interaction with the client and, and initially the guy who headed up the programme from the Wasat's perspective, erm, [draws breath] forgotten his name, nice guy, irish guy, erm, there was, he sat through nearly all of the courses, he, erm, and he had a, you know, constantly feeding back what was working, what wasn't working, er, and so on and so forth. So there was, er, in the, both in the initial design of the programme about what was going to be relevant - potentially relevant - and in the early stages of the programme we had a lot of interaction with the client,	¶41: whereas on the Wasat Bank course, it's senior business banking partners and usually the clients that they bring are managing directors or they own their own businesses, so for themselves they're quite important and for the bank they're quite important, so we really treat them, we go out of our way to treat them, to roll out the red carpet for them.	¶232: it was a good example of how a university and an organisation with a large, a large business client base could work together to deliver value to both parties as well as to, as well as to client organisations. DISTRIBUTE VALUE			¶44: their overall kind of strategy is very heavily driven by the parent group. Regional Acrab	¶58: asked a previous participant to come back along and say, listen, I was on this programme six months ago or last year, or...and, these are some of the things that I took away from the programme, and here are the things that we've been doing in my business since then, so to try and get them to see some connection between the academic theory and somebody who they would see as more credible, and one of them who had uh, taken material away, done something, got value from it,	¶131: You know, and the intention is that those that are attending, they try to keep them from... or try to keep them within industries who would collaborate, to allow that networking to happen as well.		
2	Networks	¶112: The bank has introduced you to us, but we may take that relationship forward, and that's what we granted the university as well,		¶201: The business development managers there basically to show that they were interested and understood the problems of the client, so it was a sales exercise for them as well as the learning.	¶77: They see the value in this external relationship that the university has.					¶62: Here's how we've, you know, made the connections work for us.			

Appendix 11 – Samples of intermediate analysis with raw data, NVivo queries and matrix arrangements

		28	29	38	2
1	Networks	¶172: I don't think the course and the relationship with the Bank are interconnected, they don't appear to be. **NO**	¶24: Um, gosh I can't remember anyway, it was just a, um, a course to try and see if we could build relationships, a stronger relationship with each other. It would be fair to say it that way, yes. And meet some other, other Wasat bank businesses and possibly interact with them and, um, find out a bit more about their businesses and hopefully relaxed, away from... away from your own business atmosphere. I think that was how it was sold to me anyway **BUILD NEW**	¶195: your business network change or was affected somehow by your participation in the programme? ¶197: DARIO I would say, yes, in a positive manner, in that it gave me the chance to, erm, meet other people, it gave me a chance to, er, reinforce my relationship with, er, the Wasat Bank and also some of the, the other guests from Dedun that they had invited along. **STREGTHEN CURRENT** ← - - → **DEEPER**	¶112: The bank has introduced you to us, but we may take that relationship forward, and that's what we granted the university as well,
2	Networks	¶226: Um, I understand from the Wasat, their thinking is, how do we add value to our package? How can we make something that, that adds value to our package? Um, equally, they'll be looking at it saying, how can we leverage a relationship with somewhere like the University of Weste? So, that's a win-win for them, um, in theory there should be a win-win for their customers. Um, and they might find that their customers wouldn't ordinarily do something like that, but they're making it possible. **AGENT**	¶32: Yes, we've been in touch with a couple of other customers or clients that were on the course, um, one who now we have a trade relationship with; one of them now, which is good. Unfortunately one of the other ones we've kept in touch with here, he has gone into receivership, which was, um, sad news.		¶224: And the relationship deepened. Take that a stage further, we now bank the City marketing Bureau, so they were with, I believe, Bank of Norte before, didn't really like the service they were being offered by them.

Glossary

GDP	Gross domestic product
SDL	Service-dominant logic
GDL	Goods-dominant logic
SCM	Supply chain management
IMP	Industrial marketing and purchasing
ONS	Office for national statistics, United Kingdom
ILO	International labour office, United Nations
DTI	Department of trade and industry, United Kingdom
UNCTAD	United Nations conference on trade and development
SI	Service innovation
SS	Service science
KM	Knowledge management
ICT	Information and communications technology
Typology	Classification based on types of ... (in this thesis, types of innovations)
IHIP	Intangibility, Heterogeneity, Inseparability and Perishability
Co-creation	Two or more are involved in a dynamic process of creation, usually including the customer
OM	Operations management
GT	Grounded theory
CDA	Critical discourse analysis
Servitization, Servitisation, or Servicisation	In management it refers to products in which the service component is larger than the goods component.
KIBS	Knowledge-intensive business services
SNA	Social network analysis

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