# Chapter 2
# Definitions and Theories of Collaboration

## 2.1 Introduction

In recent years the process of globalisation and development of telecommunication technology has fostered an increase in various types of local and international inter-firm collaboration. Cooperation and competition are mutually applied in the business world. However, cooperation has been increasingly considered superior to competition both for individuals and firms (Contractor and Lorange 1988). This development derives from both intellectual and social concerns (Faulkner and Rond 2000).

Many researchers have studied inter-firm collaboration from different perspectives. However, it is surprising to find how diversely the term has been defined and used by researchers in the literature (e.g. cooperation, coordination, partnership, alliance, and coalition). Not surprisingly, therefore, the outcomes from previous research have resulted in diverse outcomes and implications. The links and differences between these definitions will be further discussed in the following section. By reviewing different definitions and terms used in the literature, inter-firm collaboration as used in this study is clearly defined.

Researchers have attempted to study the motives, forms, benefits, and performance of collaboration. Collaboration among firms can be fruitfully examined from a wide range of theoretical perspectives. These include transaction cost theory (Coase 1937), agency theory (Berle and Means 1932), network theory (Eccles and Crane 1987), behavioural theories (Barnard 1938), property rights theory (Barzel 1989), economic empirical studies (Heidl 2010), strategic management positioning and resource based complementary perspectives (Heidl 2010), dynamic capabilities theory (Winter and Zollo 1999), real option theory and institutional theories (Bellon and Niosi 2001). These theories cover most questions related to the existence of firms, motives and incentives for inter-firm collaboration and the dynamics of inter-firm collaboration. However, each theory focuses on only one or some types of inter-firm collaboration. Therefore, this thesis will adopt a combination of several key theories (two major economic theories – transaction

Y. (Aimee) Zhang, *Collaboration in the Australian and Chinese Mobile Telecommunication Markets*, DOI 10.1007/978-3-642-40151-0_2,
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cost theory and the resource based view, and some management and business theories) and conduct a literature review based on these theories. The relationship, difference, and contribution to inter-firm collaboration from each of these theories will be discussed further in this chapter.

## 2.2 Broad Discussion

The word cooperate derives from the Latin words co- and operate, which means working together (Fitzek and Katz 2006). Gray (1985) defined collaboration as a pooling of resources (e.g. capital, labour, knowledge) by two or more partners.[1] To Gray (1989, p. 6), collaboration is based on the simple adages that 'two heads are better than one' and 'each needs the others to advance their individual interests'. However, researchers have defined and used the term very differently in the economic and business literature (Kogut 1988; Williamson 1991; Burgers et al. 1993; Culpan 1993; Hagedoorn 1993; Parkhe 1993b; Osborn et al. 1998; Austin 2000). Intangible benefits (mostly non-financial) play a more important role in inter-firm collaboration in developing countries (Kuada 2002; Jia and Rutherford 2010). To clearly define collaboration for this study, it is important to analysis the basics of inter-firm collaboration and the differences between all these terms.

### 2.2.1 *Terms and Variety of Definitions*

Terms such as governance, hybrid, joint venture, coalition, franchises, collusion, hierarchy, vertical integration, and business agreements are widely used in the studies that relate to inter-firm collaboration. Which of these is collaboration? Which belongs to collaboration, and what are the differences? To answer these questions it is necessary to have an overview of collaboration and all of these definitions. Figure 2.1 summarises the different terms utilised and their relationship to each other which will be reviewed in more detail below. The big circle with collaboration shows the border of inter-firm collaborations, which is located between market contracts and hierarchies (Williamson 2002). Firm A may have collaborators, such as merger firm B, partner firm C, joint venture or angel capital firm D, franchisor firm E, competitor firm F, supplier firm G, customer or service provider firm H and potential partner firm I, which is in the business network. The terms (e.g. cooperation, alliances and partnership) used in the literature are based upon different relationships as described further below.

[1] According to Gray (1985) a partner is an individual or firm that makes a financial contribution to a project.

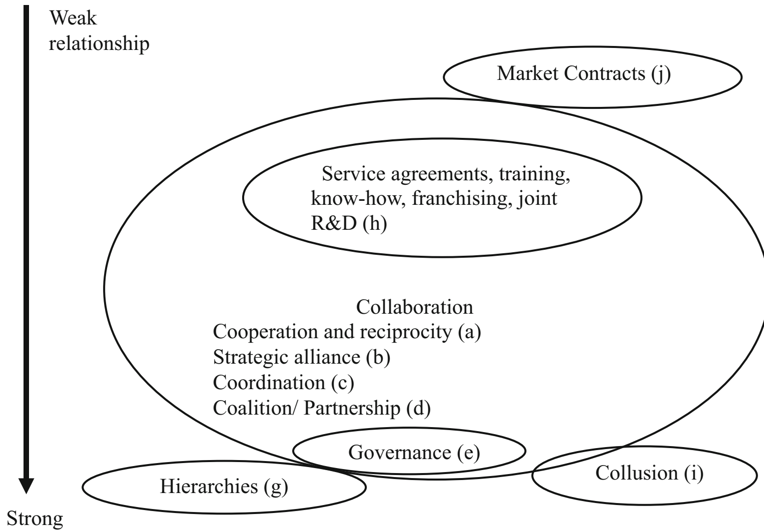


**Fig. 2.1** Collaboration terms and their relationship (Source: Summarised from literature)

As shown in Fig. 2.1 and Table 2.1, the different terms (a–j) are used in very different types of business relationships. Some of them (e.g. cooperation, coordination, coalition, partnership, and hybrids – in the biggest circle) are referred to as examples of inter-firm collaboration in the literature. These kinds of relationships include most types of business transactions with different partners (suppliers, service providers, competitors, partners and other firms in existing business networks). Some of them (e.g. strategic alliances, joint activities, hierarchies, franchises, training, know-how licensing, governance, and service agreements) are used in one or several special collaborating types. Others (e.g. collusion and market contracts) are used differently from collaboration but may be transferred into inter-firm collaboration if the business environment changed. Each of these terms (a–j) will now be discussed in more detail.

### a. Cooperation and reciprocity

Cooperation is one of the terms widely used in the literature when discussing collaboration. It is a term widely used in not only economics and business studies (Blair 1976; Parkhe 1993a), but also in managerial and sociology studies (Fitzek and Katz 2006). Cooperation is also regarded as an effective way to avoid competition (Roos 1994). However, it can bring problems such as collusion (i), which are illegal in most countries. Cooperation is the original form of inter-firm collaboration but it usually also refers to a broader range of cooperating activities between individuals and departments and not only firms. Many researchers have linked cooperation with reciprocity as one of the motives or benefits from inter-firm collaboration (Blair 1976; Withered 1980; Parkhe 1993a, b; Kashlak et al. 1998). However, reciprocity is usually linked with

**Table 2.1** Different terms representing different relationships

| Study firm | Terms used in the literature related to inter-firm collaboration | Partners and their differences |
|---|---|---|
| Firm A | a, b, c, d, e, f, g | Merger B (Acquisitions from the same or different field) |
| | a, b, c, d, f, h | Partner C (Co-founder or joint partners) |
| | b, d, e, f, g, h, i, j | Joint Venture D (Venture or angel capital firm) |
| | b, c, d, e, f, g, h, j | Franchisor E (e.g. McDonalds or 7–11) |
| | a, b, d, h, i, j | Competitor F (Usually in the same industry) |
| | a, b, c, d, e, h, i, j | Supplier G (Raw material or half product providers) |
| | a, b, c, d, e, h, i, j | Service/ Customer H (Refers here to business only) |
| | h | Potential partner in network (future collaborators) |

political decisions from government or industry associations (Bendor 1987; Kogut 1989). The motives and benefits from inter-firm collaboration will be discussed further in the next chapter.

**b. Strategic alliances**

Inter-firm collaboration is also referred to as a strategic alliance in the literature (James 1985; Borys and Jemison 1989; Lorange and Roos 1992; Park and Russo 1996; Nooteboom et al. 1997; Osborn et al. 1998; Kuada 2002). Lewis (1990) defined a strategic alliance as a collaborative relationship between firms which generates more profits than solely by means of a market transaction. Porter (1990) and Hagedoorn (1993) linked the definition of alliance with long-term transactions. A strategic alliance involves sharing: goals, mutual benefits, co-production, technology, or services (Mohr and Spekman 1994; Gulati 1995). The definitions are very similar to inter-firm collaboration. Many empirical studies have also focused upon business strategic alliances (Lorange and Roos 1992; Yoshino and Rangan 1996; Gulati 1995, 1998; Park 1996; Osborn et al. 1998; Kuada 2002). The term strategic alliance is used to describe a partnership or inter-firm collaboration in some literature (Doz and Hamel 1998). However, when referring to business strategic alliances, it usually involves large or multinational firms, eliminating most micro and small sized firms (which may have no formal business strategies) from the study. This is an important gap in most empirical studies.

**c. Coordination**

Coordination is another term used to describe collaboration. For example, inter-firm coordination is a term used by Buckley and Casson (1988). They defined inter-firm coordination as an increase in the profits of some firms that is achieved without a reduction in the profits of others. They argue that coordination is not

always good for every firm in the market. A successful coordination may reduce profits for non-participating firms and a failed coordination may bring losses for participating firms. Both of which may generate a deadweight loss[2] (DWL). One of their contributions is separating the definition of inter-firm coordination from extra-firm coordination (firms on the one hand and households on the other) and intra-firm coordination (different people working together). However, their research focused mostly on tangible profits, which exclude some important factors (intangible benefits and incentives) from inter-firm collaboration. Therefore, coordination is used in the same way as cooperation and collaboration in the literature (Van de Ven and Walker 1984; Buckley and Casson 1988; Currall and Judge 1995; Grandori 1995).

**d. Coalition and partnership**

Coalitions and partnerships are terms used in some literature to describe inter-firm collaboration. For example, Porter and Fuller (1986) believe that coalitions are also the same as collaborations and partnerships. In the sense that more than one firm shares responsibilities, a partnership is also regarded as a collaboration (Hagedoorn and Schakenraad 1994; Hagedoorn 2006). However, some researchers have indicated that it is complicated and difficult to manage these relationships (Perlmutter and Hennan 1986; Anand and Khanna 2000; Chung et al. 2000). Both coalitions and partnerships are regarded as inter-firm collaboration, although a coalition and partnership usually only focus on certain types of inter-firm collaboration based on a deeper trust relationship; for example a joint venture.

**e. Governance**

Commons (1932, 1950) used the term governance to describe a form of partnership and alliance, which was then adopted in the early literature to describe inter-firm collaboration (Macneil 1978; Williamson 1979, 1988). Governance is distinct from markets or hierarchies, including supervision activities between partners[3] (Dyer and Singh 1998; Gulati 1998). It brings profits by reducing transaction costs and enhancing efficiency when human resources and knowledge are transferred through governance activities (North 1990; Dyer 1996). Many researchers have studied viable types of governance (Smith 1776; Barnard 1938; Hayek 1945; Arrow and Debrew 1954; Williamson 1979; Dixit 1996). However, governance is usually focused on issues within firms or on some special collaborating types (e.g. franchises and joint ventures) that need supervision (Macneil 1978; Heide and John 1992) and therefore only involves some types of inter-firm collaboration.

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[2] A deadweight loss (DWL) is a net reduction in social welfare. When the total gain to society is less than it was before, a deadweight loss is generated. It is also referred to as a social loss, welfare loss, and efficiency loss.

[3] Williamson (2005) defined hierarchy as unified ownership, which is related to vertical integration and adaptation.

**f. Hybrids**

Williamson (1991, 1996, 2002) used the term *hybrid* to capture a broad group of inter-firm arrangements located between the market and hierarchy. Some researchers indicate that non-equity inter-firm collaborations are contractual hybrids and equity joint ventures are quasi-hierarchical business structures (Narula 2001; Contractor and Lorange 2002). Therefore, hybrids include most types of inter-firm collaborations. However, joint ventures and franchises, which are also important types of inter-firm collaboration, may be excluded from this definition. It also excludes some informal collaboration types, which are very common between micro and small firms, such as information sharing through informal discussions.

**g. Hierarchies**

Williamson (2005) defined hierarchy as being unified ownership, which is related to vertical integration and adaptation. Hierarchies are believed to be the most efficient in conducting transactions involving high uncertainties and which usually require additional investments (Williamson 1975, 1985). Some researchers believe that hierarchies are associated with higher transaction costs than market transactions because of greater asset specificity (Barnard 1938; Monteverde and Teece 1982; Walker and Weber 1984; Pisano 1989; Ring and Van de Ven 1992; Dyer 1997). Therefore, hierarchies seem to be different from inter-firm collaboration. However, any kind of hierarchy (e.g. vertical integration or acquisition) is associated with greater collaborating activities (e.g. information exchange, training, know-how licensing, or management services). In some cases, inter-firm collaboration can also be transformed into hierarchies when both collaborating firms find that the opportunity cost of conducting inter-firm collaboration is higher than integration. On the other hand, when the opportunity cost of integration is higher than inter-firm collaboration, a joint venture firm founded by both parent firms will be established (e.g. Sony-Ericsson).

**h. Joint activities and other forms of collaboration**

Franchises (Friedlander and Gurney 1981), strategic networks and network organisations (Eccles and Crane 1987; Jarillo 1988; Lincoln 1990; Powell 1990) and research consortia (Ouchi and Bolton 1988) are also forms of collaboration. Besides franchising, joint R&D, joint ventures, joint products, market sharing, training, know-how licensing, management and market service agreements are also different forms of collaboration (Pfeffer and Nowak 1976; Contractor and Lorange 1988). All of these forms will be discussed further in the next chapter. These concepts partly or fully belong to collaboration, because they are composed of different inter-firm transactions and coordination for ex ante[4]

[4] Ex ante refers to the state of the world before it is known.

negotiation, a period of implementation, and ex post co-supervision. Sometimes, long-term contracts or continuous agreements also need such transactions.

**i. Collusion**

Collusion is defined by OECD (2003) as "strategic collaboration among suppliers and anti-competitive behaviour. . ." Collusion is a kind of collaboration but has overall negative welfare effects (generates a dead weight loss) in the market. Collusion may cause a loss of total social welfare when both producer surplus and consumer surplus decrease (Landsburg 2005). Therefore, it is usually illegal in most countries under antitrust or competition laws (OECD 2003). Not all collaborations among firms are collusions, and in the real world most of them are not. Collusion is related to another significant area of research but is not the focus of this thesis. Inter-firm collaboration does not always improve social welfare either. A failed collaboration sometimes also threatens the survival of a firm. As Buckley and Casson (1988) argue, even for success collaborations, non-participating firms may lose as a result and a deadweight loss is then generated.

**j. Contracts**

Contracts are important for long-term collaboration where there are high uncertainties. Many researchers have studied the reasons, processes, contributions and limitations of contracts in inter-firm collaboration (Gundlach and Achrol 1993; Arrighetti et al. 1997; Harrison 2004; Harvey 2005; Jennejohn 2008). However, others argue that contracts contribute little to inter-firm collaboration and they could be enhanced by adding informal safeguards, such as trust (Heide and John 1990, 1992; Das and Teng 1998; Achrol and Gundlach 1999; Harrison 2004). Some researchers believe that formal contracts may signal distrust between the partners aimed at encouraging opportunistic behaviour[5] (Macaulay 1963; Ghoshal and Moran 1996; Fehr and Gachter 2000). Therefore, some researchers propose the use of formal contracts and relational governance as complements (Deakin et al. 1994; Lane and Bachmann 1995; Arrighetti et al. 1997; Burchell and Wilkinson 1997; Poppo and Zenger 2002; Harrison 2004; Jennejohn 2008).

Contracts and hierarchy need a lot of previous collaborating activities (e.g. regular meetings, information exchange, co-research or management services) if they are to be successful (Jennejohn 2008). In these cases, contracts and hierarchy may have interface with inter-firm collaboration. They can also transform from and into inter-firm collaboration with time and environmental changes. For example, when a firm needs to buy raw materials, it first negotiates with all potential suppliers (in meetings or emails). As a result, they may sign a one-time buy contract (contract) or long-term supplying agreement (collaboration). These two could be

[5] There is no perfect contract and the partner is expected to make use of the ambiguous terms if the trust level is low during collaboration.

**Table 2.2** A summary of different terms related to collaboration

| Terms | Characteristics | Focus |
|---|---|---|
| Cooperation | Original form of collaboration; involving more than one party; also used in managerial and sociology studies; | Involves a broader range of activities |
| Strategic alliance | Involves long-term transactions; sharing goals; mutual benefits; co-development | Large firm focus |
| Coordination | Used for business collaborations, organisational collaborations and individual collaborations. They are separated into inter-firm, intra-firm, and extra-firm coordination | Tangible benefit focus |
| Coalition/ partnership | Shared responsibilities in complicated and difficult relationships | Involves deeper trust relationships |
| Governance | Distinct from markets and hierarchies; emerge from values and agreed-upon processes | Supervising relationship focus |
| Hybrids | Located between markets and hierarchies | Formal collaborations |
| Hierarchies | Usually used as structured collaboration with supervision relationships. It is regarded as efficient transactions with uncertain outcomes and higher transaction costs | Unified ownership |
| Joint activities and other forms | Franchising, joint R&D, joint venture, joint products, market share, training, know-how licensing, management agreements | Different forms of collaboration |
| Collusion | Secret agreements target on market power and usually cause DWL | Illegal in most countries |
| Contracts | Formal collaborations with written documents and rules | Market transactions |

transferred into each other with an increasing or decreasing trust level or environmental changes.

Table 2.2 summarises all the terms and definitions used in the literature relating to collaboration. Their contribution, limitations and relationship with collaboration as defined in this thesis are also compared in Table 2.2. Collaboration, in this way, exists at every stage in the development of a firm. It can be an informal oral agreement, documented contract, or information exchange via trust. Every activity of the company, manager, or employee may influence the process or performance of collaboration. A clear definition of collaboration can help us understand better what enterprises do with each other, and thus facilitate finding the real determinants of successful collaboration.

### 2.2.2 *Definition of Collaboration as Used in This Thesis*

Previous literature has defined collaboration as a transaction between two or more parties to achieve mutual benefits. However, most researchers have focused only on

the tangible benefits brought by inter-firm collaboration (Contractor and Lorange 1988; Park 1996; Gulati 1998; Kuada 2002). Tangible benefits are the benefits that can be foreseen or predicted before collaboration commences. These benefits have received considerable attention in the literature and include financial benefits, technical benefits, information and market benefits and product benefits. However, some intangible assets of a firm play an important role in both initiating and achieving beneficial outcomes from a inter-firm collaboration, such as trust (Becerra et al. 2008; Beckett and Jones 2010; Burgess and Jones 2010), reputation (Lavie 2007; Husted and Michailova 2009; Swaminathan 2009), and other information (Elg 2007; Papadopoulos et al. 2008). An increase in the level of trust during collaboration is an important outcome for a current collaboration as well as for future collaboration (Adler 2001; Lohrke et al. 2006). Intangible benefits such as trust generate future benefits that cannot be measured at the current stage. Although intangible benefits have a high degree of uncertainty it is sometimes one of the most important incentives for collaboration, especially in some developing countries such as China (Keane 2009; Jia and Rutherford 2010). Therefore, intangible benefits, such as an enhanced relationship with government agencies or extended business networks into new markets, are also included in this thesis.

In addition, previous empirical studies have only focused on large and multinational firms by studying special types of collaboration (e.g. joint ventures), using the databases of big firms only, or adopting only financial returns on investment (ROI) as indicators of collaboration performance (Anderson 1990; Wolf 1995; Indro and Richards 2007). The majority of firms, micro and small firms, have not received enough attention in the previous literature (Lee 2007; O'Dwyer et al. 2011). Some informal collaborating types, such as oral agreements and information sharing, are also excluded from existing studies. However, these activities are very important forms of collaboration between micro and small firms (Jaouen and Gundolf 2007). This thesis will expand the traditional definition of collaboration to cover all formal and informal collaboration types, and will be discussed separately in a later chapter.

Therefore, inter-firm collaboration is defined in this thesis as **"inter-firm activities that are aimed at generating tangible and/or intangible benefits for each firm involved"**. All formal and informal inter-firm activities, therefore, are included in this definition. Both tangible and intangible benefits are also included in this definition. Each firm involved in this collaboration is expected to benefit. With this clear definition, this thesis will study some basic questions such as why do firms collaborate? What are the key determinants of successful collaboration? How does this vary across developed and developing countries? How does it vary by firm size? Before answering these research questions it is important to review previous theories and related literature in the study of inter-firm collaboration.

## 2.3 Major Theories

The major theories related to inter-firm collaboration are: transaction cost theory, behavioural theory, agency theory, property rights theory, the resource based view, dynamic capabilities theory, the knowledge based view, and network perspective. Many researchers, from economics, managerial, and business studies, then contributed to the study of inter-firm collaboration from different perspectives. While this is not an exhaustive list of the diverse theories on inter-firm collaboration, it does include the important ones. There is no clear distinguish between economic studies and business studies and some of them have blurring boundaries.

From Fig. 2.2 it can be seen that transaction cost theory and the resource based view are very important theoretical contributions in the framework, linking many other theories. Transaction cost theory is one of the most important theories in the study of firms and provides the basis for many theories in business and management studies. Focused on the real costs of firms' operations and transactions, it explains the incentives for inter-firm collaboration as well as why firms exist. The resource based view, on the other hand, provides the foundation for recent or contemporary collaboration studies. It focuses on scarce resources that are inimitable or cannot be substituted to sustain and increase a firm's development and collaboration. Transaction cost theory has contributed to the resource combination issue[6] in the resource based view (Teece 1982). Many other theories have contributed significantly to the development of the resource based view and made it a core framework in the network of these theories as shown in Fig. 2.2. Papadopoulos et al. (2008) argued that transaction cost theory best explains "alliances in high asymmetry and low heterogeneity situations[7]" and the resource based view is "most appropriate for high

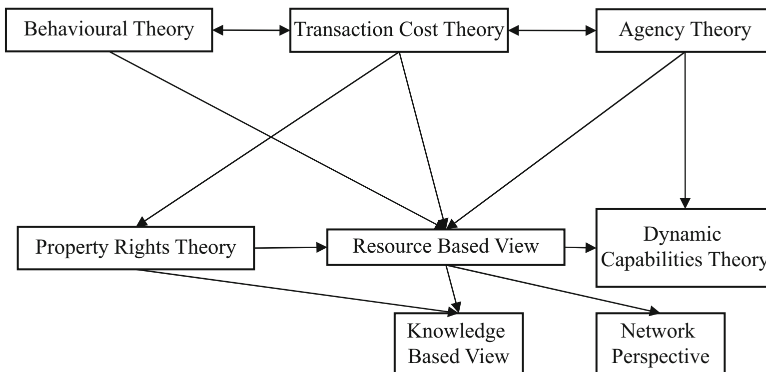


**Fig. 2.2** Theories in economics and business studies

[6] Firms exist as they can organize resources more efficiently than others.

[7] Equity collaboration types such as equity joint ventures.

heterogeneity and low asymmetry alliances".[8] Both these theories have contributed to the development of many other theories and studies, some of which are discussed below.

Behavioural theory and agency theory, which share the same assumptions on bounded rationality[9] and opportunism[10] as transaction cost theory, also play an important role in collaborating studies. Although these latter theories are focused on different aspects of business activities, they are influenced by and also contribute greatly to transaction cost theory. Behavioural theory focuses on the effective operation of the decision making process. Behavioural theory and the resource based view both focus on the competitive advantages of a firm (Schoemaker 1990). Agency theory recognises the important principal agent relationship and distinguishes between the roles of business owners and managers. Property rights theory, on the other hand, focuses more on ownership, distribution and bargaining. Property rights make resources economically valuable by structure the ownership based on how the assignment of property rights will affect the surplus value generated (Mahoney 1995) and the resource based view evaluates the contribution of property rights as a type of resource for firms (Libecap 1989). Finally, agency theory has also influenced thinking on the deployment of resources and firm capabilities (Castanias and Helfat 1991).

The resource based view has also contributed to the development of many other business and management theories. Generated from the resource based view, the knowledge based view of the firm also provides promising insights to extend our understanding of cooperation capabilities (Porter 1990). The network approach, which is also developed from the resource based view, is "concerned with understanding and explaining the dynamics of developing, maintaining, and terminating inter-organisational exchange relationships" (Harrison 2004). Compared with the resource based view, these theories focus more on different aspects (such as the personalities of the entrepreneurs, managerial structures of medium or large sized firms, legal related aspects or special resources) of a firm and its collaboration with other firms. Table 2.3 summarises the contributions and limitations of the major theories.

As shown in Table 2.3, many managerial and business theories have contributed to the research and study of inter-firm collaboration. Most of the managerial and business theories contributed significantly to the empirical studies. They analysed and examined different aspects and types of business collaboration in industries and case studies. Transaction cost theory captures many of the elements present in other theories (such as bounded rationality of behavioural theory and opportunism of agency theory and property rights). On the other hand, the resource based view captures different aspects of resources (such as network capabilities from the network perspective, human capital of the knowledge based view and agency theory or intellectual property of property rights theory) that firms need for inter-firm collaborations. As shown in Fig. 2.2, these two economic theories are core

[8] Non-equity cooperation in exploration, research and co-production.

[9] Bounded rationality means the limited capacity and rationality of human beings to solve complex problems (Simon 1982).

[10] Opportunism is self interest seeking behaviour with guile (Williamson 1975).

**Table 2.3** Summary of differences between the major theories of collaboration

| | Contributions to the literature | Limitations, focus and difference | Major contributors |
|---|---|---|---|
| Transaction cost theory | Studies the basic transactions of firms, and answers the question "Make or buy?" | Focuses on transaction with a single partner; ignores the process of collaboration and role of trust | Coase 1937; Williamson 1971, 1975; Arrow 1974, 1969; Agarwal and Ramaswami 1992; Bellon and Niosi 2001; Rao 2003; Papadopoulos et al. 2008 |
| Behavioural theory | Emphasises the role of firm goals in inter-firm collaboration and focuses on the supplier-customer relationship | Focuses on the decision making process, prices, and outputs, which are mostly determined within the firm | Barnard 1938; Simon 1947; March and Simon 1958; Cyert and March 1963; Simon 1982; Schoemaker 1990; Aulakh et al. 1996; Bazerman 2006 |
| Agency theory | Studies the ex ante incentives of collaboration, focuses on incomplete contracting and efficient operation | Focuses only on the principal and agent relationship, does not explain some managerial problems | Berle and Means 1932; Jensen and Meckling 1976; Arrow 1985; Pratt and Zeckhauser 1985; Levinthal 1988; Castanias and Helfat 1991 |
| Property rights theory | Applied neoclassical theory to industry cases and identified the role of property rights | Focuses on special types of resources of a firm, ignores some intangible assets | Barzel 1989; Libecap 1989; Eggertsson 1990; North 1990; Hart 1995; Hagedoorn et al. 2005; Teece 2005 |
| Resource based view | Focuses on the advantages, which are basic for collaboration | Does not adequately account for alliance formation; phrases are used loosely (e.g. partnership) | Penrose 1959; Richardson 1972; Demsetz 1973; Rumelt 1984; Wernerfelt 1984; Barney 1991; Eisenhardt and Schoonhoven 1996; Das and Teng 1998; Barney 2001 |
| Knowledge based view | Extends understanding of cooperation capabilities | Focuses on special types of collaboration | Zander and Kogut 1995; Conner and Prahalad 1996; Grant 1996; Kale 1999; Cricelli and Grimaldi 2009; Marsh 2010 |
| Network perspective | Explains the dynamics of developing, maintaining, and terminating inter-firm relationships | Does not adequately account for alliance performance and results | Eccles and Crane 1987; Hakansson and Snehota 1995; Hakansson and Johanson 1998; Harrison 2004; Lu et al. 2006; Swaminathan 2009 |
| Dynamic capabilities theory | Studies the new modern capabilities of firms and the influence of new technology | Focuses on the accumulation of rent in business operation | Teece 1994; Langlois and Robertson 1995; Foss 1997; Winter and Zollo 1999; Nelson and Winter 2002 |

theories that have contributed to the development of all the other theories. The two core theories have also contributed significantly to the modelling and development of theoretical frameworks of inter-firm collaboration. To construct the basic model of key determinants for successful inter-firm collaboration for this thesis, this chapter draws on these two basic economic theories: transaction cost theory and the resource based view. However, not all aspects of the other theories are captured by transaction cost theory and the resource based view. To capture the missing factors (such as the characteristics of entrepreneurs and the role of the contact person in business collaborations), managerial and business theories are adopted in the next chapter to study the different types, motives, benefits and risks of inter-firm collaboration to answer the first primary research question.

Beside these theories and studies, game theory is also a common tool usually used in analysing the conflicts and results of collaborating (Zagare 1984; Faulkner and Rond 2000). However, game theory focuses more on the decision making process, ignoring environmental change and the role of trust during collaboration. Game theory, therefore, cannot describe the situation and results of collaboration. Some researchers find that it is only suitable in analysing long-term or repeated games (Heide and Miner 1992; Gulati 1995). It is limited by many assumptions and cannot be applied in some real world cases (Buckley and Casson 1988; Gulati et al. 1994). Therefore, game theory is not adopted in this thesis.

Transaction cost theory and the resource based view are the original and basic theoretical studies, most relevant and referenced works, and most discussed topics in inter-firm studies. The two theories and their major contributors will be discussed in the following section. To study the basic perspective of inter-firm collaboration, this thesis will focus on the transaction cost theory and the resource based view. Some empirical studies from strategic management will also be reviewed as supplementary to these theories (Faulkner and Rond 2000) in the next chapter to study the motives, types, and risks from inter-firm collaboration.

### *2.3.1 Transaction Cost Theory*

One of the most important and basic economic theories of inter-firm relationships is transaction cost theory. Transaction costs are “those costs incurred in arranging, managing, and monitoring transactions across markets” (Rindfleisch and Heide 1997, p. 31). Coase (1937) originated the concept of transaction costs. His paper “The Nature of the firm” sheds light on a firm’s existence and behaviour. Coase (1988) also emphasized the important role of transaction costs in empirical studies. Arrow (1969, 1974, 1985) broadened the category of transaction costs and highlighted the importance of rationality in business operations and collaboration.

Transaction cost theory “regards the basic choice in organizing economic transactions as being between affecting transactions through market exchange and internalising them within a single firm, where they are governed by hierarchical relationships embedded in organisation structure (Faulkner and Rond 2000, p. 7).”

Poppo and Zenger (2002) and Harrison (2004) regard transaction cost economics (TCE) as the common framework for understanding governance arrangements. Williamson then opened another area of study on inter-firm collaboration, which contributed greatly to this study and is discussed further below.

Williamson (1975) highlighted the important influence of opportunism and bounded rationality on inter-firm collaboration. Williamson (1985) further decomposed transaction costs into search costs (the costs of gathering information on potential partners); contracting costs (costs associated with negotiating and writing an agreement); monitoring costs (costs associated with monitoring the agreement); and enforcement costs (costs associated with ex post bargaining and sanctioning). He categorised inter-firm transactions into competition (market transaction), governance (internal transaction), planning (contract), and promise (collaboration). Williamson (1991) noted that hybrid structures (e.g. licensing and franchising) are useful alternatives to both internal control and market control. However, Williamson has been criticised for ignoring the role of power in markets and hierarchy (Francis et al. 1983).

Transaction cost theory is also criticised as it ignores many factors important to inter-firm collaboration (Powell 1990; Doz and Prahalad 1991; Gulati 1998; Bellon and Niosi 2001). Researchers argued that it ignores the cost savings and new processes from repeated collaboration and prior communications (Dyer 1997; Nickerson and Silverman 1997), relational aspects over time (Parkhe 1993b), and the role of trust (Boisot and Child 1988; Hill 1990; Dyer 1997; Poppo and Zenger 2002). Zajac and Olsen (1993) argued that transaction costs focused on single-party cost minimisation while alliances are inherently dyadic exchanges and are concerned also with joint value maximisation.

Therefore, the important contributions of the resource based view on exploring other types of collaboration, the dynamics of business transactions, and the key roles of trust become good supplements to transaction cost theory.

### *2.3.2 Resource Based View*

Although generated from the discipline of economics, the resource based view has also greatly contributed to the study of strategic management. Many researchers from economic studies (Penrose 1959; Richardson 1972; Rumelt 1984; Wernerfelt 1984) and business and management studies (Foss 1997; Tallman 2000; Teece 2000) have conducted research on the resource based view and contributed many profound results to this theory such as identifying the important role of trust in inter-firm collaboration. This contributed to closing the gaps in transaction cost theory.

Both approaches have contributed significantly to the theoretical and industrial study of firms. They also provide complimentary studies on inter-firm collaboration. To further study inter-firm collaboration, it is important to link the resource-based view with transaction cost theory.

Wernerfelt (1984) first focused on the importance of differences in resources. Barney (1991) focused on the specialised resources and assets possessed by different firms and developed the resource-based framework for strategic expectations. He argued that a firm may gain expected advantages by analysing information about the assets it already controls. The resource based view contributed to inter-firm collaboration by distinguishing between tangible and intangible resources (Barney 2001). Rumelt (1984) argues that profits are derived from *ex ante* uncertainty. Therefore, uncertainties are good to inter-firm collaboration. Resource based theories have examined the formation of collaboration (Pfeffer and Nowak 1976) and shed light on the dynamics of collaboration (Rumelt 1991; Das and Teng 1998; Heidl 2010). Tallman (2000) linked the resource-based view with transaction cost theory and argued collaboration provides firms with complementary capabilities. These works greatly contributed to the development of the resource-based view and inter-firm collaboration.

However, the resource based view has also received criticism. Gulati (1995) argued that the resource based view does not adequately account for alliance formation. Dyer and Singh (1998) also argued that according to the resource based view an individual firm should attempt to protect rather than share knowledge. On the other hand some phrases such as resources (Barney 1986), capabilities (Teece 1994) and competencies (Prahalad and Hamel 1990) are used loosely and are exchangeable in Resource Based studies (Kale 1999).

Existing empirical studies on the transaction cost and the resource based view are inadequate for a study of collaboration as most of them are focused on intra-firm transactions and resources (Gulati 1995). Therefore, some literature from management and business studies will also be reviewed as a supplement to these two theories in Chap. 3 to study the characteristics of inter-firm collaboration.

## 2.4 Conclusions and Approach Adopted in This Thesis

With the process of globalisation and the development of information and telecommunication technologies, inter-firm collaboration both intra-state and globally has attracted increased attention. However, a diversity of terms has been used by researchers in the literature. To describe the phenomenon, this chapter has discussed the links and differences between all these different definitions and then clearly identified the definition of inter-firm collaboration to be adopted in this thesis.

Inter-firm collaboration, as defined in this chapter, broadens the neoclassical notion of collaboration to cover both tangible and intangible benefits for the firms involved and highlights the important role of trust in collaborating relationships. It also opened the study to include micro and small firms, which have been ignored in most previous empirical studies.

Among the many theories that have been developed and studied in inter-firm collaboration, transaction cost theory and the resource based view are the two most

important theories, which are closely tied with all the other theories. Transaction cost theory is the original and basic theory dealing with firms and enterprises. The resource-based theory, however, has been widely used in recent research and is closely linked with many management and business studies. This thesis will focus on transaction cost theory and the resource-based view. They will assist in better understanding in detail the motives and benefits of collaboration.

To address some of the research gaps outlined above, this thesis attempts to categorise the basic motives, benefits, types, risks, and key determinants for inter-firm collaboration from the previous literature. The next chapter will address these concepts by analysing some empirical studies from the economic, management and business literature.

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