Chapter 2
Theories Explaining Inter-Organizational Relationships in Terms of Coordination and Control Needs

Abstract This chapter provides a synoptic description of the main theories that see inter-organizational relationships as coordination and control issues: the Transaction Costs Economics theory, the Agency theory and the Resource Dependence theory. These three theories share the idea that inter-organizational relationships are founded on opportunism and bounded rationality, and that organizations seek to control the critical aspects of their business network interactions in order to pursue their goals. These three theories are often considered as complementary in literature, since they often provide opposite predictions in similar cases. Scholars interested in e-marketplaces and in the inter-organizational impacts of the Internet have mainly focused on the Transaction Costs Economics theory so far; this theory has undergone important evolution and hybridization processes, and is then more thoroughly described than the other two in this chapter.

2.1 Introduction

This chapter provides a synoptic description of the main theories that see inter-organizational relationships as coordination and control issues: the Transaction Costs Economics theory (Williamson 1975), the Agency theory (Eisenhardt 1989) and the Resource Dependence theory (Pfeffer and Salancik 2003). These three theories share the idea that inter-organizational relationships are founded on opportunism and bounded rationality, and that organizations seek to control the critical aspects of their business network interactions in order to pursue their goals. According to the Transaction Costs Economics, organizations are driven by the need of reducing costs when interact with each other; according to the Agency theory, organizations are driven by the need of aligning the behaviours or outcomes of the other parties to expectations; according to the Resource Dependence theory, organizations are driven by the need to control the resources that are critical to them. In the first case, the unit of analysis is the transaction; in the second case, the unit of analysis is the contract; in the third case, the unit of analysis is the organization. These three theories are often considered as complementary in literature, since they often provide opposite predictions in similar cases. Scholars

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2.2 Transaction Costs Economics Theory

2.2.1 Core Concepts

Transaction Cost Economics (TCE) sees firms and markets as two alternative governance structures, each with different transactions costs. TCE refers to the initial work of Commons (1934) and Coase (1937) although it only gained relevance in the 1980s, thanks to the original work of Williamson, who adopted a microeconomic approach in direct opposition to the traditional view of the firm in neoclassical theory. The thinking of Williamson (1975, 1979, 1981, 1985) was influenced by many of the authors that preceded him, in particular Coase.

Coase (1937) identified the market costs of use, defining two key conceptual categories: the market exchange and the firm's internal transactions. The scholar attempted to put forward the economists' view of the price mechanism's role as an organizational tool. In parallel, the economists themselves acknowledged the coordinating role played by the entrepreneur. "*In view of the fact that while economists treat the price mechanism as a co-ordinating instrument, they also admit the co-ordinating function of the 'entrepreneur', it is surely important to enquire why coordination is the work of price mechanism in one case and of the entrepreneur in another*" (Coase 1937, p. 389). The contribution of Coase aims to both clarify the primary factors that lead to the decision of which of the two alternatives to opt for and discover in what way the resources are allocated, whether by the price mechanism or by the entrepreneur co-ordinator.

Klein et al. (1978), Grossmann and Hart (1986) are just some of the many authors that contributed to the theory of TCE.

The focus of the neoclassical economics studies is on the alternative characteristics of the different forms of market, in particular, their most efficient system functioning and coordinating methods. On the other hand, the internal organization is primarily the domain of sociology and political science scholars, who, in turn, have emphasized and developed the concept of bureaucracy. Thus, Hierarchy and Market are the two extreme methods used to develop and coordinate economic production. Then there are the other intermediates or derivatives, each characterized by a different degree of efficiency (Williamson 1975, 1985).

If, on the one side, classical microeconomics sees the firm as a black box, the Transaction Costs Economics Theory seeks to explain the reasons that justify the existence of firms and how these organize internally. Coase asked a question, now famous, that calls our attention to a highly relevant aspect and, that is, to paraphrase

the author: why do firms exist if the price mechanism is the most efficient mechanism for allocating resources in a market economy? "*. . .having regard to the fact that if production is regulated by price movements, production could be carried on without any organization at all, well might we ask, why is there any organization*?" (Coase 1937, p. 388).

The response to that question, said Coase, is that when the economic agents refer to the price as the coordinating mechanism these must incur transaction costs, and the more numerous and more complex the transactions, the higher the costs. The Transaction Cost Theory is centred on the dualism of Hierarchy and Market and on the transaction governance forms adopted by them, placing the emphasis on the transactions as the base analysis unit.

Once the need to develop specific transactions has been established, these can be governed either by the market or by the hierarchy. In his historical contribution of 1975, Williamson indicates which combination of factors make the market an inefficient mechanism for governing the transactions, thus making it cheaper to use the hierarchy. Indeed, the market does not always function in a predictable, linear way and three factors lead to unforeseeable costs: bounded rationality, information asymmetries and the potential for opportunistic behaviour. As a result, these costs are called "*market use costs*" and basically cover the expenses inherent in searching and getting information for the best supplier/partner/customer, the cost of establishing a contract, and the costs of monitoring and enforcing the implementation of the contract. In some cases, these costs can escalate to such an extent it is more economical to switch to other forms of transaction governance (Milgrom and Roberts 1992; Williamson 1975). A widely accepted definition of transaction can be traced to its Latin etymology, which evokes the idea of "acting through", meaning, for example, the exchange of the energy, information, values, symbols, objects, and consent between the parties. When these 'operations' are performed in compliance with a mutual agreement, the transaction takes on the form of a **contract** (explicit or implicit, complete or incomplete) that regulates its execution.

The alternative to the market is the **internal organization** (very often hierarchical). In conditions of uncertainty, targeted investments and a high rate of transactions, the internal organization replaces the market. Employee relations are regulated according to the hierarchical principle, the employment contract and through mechanisms of organizational influence.

The logic of the market is replaced by the action of the managerial hierarchies, the source of the "*organization costs of use*". These costs stem from the difficulties of controlling the size and complexity of the expanding organization. Information asymmetries resurface: those who execute the order are better informed than those responsible for instructing which transaction mode to use and setting the production target. These asymmetries generate opportunistic behaviour; the person executing the transaction pursues their personal agenda and not the organization's goals. To prevent this kind of behaviour, it is necessary to implement monitoring and incentive systems. In fact, verified critical situations (Williamson 1975; Costa and Gubitta 2008) show how an increase in the size of an organization diminishes the capacity to control it. For example, expansion strategies not justified by real

business needs (for instance, when managers overestimate their human resource needs solely with an eye to boosting their internal power base). Situations of unfairly manipulated information can be verified, while opportunistic acts that benefit the individual managers and not the organization can be committed by the hierarchical line.

The hierarchy thus sees its returns diminish as the organization's size and complexity increase. When the organization costs of use outstrip the benefits, the decision to internalize can be questioned, if not through an improbable return to the market, through recourse to hybrid forms. The adoption of a governance structure based on the internal organization implies the prevalent use of employment relationships and the development of all the organizational mechanisms, clearly with a view to minimizing the organization costs of use.

After having analyzed the factors that determine the failure of the market and the hierarchy as transaction governance structures, Williamson turns to the intermediate organizational forms midway between the hierarchy and the market and then highlights not only how the firm can be interpreted as a flow of transactions, but also how these characterize the entire economic system.

Caught up in the drift of this ongoing flow, the firm's job is to position itself where the transactions can be performed efficiently, which means that each firm must identify its boundary of efficiency, i.e., where the transaction costs are minimal.

Williamson thus clarifies just how crucial it is to define the essential characteristics of what he defines as the critical transactions. Indeed, it is the critical transactions that influence the decision of which alternative transaction governance system to use between market, hierarchy and mixed forms.

Williamson's study revolves around two sets of factors (Fig. 2.1): the human factors and the environmental factors.

The diagram shows how significant factors pair up to influence market crisis. The human factors are bounded rationality and opportunism; the environmental factors are uncertainty/complexity and a small number of interacting subjects. Bounded rationality is associated with uncertainty/complexity, while opportunism is linked to small numbers. In turn, uncertainty and opportunism, both of which are closely linked to small numbers, are the main cause of the information block.

A situation of **information impactedness** is created when one group has a better understanding or more information about an exchange than the other group.

This creates a disadvantage (whether known or unknown) that can hinder the negotiations or increase the risk inherent in the exchange. Again, such a situation is more serious when there are small numbers of exchangers in uncertain, bounded rational situations where the potential for opportunism exists. Internal organizations can help to unblock a situation of information impactedness. The organization serves to inhibit opportunism in situations of information disadvantage.

In short, the information block is a condition that all the factors indicated in Fig. 2.1 contribute to and that materializes when the circumstances related to the execution of a transaction are known to one or more subjects while their counterparts must incur a cost to discover or get that same information. The problem arises

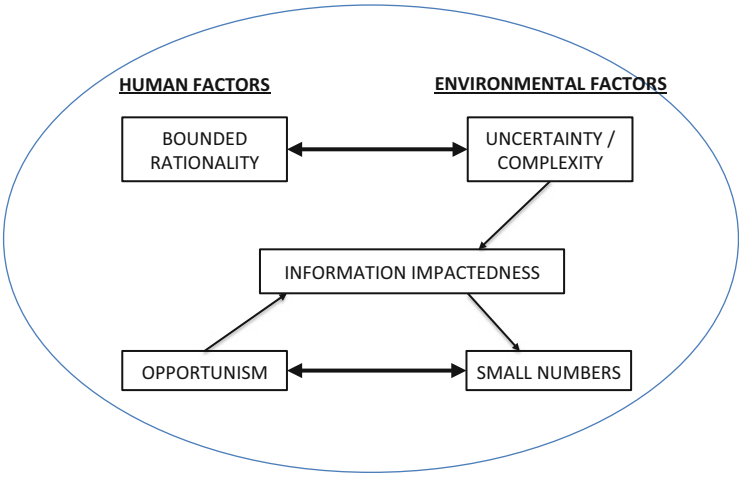

Fig. 2.1 The organizational failure framework (*Source* Williamson 1975, p. 40)

not only from information asymmetry, but also from the high cost of levelling the information playing field and the tendency of the parties to adopt opportunistic behaviour. In such situations, it is easier to control the opportunism factor by switching from the market to the hierarchy.

2.2.2 Opportunism, Small Numbers, Bounded Rationality, Uncertainty/Complexity

Opportunism allows for strategic thinking and guile in exchanges. People can lie, cheat and steal. One cannot necessarily trust everybody. Therefore agreements need to be monitored during execution—hence the need for an organization. Theoretically, with large numbers of exchangers one could avoid those who exhibit opportunistic behaviour, effectively punishing it. But in situations of small numbers of exchangers, one may not be able to avoid it. In instances of opportunistic behaviour, the advantages of the internal organization are greater than those of the market modes.

Transaction cost economics assumes that the sphere of human knowledge is rational but bounded in its intentions (Simon 1996). That boundedness is attributable to two things: neurophysiologic limitations and expressive limitations, where the former is connected to the reduced capacity to store information, to recall the information and to process it correctly, and the latter refers to the limited capacity of the individual to translate their knowledge into words, symbols and numbers that can be understood by others. Those limitations are further emphasized when we find ourselves in situations of uncertainty and/or complexity. Hence, bounded rationality establishes that, even though humans behave in an intentionally rational way,

they are actually far less so due to the limitations of their knowledge, far-sightedness, technical abilities and the available response time. In essence, we are talking about the difficulty of coming into full possession of the information and the decisions. According to Herbert Simon (1996), rationality requires complete knowledge and a perception of the knowledge generated by each choice; but knowledge of the consequences is often incomplete. As these consequences can impact the future, the imagination has to be used to bridge the experience gap and place a value on the future expectations of the consequences. Rationality means choosing from among all the possible behaviours, but the decision-makers have knowledge of only a few of these alternatives. To again cite Simon, the human capacity to formulate and resolve complex problems is very small when compared to the size of the problems that need to be solved using objective rational behaviour.

Given the limited capacity to calculate, an intentionally rational behaviour is that in which the decision-maker explores only a few alternatives, makes a guesstimate of the consequences and bases his/her decision on the criterion of satisfaction. And all this to indicate how one of the functions carried out by the organization is precisely that of placing the participating subjects in an environment that enables the decisions to be adapted to the organizational objectives and provides the individuals with adequate information to make the right decisions. It is, effectively, an attempt to save on rationality.

Williamson (1975, 1979) also believed that the inability to formulate and resolve complex problems places a restriction on the choices and leads to an incomplete adaptation to random events. This is particularly true of negotiating.

If uncertainty, opportunism and small numbers help to more precisely explain the determinants of market failure, the main problem of organizational design is aggregating these transactions into a pool of efficiently sized technical-production units.

Williamson states that the goal of an organization is to minimize the costs of exchanging resources in the business environment and the costs of managing exchanges inside the organization.

The analysis proposed by Williamson (1981, 1985) factors in the transaction costs *and* the production costs. These two types of costs are mutually exclusive and have the same rate of replacement. In order to improve the size of the organization it is necessary to consider the weight of both types of costs (transaction and production) to evaluate the best alternative between hierarchy and market. Williamson hypothesizes that *both* cost groups (production and transaction) change when variations occur in the three critical dimensions that identify the single transactions:

- The degree of **specificity of the assets** involved in the relationship
- The **frequency** of the transactions
- The **uncertainty** (deriving from opportunism and incomplete contracts)

2.2.3 Asset Specificity

Williamson clarifies the concept of asset specificity by using the term idiosyncratic investments, i.e., the investments needed to successfully execute the transaction. The higher the investments, the more it behoves the transacting parties to continue the relationship, given that calling a halt to the exchange would imply a **sunk cost**, i.e., a cost that cannot be recovered.

Market-based transactions are preferred when these are short-term and the required investments are not excessively specific. Conversely, in the presence of significant uncertainty, particularly specific investments and frequent relations between the parties, Williamson suggests using the unified governance mechanism (Coase 1937; Williamson 1975, 1979; Klein et al. 1978).

Market and hierarchy call for two different cost structures. The market has higher variable costs due to the need to search for information, enter into negotiations and control contract execution.

The hierarchy has higher fixed costs because the increase in the number of transactions means that the hierarchical fixed costs of use are split across more than one transaction and, as a result, the internal organization (unified governance) becomes comparatively more efficient than the market as a form of transaction governance.

Asset specificity occurs when the exchanges require specific investments to implement legitimate contracts or when distinctive know-how is acquired during contract application. To understand asset specificity, think, for example, of a long-term contract for the supply of semi-finished goods. The supplier has a technological choice to make: either meet demand by using a multipurpose technology or by using a specialized technology for that particular type of subcontract. In choosing the latter, the supplier opts to make a specific investment. The investment in specific assets carries benefits, for example, lower production costs, but also risks, given that the recovery value of a specific asset is far lower than the value it has in the principle transaction. In terms of contract implementation, investment specificity can take many guises and can refer to:

- **Specificity of localization** when the production of a specific output requires the parties to make physically localized investments in a specific place to save on transportation and warehousing (i.e., logistics) costs
- **Specificity of the asset** when the production of a specific output requires the parties to invest in specific plant and machinery, the value of which decreases when put to other uses
- **Specificity of human resources** in cases where the production of a specific output requires the parties to invest in human capital specifically to implement the transaction

The transaction is linked to a cost the recovery rate of which, should the client-supplier relationship be terminated, decreases the more specific the transaction. Further, that specificity implies a high level of costs to, first, search and select the

best partner for that particular transaction and, second, reach agreement on the terms of that specific transaction. On the other hand, there would be no need to reach a specific agreement if the client-supplier negotiations centre on a non-specific exchange.

Each transaction therefore needs to be supported by the use of assets in both the production and the exchange (contract negotiation and execution) phases. However, assets dedicated to a specific transaction are more or less non-recoverable when used in other types of transactions, thus becoming a sunk cost. This explains the need to enter into long-term contracts with partners that can ensure an adequate economic return over the medium to longer term.

2.2.4 Transaction Frequency

The fact that transactions can be occasional or recurrent leads to the adoption of different types of transaction governance. In fact, the more frequent a transaction, the more probable it is that a specific instrument will be designed to govern it. Frequent interactions and the expectation of recurrent exchanges that transfer and build knowledge among partners tend to deter opportunistic behaviour.

As a result, the frequency of the exchanges has two effects, given that, on the one hand, it tends to lower the internal production costs by enabling both production and administrative economies of scale and, on the other, helps to contain the external transaction costs by keeping opportunism in check.

2.2.5 Transaction Uncertainty

Each transaction is developed over an arc of time, starting with the investments made in human resources and/or financial assets and ending with the final exchange, i.e., the handover of the product/service to the client. In that arc of time, however, there is always a degree of uncertainty about whether the transaction will effectively be completed and, hence, the risk that the relative costs will fail to generate a financial return. Therefore, a positive correlation exists between uncertainty and the level of transaction costs.

Moreover, uncertainty is influenced by both the complexity of the environment and the fact that the parties might adopt opportunistic behaviour. The higher the "environmental" and/or "subjective" uncertainty, the higher the transaction costs to implement the exchanges. In other words, the more the uncertainty attached to the transaction, the more these will tend to be "close" to the hierarchy.

2.2.6 Market Versus Hierarchy

The above analysis shows how different situations can exist between the opposite ends of a *continuum*:

- At the one end there is a situation of high frequency, low specificity and low uncertainty: this situation favours the use of the market to make transactions.
- At the other end, there is a situation where the diametric opposite is true, in which the use of the hierarchy is necessary to remove uncertainty.

Between the two ends of that continuum are situated all those intermediate situations that can lead to governance-by-contract solutions according to the logic of trilateral, bilateral or unified governance (relational contract).

Basically, the hierarchy-market paradigm moves along an axis that draws the organizational boundaries and that is based on a trade-off between the production cost advantages of using the market and the coordinated cost advantages provided by the hierarchical form (Grossmann and Hart 1986).

Williamson, in considering exclusively transaction frequency and asset specificity, identifies four forms of transaction governance:

The **market** is more efficient at low rates of transaction frequency and investment specificity.

Trilateral governance is a "third-party" assisted market, i.e., a form of market that calls for a bureaucratic mechanism in addition to an external market. And this is why it is defined also as **market-b** (Barney and Ouchi 1986).

Bilateral governance considers social factors such as trust and reputation essential to ensure the flexibility and continuity of the agreement. The parties are to some extent locked-in, forced to cooperate by fiat. This form of governance is favoured when the transactions are high and recurring in number and the investments required are not too specific (**market-c**).

In direct contrast to the market, **unified governance** (**hierarchy**) is more efficient when the resources are highly idiosyncratic.

The market, a conglomerate of independent players, can often deliver a product or a service of higher quality to the firm at a lower cost because it can leverage economies of scale or specialized production competences. However, the use of the market raises the transaction costs, which have to cover the search for the best supplier, contractual negotiations, contract monitoring and implementation and the behaviour of the other party, as well as managing coordination with this latter throughout the entire duration of the contract.

2.2.7 The Electronic Market Hypothesis

As we have seen above, the Transaction Cost Economics theory assumes that make-or-buy decisions are based on the sum total of production and transaction costs, arguing that the firm's natural evolutionary path leads it to select the governance mechanism and the degree of externalization that minimize this overall cost.

Traditional TCE thinking has it that organizations address such issues by opting for one of two alternatives, either the market or the hierarchy. Nevertheless, over time, this dichotomy has acquired a more nuanced view whereby different forms of "hybrid" governance create a continuum between the two "pure" forms that are its opposite ends, i.e., the hierarchy and the market. This broader view was introduced to better convey the great variety of governance structures that exist in practice.

The markets coordinate the flow of goods and services along the value chain in a process that sees multiple individuals and firms interact to marry demand with supply and to perform external transactions. These market forces determine the attributes, the price, the quantity and the other characteristics of the products and services that yet other firms produce: the buyer compares the several options proposed by the potential vendors and reaches a reasoned decision as to the best possible combination of predetermined characteristics.

Conversely, the hierarchy coordinates the flow of materials and services that traverses the phases adjacent to the value chain, using the firm's managerial hierarchy to control and manage the flow in-house. So it is the managerial decisions of the hierarchy and not the market forces that actually determine the characteristics, the price (if relevant), the quantity and the shipment methods for the goods and services that then enter the value chain.

As shown earlier, an organization that decides to produce a good or a service in-house pays the bill of production but saves on the coordination costs; vice versa, if the good or service is bought on the market, the organization does not have to go to the trouble of producing them but has to pay the coordination costs, i.e., the cost of activities such as searching for information, contract negotiation, monitoring the behaviour of the counterparty, and complying with legal, accounting and fiscal obligations.

These are the theoretical assumptions used by Malone et al. (1987) to identify some of the market and hierarchy trade-offs between production and coordination costs, as shown in Table 2.1, below.

Malone et al. (1987), taking their cue from the analysis conducted by Williamson (Williamson 1975), acknowledge and confirm the assumption of a substantial trade-off between the production cost economies that drive a firm to

Table 2.1 Market costs and hierarchy costs (Malone et al. 1987)

Organizational form	Production costs	Coordination costs
Market	Low	High
Hierarchy	High	Low

use the market and the governance cost economies that, on the other hand, lead the firm to use the hierarchy to govern the transactions.

The market favours competition and, presumably, lower prices precisely because it enables people to weigh up the offers of diverse suppliers and gives them a choice. When the buyers' individual demands are grouped into a larger and hence more significant unit of demand (bulk-buying), this can create economies of scale, i.e., cost advantages, that favour the buy-side. Further, specialized production can generate what are called 'economies of specialization' that enable the same good or service to be produced at a lower cost, an advantage that, in turn, can be passed on to the user/buyer.

These basic observations give us an idea of the *production cost* advantages linked to using the market as opposed to the hierarchy. Conversely, the opposite is true for the *transaction costs*. In fact, the absence of the numerous costs incurred in the search for information and the stipulation of contracts makes hierarchy-driven internal coordination simpler. The partner is always the same and the search for information is a one-off event that happens at the start of the collaborative relationship, as is the drawing up of the contracts.

Much use of the theoretical framework provided by the TCE theory has been made to evaluate the impact of information technology on an organization's business operations. Even 30 years ago, Ciborra (1983) was already predicting that IT would lead to a reduction in transaction costs, helping to create more efficient markets and hierarchy.

These were the aspects developed by Malone et al. (1987), who pointed out that the demand and supply of the traditional markets determine how goods and services are transferred from multiple firms to multiple clients and in what quantities. The client compares the offers of several vendors in order to find a good that meets their specific needs as to characteristics, service, price and other factors. Assessing the offers of many vendors translates into search costs for the buyer. However, the advent of the *electronic markets* has made it much easier for the buyer to compare the alternatives, both enhancing the volume of information available and reducing the information search costs.

Information and Communication Technology (ICT) has enabled firms to not only save on costs, but also time, i.e., compacting that spent on searching, gathering, transmitting and processing the information. After analyzing the impact of IT on organizational activities, Malone et al. (1987) identified three potential effects:

- The electronic communication effect
- The electronic brokerage effect and
- The electronic integration effect

The first, the *electronic communication effect*, implies that it is possible to transfer a higher quantity of information in a given unit of time (or the same quantity in less time) and to reduce the communication costs normally incurred using more traditional methods.

The *electronic mediation effect* is threefold: it enables multiple buyers and vendors to connect via a platform; it matches the counterparties in the most

economical way for each side, opportunely filtering the buy and sell offers; and, ultimately, acts as an efficacious and speedy mediator. This effect heightens transparency and spurs a parallel increase in the quality of the information, expanding the range of possible alternatives from which to choose. In addition, it is designed to give the user a simple and quick way to compare the different options, thus reducing the cost of the entire selection process.

Finally, the use of ICT makes it possible to harness more powerful and accessible connections, thus creating what is called the *electronic integration effect*.

When all three of those effects are combined, the coordination costs are much lower than those of production. These important consequences benefit both the markets and the hierarchies although, according to Malone et al., over the long term, the market will be the form of transaction governance that reaps the highest rewards of the advances in ICT.

In fact, as shown in Fig. 2.2, below, it is cheaper to use the market when the specificity of the investment and the complexity of the preliminary product evaluation process are low. According to the Electronic Market Hypothesis (EMH), the new technologies tend to influence both these aspects, making the investments needed in inter-organizational relations less specific and the product evaluation process easier.

In gauging the specificity of an investment, a production factor used by a firm is highly specific when the asset cannot be readily reused by other potential commercial partners, for example, due to its geographical location or physical characteristics or the specificity of the human capital required to operate it, or because it only acquires value when put to the use for which it is destined. Such production factors make the hierarchy the best form of transaction governance because the transactions aimed at objects characterized by these types of factors must be monitored carefully by the vendor so that the product meets the specific requirements of the buyer/user.

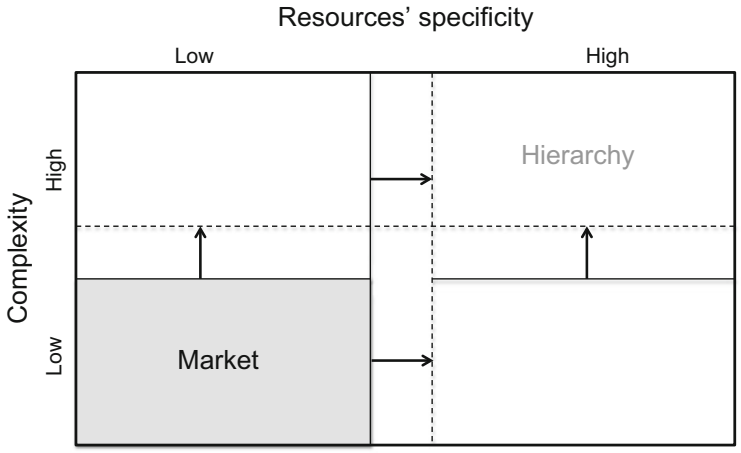

Fig. 2.2 The expansion of the market over the hierarchy (Malone et al. 1987)

On the other hand, thanks to the advent and the maturation of IT the flexible industrial technologies now facilitate and accelerate the revamping of production lines. The information systems are not always able to support different processes, activities and functions and do not require the total customization of hardware and software, having been tailored to the specific needs of the firm. Hence, the hardware/software can be reallocated and more easily readapted to meet any change in production or management needs.

However, the degree of product evaluation complexity derives from how much information is needed to give potential customers sufficient details on the product's features to enable them to make their choice from the range of offers. Thanks to the use of simple and highly accessible tools, the current technologies make it very easy to compare the features of products that are also highly diverse and highly complex in nature. One example is the use of web browsers to search product catalogues from which to select a certain product or products with the required features. The user can deploy automatic tools, such as intelligent agents or search engines, keying in search parameters to identify and visualize the products that match their product specifications.

Figure 2.2 illustrates the organizational implications of reducing the degree of complexity of both product descriptions and investment specificity. In particular, it shows how an increase in descriptive complexity and resource specificity shifts the boundaries of the market transactions dimension, expanding it. As analyzed in the previous section, these conditions facilitate the emergence and consolidation of market rather than hierarchically organized transactions precisely because both the contracting parties have more to gain from the exchange.

The figure's horizontal line represents the product description and its degree of complexity. The upward shift in the horizontal line illustrates how the take-up of ICT has enabled a reduction in the high degree of complexity previously attributed to many goods and services prior to its arrival. On the other hand, the vertical line represents the specificity of the resources, which tends to diminish post-ICT, shifting the vertical line gradually to the right and expanding the less specific production assets dimension. These shifts, marked with arrows, increase the dimension in which the market is the best form of transaction management.

Despite its simplicity, the figure below summarizes all the hypotheses formulated earlier and highlights the outcome of the EMH theory supported by Malone, Benjamin and Yates. Two years later, the same authors (Malone et al. 1989) published a new article in the Harvard Business Review to demonstrate the validity of their theory. The new contribution cited many concrete examples in which their predictions of 1987 were being effectively realized, following the evolutionary path that these same had already anticipated.

Figure 2.2 shows that the products with more complex descriptions that demand the highest specific investments require a particularly elaborate information flow, which is why these can be acquired more efficaciously using the hierarchy instead of the market. Malone et al. (1987) predicted that these situations would become less and less frequent because the advances in ICT would make it possible to automate increasingly more complex exchanges of information. Therefore, these

authors hypothesized that, over the longer term, the electronic market would become the most widespread transaction governance mechanism because it would enhance all the typical traits of the traditional market: competition, efficiency and substitutability. Nevertheless, the organizations will not make a sudden dash for the electronic market but will advance at a slower pace through intermediate steps.

The first of these intermediate steps is a partial electronic market in which the suppliers, mostly providers of coordination technology, push the potential buyers toward the supplier's own products or services while also giving them access to the other business vendors. Hence, in the partial electronic market, the interests of a certain member will prevail and, more often than not, those of the market operator itself. The next step is an impartial electronic market that gives all the vendors a chance to win clients based on the merits of their goods and services. In this case, independent market platforms are created and managed by unbiased operators for buyers with which they have no relation. The final step is a customized electronic market that provides the buyers with support decisions to help them wade through the maze of options. Many authors, for example, Daniel and Klimis (1999), Malone et al. (1989), Bakos (1991), Hopper (1990) and Brynjolfson et al. (1994), have investigated the different evolutionary paths that can be charted toward new forms of market.

However, the contribution of Malone et al. (1989) remains particularly significant for having developed the model's indirect implications on the role of the value chain intermediaries. Indeed, according to these authors, the impact of the shift to the market will greatly threaten their role because the market's ability to replace them, and do a more efficient job, will make traditional intermediaries less and less indispensable, leading, more likely than not, to their demise. This highly controversial hypothesis is the subject of intense debate in the literature, which has reached the conclusion that, rather than all the traditional intermediaries disappearing, in reality, the new organizational forms will merely lead to a reshaping of the existing scenario. Such a reconfiguration is expected to spur the creation of new types of intermediaries, defined as electronic or infomediators or cybermediators, to take over the high-profile roles in those sectors in which they initially developed (Fielt et al. 2006; Giaglis et al. 2002).

Last, but by no means least, is the important conclusion reached by the EMH model that all the participants should benefit from the improvements generated by the electronic market, and that each of these should agree to pay for the services provided by the market-maker (Sampson 2003).

2.2.8 The "Move to the Middle" Hypothesis and the Market-Hierarchy Hybrids

Clemons et al. (1993) have brought new predictions to the debate, which, like those of Malone et al. (1987), are also TCE-based. These authors claim that the impact of

ICT on the business organization cannot be understood unless the concept of *risk* is taken into account, particularly, the operational risks and the risks related to opportunistic behaviour.

By operational risks, the authors mean the costs deriving from the information asymmetries and the different objectives of the exchange participants. The risk of opportunism refers, again according to the authors, to the cost of what are known as relation-specific investments, i.e., those that are closely related to a particular contractual relationship or to the number of potential suppliers of a product. Another source of these costs is that defined by the managerial literature as the loss of resources control, for instance, when sensitive information is transmitted to an external supplier, which, in turn, might use it to their own advantage, thus damaging the client firm.

Clemons et al. (1993) reworked the Transaction Cost Economics theory to factor in the risk concept, claiming that the transaction cost is composed of the coordination costs and the transaction risks. In this model, *cooperation* is seen as an effort to increase, on the one side, the use of the resources and, on the other, the value of the transaction by more explicitly coordinating the business activities thanks to greater integration of the business processes.

Nevertheless, increased integration cannot but translate into higher transaction-related risks due to the possibility that the counterpart will behave opportunistically. This reasoned assumption ensues from observing firm behaviour: firms have historically avoided this risk through either upstream or downstream vertical integration or have merely refused to pursue initiatives with the potential to create value.

Clemons et al. (1993) demonstrate that the use of IT can reduce coordination costs without necessarily increasing the risk associated with a higher level of explicit collaboration. The authors conclude that the benefits of external production and specialization economies of scale should spur the firms to make more use of outsourcing channels. In addition, that move is expected to be accompanied by greater cooperation than in the past.

The buyer-supplier relationship is a form studied also by Bakos and Brynjolfsson (1993), who focus on several aspects of the issue. According to these authors, transactions linked closely to the use of ICT mean that the suppliers need to increase their investments in resources that cannot be subject to contract, such as quality, innovation and the sharing of information, despite the fact that these might not have enough contractual power to guarantee a return on investment. Bakos and Brynjolfsson (1993) believe that reducing the number of suppliers would ensure each supplier higher contractual power and provide them with the incentive needed to finance the investments that cannot be factored into a contract and which otherwise would not be made.

In brief, this model is underpinned by two basic assumptions: that the increasingly pervasive presence of ICT will determine: (1) an increase in long-term supply relations (outsourcing) and (2) a decrease in the number of suppliers with which the firm will forge close-knit, longer term relations.

This perspective sees outsourcing as a hybrid form of transaction governance, positioned "in the middle" of the market and hierarchy continuum. The hypothesis is that the progressive growth in the ICT take-up will create the conditions that promote greater use of outsourcing, the good management of which generates the advantages of both the hierarchy (low coordination costs) and the market (low production costs), as well as enabling risk control. Hence, the name of the model is "Move to the Middle Hypothesis".

The Move to the Middle Hypothesis has played a significant role in TCE's evolution from a basically bipolar model (market versus hierarchy) to a model that envisages many possible governance forms in a continuum of combinations that stretch from one end (the market) to the other (the hierarchy). In fact, like the market, long-term inter-organizational relations—for example, an outsourcing agreement—require both a supplier and a client but also knowledge, cooperation and the sharing of resources and effort that is typical of the hierarchical context.

Many years have passed since Malone, Benjamin and Yates published their academic article on the impact of Information Technology (IT) on the choice of the organizational coordination of business activities . Despite that, the Electronic Markets Hypothesis still remains a point of reference for many scholars today (Wigand 2011). Among the many authors to follow this debate in the literature, (Wigand 1995) later re-examined the arguments of Malone et al. (1987) from a strategic angle, incorporating into their theory what the author defines as the "strategic electronic network effect", thus extending the explicative reach of the original theory. According to this thinking, ICT can help to surpass the market's implicit limitations, favoring a shift from the market to hybrid forms such as clans or networks. ICT implementation, in fact, tends to reduce transaction costs, facilitating the creation of hybrid transaction governance forms based on price, contractual or hierarchical mechanisms (Wigand 1997). These collaborative forms, positioned between the market and the hierarchy, enable the firms to benefit from both low market prices and hierarchical stability (Wigand 1997).

All these contributions agree that the advances in ICT will not lead the market to dominate the hierarchy, as predicted by EMH (see above) but to the increasing development of further hybrid forms of transaction governance that enjoy the best of both worlds: the hierarchy's low coordination costs and the market's low production costs.

2.3 Agency Theory

2.3.1 Core Concepts

The Agency Theory is rooted in the seminal studies on risk sharing among individuals and groups, that were published between the 1960s and 1970s (e.g., Arrow 1971; Wilson 1968). Building on these researches, some scholars focused on the

so-called agency problem, that occurs when one party (the principal) delegates work to another party (the agent) who performs the work (Jensen and Meckling 1976; Ross 1973). The agency relationship is seen as ubiquitous: for example, the relationship between firm owners and managers can be seen in this light, but also many inter-organizational relationships, such as the buyer-supplier one, are affected by agency problems. In other words, the agency theory is potentially interested in all cooperative relationships.

Agency theory focuses on two problems that can occur in agency relationships:

1. Conflicting goals and interests between the principal and the agent.
2. Different attitudes toward risk between the principal and the agent.

The relationship between the principal and the agent is described using the metaphor of a contract (Jensen and Meckling 1976). The contract governing the relationship is then the unit of analysis in this theory, whose goal is to determine which is the most efficient contract, given the key assumptions about people (self-interest, bounded rationality, risk aversion), organizations (goal conflict) and information (in this theory, information is assumed as a commodity that can be purchased).

More specifically, the key question (Eisenhardt 1989) in this theory is: in a given situation, how can we predict whether a behavior-oriented contract (e.g. salaries, hierarchical governance) will be more or less attractive and efficient than an outcome-oriented contract (e.g. commissions, stock options, transfer of property rights, market governance)?

In the next paragraphs, we will follow Eisenhardt's (1989) seminal paper to synthesize the key answers to this question and then we will seek to adapt them to the specific topic of inter-organizational relationships.

2.3.2 Outcome-Based and Behavior-Based Contracts

From its roots in information economics, agency theory has developed along two lines: positivist and principal-agent (Jensen 1983). Both streams focus on the contract between principal and agent as a common unit of analysis, but positivist researchers have focused on identifying situations in which the principal and agent are likely to have conflicting goals, and on the relationship between owners and managers of large, public corporations especially; whilst the principal-agent approach has a broader focus. As Eisenhardt (1989) claims, "the important point is that the two streams are complementary: positivist theory identifies various contract alternatives, and principal-agent theory indicates which contract is the most efficient under varying levels of outcome uncertainty, risk aversion, information, and other variables" (p. 60). Eisenhardt lists two propositions synthesizing the outcomes of the positivist stream of studies.

When the contract between the principal and agent is outcome based, the agent is more likely to behave in the interests of the principal.

The argument is that outcome-based contracts (e.g. commissions, stock options, transfer of property rights, market governance) align the preferences of agents with those of the principal, because the rewards for both depend on the same actions; thus, the conflicts of self-interest between principal and agent are reduced. For example, Jensen and Meckling (1976) described how increasing the firm ownership of the managers decreases managerial opportunism.

When the principal has information to verify agent behavior, the agent is more likely to behave in the interests of the principal.

This second proposition claims that information systems also curb agent opportunism. In fact, information systems inform the principal about what the agent is actually doing, then the agent will realize that he or she cannot deceive the principal. For example, Fama and Jensen (1983) described the information role that boards of directors play in controlling managerial behavior.

2.3.3 The Principal-Agent Literature: Information Systems, Outcome Uncertainty, Risk Aversion and Goal Conflict

The approach of the simple model assumed by the principal-agent literature can be described in terms of cases (e.g., Demski and Feltham 1978). The first case is when the principal knows what the agent has done. Given that the principal is buying the agent's behavior, then a contract that is based on behavior is most efficient in this case. An outcome-based contract would needlessly transfer risk to the agent, who is assumed to be more risk averse than the principal. The second case is when the principal does not know exactly what the agent has done. Given the self-interest of the agent, the agent may or may not have behaved as agreed. The agency problem, then, arises because (a) the principal and the agent have different goals and (b) the principal cannot determine if the agent has behaved appropriately.

As a consequence, the heart of principal-agent theory is the trade-off between the cost of measuring behavior and the cost of measuring outcomes and transferring risk to the agent (agents are assumed to ask higher rewards to accept the risks of outcome-based contracts) .

Two aspects of the agency problem are cited in literature: moral hazard and adverse selection. Moral hazard refers to lack of effort on the part of the agent. Adverse selection refers to the misrepresentation of the agent's abilities: it arises when the principal cannot completely verify the agent's real skills or abilities in advance. In other words, adverse selection involves hidden information, and moral hazard hidden action ((Pavlou et al. 2007).

In the case of unobservable behavior (due to moral hazard or adverse selection), the principal has two options (Eisenhardt 1989). The first one consists in investing

in information systems, that in this theory are generally defined not as technological solutions, but as social and organizational solutions, such as budgeting systems, reporting procedures, boards of directors, additional layers of management. Such investments reveal the agent's behavior to the principal, and the situation reverts to the complete information case described above (Conlon and Parks 1988; Eccles 1985; Fama and Jensen 1983). Consistently, Eisenhardt (1989) states that:

> Information systems are positively related to behavior-based contracts and negatively related to outcome-based contracts.

The other option for the principal is to contract on the outcomes of the agent's behavior. Such an outcome-based contract motivates behavior by aligning the agent's preferences with those of the principal, but at the price of transferring risk to the agent. The issue of risk arises because outcomes are only partly a function of behaviors. Uncontrollable variations in outcomes can be caused by many factors such as, for example, government policies, economic climate, competitor actions, technological change. When outcome uncertainty is low, the costs of shifting risk to the agent are low and outcome-based contracts are attractive; but when uncertainty increases, it becomes increasingly expensive to shift risk to the agent, despite the motivational benefits of outcome-based contracts. Consistently, Eisenhardt (1989) claims that

> Outcome uncertainty is positively related to behavior-based contracts and negatively related to outcome-based contracts.

On the other hand, the risk aversion of the agent can vary: for example richer and larger enterprises can accept risks that smaller and weaker firms cannot afford. As the agent becomes increasingly less risk averse, it becomes more attractive to pass risk to the agent using an outcome-based contract. Conversely, as the agent becomes more risk averse, it is increasingly expensive to pass risk to the agent. Consistently, Eisenhardt (1989) claims that

> The risk aversion of the agent is positively related to behavior-based contracts and negatively related to outcome-based contracts.

Similarly, as the principal becomes more risk averse, it is increasingly attractive to pass risk to the agent. In formal terms,

> The risk aversion of the principal is negatively related to behavior-based contracts and positively related to outcome-based contracts.

Another extension of the theory is to assume that the goal conflict between the principal and agent decreases (e.g., Demski 1980) as occurs, for example, in a highly socialized or clan-oriented firm (Ouchi 1979). If there is no goal conflict, the agent has no reason to behave differently from the principal's will, even if his or her behavior is not monitored. As goal conflict decreases, then, there is a decreasing motivational imperative for outcome-based contracting, and the issue reduces to risk-sharing considerations: if we assume that the agent is risk averse,

> The goal conflict between principal and agent is negatively related to behavior-based contracts and positively related to outcome-based contracts.

2.3.4 Task Programmability, Outcome Measurability, Relationship Length

Programmability is defined as the degree to which appropriate behavior by the agent can be specified in advance. Since the behavior of agents engaged in more programmed tasks is easier to observe and evaluate, information about the agent's behavior is more readily determined and the situation reverts to the complete information case. "Thus, retail sales clerks are more likely to be paid via behavior-based contracting (e.g., hourly wages), whereas entrepreneurs are more likely to be compensated with outcome-based contracts (e.g., stock ownership)" (Eisenhardt 1989). In formal terms,

> Task programmability is positively related to behavior-based contracts and negatively related to outcome-based contracts.

Another task characteristic is the measurability of the outcome. Some tasks require a long time to complete, involve joint or team effort, or produce intangible, soft outcomes. In these circumstances, outcomes are difficult to measure, at least within a practical amount of time. When outcomes are measured with difficulty, outcome-based contracts become less attractive. In contrast, when outcomes are readily measured, outcome-based contracts are more attractive (Anderson 1985). Consistently, Eisenhardt (1989) claims that

> Outcome measurability is negatively related to behavior-based contracts and positively related to outcome-based contracts.

Finally, when principals and agents engage in a long-term relationship, it is likely that the principal will learn about the agent (e.g., Lambert 1983) and so will be able to assess behavior more readily; whilst in short-term agency relationships, the information asymmetry between principal and agent is likely to be greater, thus making outcome-based contracts more attractive. Consistently, Eisenhardt (1989) asserts that

> The length of the agency relationship is positively related to behavior-based contracts and negatively related to outcome-based contracts.

2.3.5 Agency Theory and Inter-Organizational Relationships

Agency theory has several similarities with the Transaction Cost perspective (Williamson 1975). As noted by Barney and Ouchi (1986), the two theories share the assumptions of self-interest and bounded rationality. Moreover, both theories concentrate on economic mechanisms for managing conflicts, such as price or incentives, while the social and political mechanisms of power, bargaining, negotiation and coalitions are not considered. They also have similar dependent variables; in fact, hierarchies may be considered as roughly corresponding to behavior-

based contracts, and markets as roughly corresponding to outcome-based contracts. However, the two theories arise from different traditions in economics: Transaction Costs Economics focuses on organizational boundaries, whereas in Agency theory it is the contract between cooperating parties, regardless of firm boundaries, to be highlighted.

Despite similarities, in effect, the focus on risk in Agency theories leads to different predictions from those claimed by the Transaction Costs theory. For example, Walker and Weber (1987) studied the "make or buy" decision for components in a large automobile manufacturer (which was the principal in this case). The authors were unable to explain their results using a Transaction Cost framework. They found that managers can be very sensitive to outcome uncertainty. In particular, if high levels of outcome uncertainty are perceived, the managers are be more likely to choose the "buy" option, thereby transferring risk to the supplying firm, even despite transaction costs. This is consistent with the Agency theory, which predicts (see the Propositions in the paragraphs above) that risk-neutral managers are likely to choose the "make" option (behavior-based contract), whilst risk-averse executives are likely to choose the "buy" option (outcome-based contract), independently from the related transaction costs.

Another important contribution of Agency theory involves information systems. In agency theory, information is regarded as a commodity: it has a cost, and it can be purchased. The implication is that organizations can invest in information systems in order to control agent opportunism. In the classical, seminal papers of the principal-agent literature, "information systems" are not the IT-supported systems that we usually think about when we use this expression: in this stream of studies, information systems are defined as the organizational solutions aimed to allow effective information streams between principal and agents (such as budgeting, MBO, boards of directors, managerial supervision, etc.), and are considered independently from their possible IT base.

Maybe because the role of IT is usually not mentioned in this theory, Information Systems scholars have preferably concentrated on the implications of the Transaction Costs theory, and have sometimes overlooked the implications of Agency theory so far. But if we consider that modern, IT-based Information Systems can actually boost the information flows between the principal and the agents (let us think, for example, to the control potential of ERPs), we can understand that the predictions of Agency theory can be of great interest for Information Systems scholars.

In fact, whilst Transaction Costs had predicted that the growing importance and effectiveness of Information Systems would decrease transaction costs and then lead to market solutions, roughly equivalent to outcome-based contracts, the Agency theory on the contrary predicted that enhanced Information Systems would enhance control possibilities and then lead to behavior-based contracts, roughly equivalent to hierarchy solutions. As we have seen in the paragraphs dedicated to the Transaction Costs theory, this second prediction seems more consistent with field data.

But what are the typical behavior-based contracts in inter-organizational settings? For example, vertical integration between customer and supplier (Anderson 1985; Eccles 1985); inter-organizational collaboration for innovation and new product development (Bolton 1988; Zenger 1988); alliances (Ozcan and Eisenhardt 2009); joint ventures (Reuer and Ragozzino 2006); franchising contracts (El Akremi et al. 2010); long-term outsourcing contracts (Bahli and Rivard 2003) including institutionalized codes of conduct (Goo et al. 2009). In all these cases, the agent is chosen for its perceived controllability/reliability, and the principal does not pass a great deal of risk to the agent.

Conversely, outcome-based inter-organizational contracts include the traditional buyer-seller relationships, where the supplier accepts the risk that its outcome is not considered sufficient by the principal, and then is not paid for.

Building on the propositions presented in the paragraphs above, we propose the following framework, synthesizing the predictions of Agency theory translated into inter-organizational settings:

Factors leading to behavior-based inter-organizational contracts (e.g. vertical integration between customer and supplier; inter-organizational collaboration for new product development; joint ventures; franchising contracts; long-term outsourcing contracts) include:

1. Efficient inter-organizational information systems (information on the behaviors of the agent is available for the principal, for example through a shared collaborative IT-supported work environment)
2. High outcome uncertainty (e.g. in case of turbulent markets, evolving government policies, continuous technological changes, the agent organization may refuse to be rewarded on the basis of its outcomes, which may be unacceptably beyond its control)
3. High risk-aversion of the agent organization (e.g. a small, fragile supplier is likely not to accept the risks implied in outcome-based contracts)
4. Low risk-aversion of the principal organization (e.g. a large, rich customer is more likely to accept not to pass risk to the supplier)
5. Low levels of goal conflict between the principal and the agent organization (e.g. in the classical relationship between a fashion manufacturer and its mono-brand retailers)
6. High task programmability (the tasks committed to the agent organization are easy to standardize and pre-determine, such as, for example, in outsourced basic security services)
7. Low outcome measurability (the agent organization's outcomes are difficult to measure within a reasonable amount of time, such as, for example, in new product co-design)
8. Long-lasting (satisfying) previous inter-organizational relationships, which facilitated reciprocal perceived predictability

Of course, the opposite conditions (inefficient inter-organizational information systems; low outcome uncertainty; low risk-aversion of the agent organization;

high risk-aversion of the principal organization; high levels of goal conflict; low task programmability; high outcome measurability; short-term relationships) are expected to lead to outcome- based contracts, i.e. the classical buyer-seller relationships.

2.4 Resource Dependence Theory

2.4.1 Core Concepts

What makes the competitive environment uncertain is the scarcity of resources, the unforeseeable changes in scenario, and the ongoing attempts of the other organizations to control the critical resources far beyond their organizational boundaries. This creates the need for the firm to forge relationships with other organizations that own complementary resources. To reduce their dependency on resources not owned or controlled directly, the firms seek to regulate the environment by implementing targeted strategies. One strategic option is to create stable inter-organizational relations based on cooperation.

The organizations are not therefore self-sufficient but depend on the environment for the resources they need to survive and grow. The Resource Dependence Theory mainly refers to the contribution of Pfeffer and Salancik (2003). In their theoretical approach, a key role is assigned to the environment and the social context in which the firm operates. Even the decisions made by the internal organization reflect the pressures of the external environment (Pfeffer and Salancik 2003). Moreover, the organizations are "*embedded*" in networks of interdependencies and social relations. The external relations generate the resources that the organization uses as inputs to ensure its survival. The dependencies are often reciprocal and sometimes indirect. If firms could generate all the resources they need to survive there would be no need to forge "relations" with the external environment and, therefore, other organizations. But the firms need to interact with other organizations to procure an ongoing and abundant flow of resources to satisfy its stakeholders. The availability of the resources depends on the complexity, dynamism and munificence of the environment. The organizations seek to interact with the environment to ensure they have access to the resources on which they depend.

2.4.2 The Role of the Environment

According to the Resource Dependence Theory, the organizations seek, on the one side, to minimize their dependence on other organizations for the procurement of

important resources and, on the other, to work on influencing the environment to make those resources available.

The Resource Dependence Theory is based on the following assumptions:

- That organizations prefer certain and predictable environments to uncertain ones
- That organizations prefer more permissive environments to those that restrict their degree of freedom
- That, where possible, organizations adopt strategies to change the environment

Pfeffer and Salancik (2003) emphatically point out the importance of the environment in understanding organizations.

In particular, the authors investigate how the organizational environments influence and restrict the organizations and how the organizations respond to external restrictions. The organizations are inevitably tied to the conditions of their environment. In fact, all organizations carry out activities the logical conclusion of which is the regulation of the environment (Hawley 1950). Nevertheless, despite the apparent evidence of this position, most of the literature on organizations has still not acknowledged the importance of the context (Pfeffer and Salancik 2003).

According to Pfeffer and Salancik, organizations survive to the extent these are efficacious. Their efficacy stems from the management of the requests, especially requests from the stakeholder groups on which the organization depends for resources and support. The key to organizational survival is the ability to acquire and maintain the resources. To acquire resources, the organizations must perforce interact with their social environments. The problem of interaction would not exist if the organizations had complete control over all the factors and elements necessary to their operations.

It is easy to see how the management of an organizational coalition encompasses also the resolution of the various conflicts that arise between the different interests (Pfeffer and Salancik 2003). The organizations are "wedged" into an environment that consists of other organizations. As a result, the former are dependent on the latter for most of the resources they need. The organizations are linked to their environments through federations, associations, client-supplier relations, competitive relations and a social-legal system that defines and controls the nature and the boundaries of those relations.

The firms enter relations with the other organizations based on cooperation and coordination with the aim of controlling environmental uncertainty (Thompson 1967; Pfeffer and Salancik 2003; Alter and Hage 1993). The basic tenet of the Resource Dependence Theory is that the organizations operate inside uncertain and fluctuating environments. That uncertainty is generally attributable to several factors:

- Scarcity of resources
- Unpredictability of environmental changes
- Functional specialization of the diverse organizations
- Control of critical resources by other organizations

If we place the uncertain environment in which the organizations operate alongside their preference for stable and predictable environments, it becomes very clear why the firms necessarily seek to control and govern environmental uncertainty. The need to reduce uncertainty by controlling the resources pushes the organization's internal decision-makers to create stable and more predictable "negotiated" environments. The negotiation oriented to reducing uncertainty has as its object critical resource flows and, as a consequence, involves the organizations that control them. The extent to which the external organizations put up barriers to that action indicates how much environmental control an organization has. External restrictions can be attributed to a dependency on resources that are controlled beyond the organization's institutional boundaries. The Resource Dependence View defines the extent to which the survival of an organization is linked to the resources it does not directly control. The attempt to reduce that dependency or to make other organizations dependent on one's own resources is thus what worries the decision-makers the most.

To better understand this situation, let's imagine the case of two companies that we shall call A and B and, in particular, the fact that A depends on B, the organization that controls the resources. The conditions that determine to what extent A depends on B are:

- Access to and control of the resources that enable A to enter into a relation of exchange
- Importance of the resource to the survival of A
- Extent to which the resource is controlled by B
- Existence for A of alternative resource providers and the freedom to use them
- Ability of A to exercise coercive power of another kind over B
- Ability of A to change its goals, strategies and operating activities to eliminate the need to procure the resources controlled by B

The existence of unfavourable conditions for A determines its dependency on B. In this case, A is interested in negotiating a coordinating or linking mechanism with B given that a situation of dependency signals the end of its own discretionary power (Soda 1998).

The resource dependence view builds on the hypothesis that dependency can be reduced through strategies that regulate the environment, such as the creation of stable inter-organizational relations based on cooperation instead of competition. Joint ventures, cartels, interlocking directorates, associations and social norms are a few of the possible solutions to the need for coordination and, therefore, are a plausible alternative to shape a negotiated and predictable environment.

2.4.3 Cooperative Relations with Other Organizations

Cooperative relations with other organizations shrink or remove external barriers from both the vertical value creation chain and the horizontal value creation chain,

i.e., that which regulates the competition (Lang and Lockhart 1990). Nevertheless, in addition to cooperative relations, the Resource Dependence Theory considers other options linked to the restructuring of institutional and legal assets: mergers, vertical integration, diversification and the strategic integration of businesses in other sectors. According to this theory, the organization tends to choose the inter-organizational strategy that minimizes both uncertainty and loss of control.

The determinants of a network according to the resource theory approach can be recapped as follows:

- The firm, or, more generally, the organization is the unit of analysis
- The firms are not free of restrictions and conditioning but operate within a vast web of interdependencies with other firms
- The interdependencies refer to the resources needed by the firm to perform its operations
- The extent of the interdependencies generates uncertainty for the firm's success and survival. Accordingly, in order to both reduce its dependency on the other organizations that control the resources and to increase its power over other organizations, the firm takes action to manage the web of interdependencies. Cooperation strategies can be formulated to achieve these objectives. Resource-dependency forces the firm to weigh up a mixed bag of alternatives to address the levels of interdependency and environmental uncertainty; however, this theory does not attempt to define the boundaries of these strategies
- The firms are unable to produce all the inputs they need to survive. This forces them to go beyond their boundaries to stabilize and reduce the uncertainty of the resource flows. The firm has a number of options, including cooperative relations. When seen through this lens, the inter-organizational relations become a "power base" (Soda 1998). The emphasis on power in contrast to economic efficiency is what sets the Resource Dependence Theory apart from the Transaction Costs Theory (Pfeffer and Salancik 2003)

Seen from this angle, the firm's environment can be interpreted as a network of other firms that are themselves the ports of call for other exchange channels and containers through which the resources flow. An organization that is unable to produce all the necessary resources will find itself in a state of heavy dependency. The power shift to the outside is driven by the desire to control and deploy key resources and the stronger the control factor, the higher the influence in determining the types of channels and the nature of the exchange relationship.

Organizations can access complementary resources or knowledge for several reasons: competitive; to develop internal competences; or to spread and thus dilute the risk inherent in innovative activities. It is important for a firm to obtain cooperation-based advantages in terms of intangible resources and innovation (Kline and Rosenberg 1986; Mansell and Wehn 1998; Rubenson and Schuetze 2000).

Organizations are characterized by competences, knowledge and technologies, i.e., a set of intangible resources that can swiftly adapt to the changes imposed by the environment. And it is precisely because the individual firms are not always able

to obtain all these resources, which require major investments and, hence, the sharing of the inherent risks, that the development of continuative and stable relations can bring a diverse range of advantages to the entire cast of actors.

2.4.4 The Role of IT in Inter-Organizational Relations Ruled by the Resource Dependence Approach

Although the Resource Dependence theory describes long-term, collaborative inter-oorganizational relations, based for example on joint venture alliances or long-term outsourcing agreements, clearly if the relations are shaped by power, genuine cooperation is rare. Larger and stronger enterprises, for example, can impose their conditions to smaller and weaker suppliers. According to the Resource Dependence theory, the stronger the power asymmetry, the more likely phenomena such as inter-organizational bullying are (Ricciardi 2014).

If an organization succeeds in achieving favourable or at least sustainable interaction conditions in these control-oriented networks, the Resource Dependence theory predicts that the relations will be stable and result in higher efficiency and more reliable risk management; this assumption is implicit in the stream of studies dedicated to inter-firm process integration and supply chain management, where IT-based solutions play a pivotal role (Lambert and Cooper 2000).

Conversely, as soon as an organization perceives that other relationships could provide it with more power in controlling key resources, the organization will be tempted to break the old relations (e.g. alliances, agreements, supply chains) and to join the new network. In other words, no power relationship is forever, especially if the stronger partner goes too far in abusing the weaker one. Technological innovations are the most important factor of change in power relations. For example, when consumers were given the possibility to buy airplane tickets directly on the web, this destroyed a great deal of the traditional travel agencies' power in their relationships with the airline companies. Today, the fees that the travel agencies can get from airline companies are dramatically lower than before the Internet era.

The Resource Dependence theory, then, sees IT as a double-bladed weapon: on the one side, it allows stricter and more efficient control and inter-dependency, for example through supply chain management systems and other process integration software solutions; on the other hand, it sooner or later generates changes resulting in centrifugal forces that can break also the soundest inter-organizational ties, agreements and habits.

Conclusions
The three theories that we have presented in this chapter share an anthropological assumption: human nature is based on opportunism and relations must

(continued)

be strongly coordinated and controlled to prevent opportunism from harming us.

The Transaction Costs Economics approach sees relations in terms of transactions; the purpose is minimizing costs (or costs and risks, in recent versions of the theory); and inter-organizational relations are controlled through the economic mechanisms of price (or through hybridized price-hierarchy mechanisms, in recent versions of the theory).

The Agency approach sees relations in terms of contracts; the purpose is aligning the agent's goals with those of the principal; and inter-organizational relations are controlled through the economic mechanisms of incentives.

The Resource Dependence approach sees relations in terms of means to influence the business environment; the purpose is maximizing control on key resources; and inter-organizational relations are controlled through the power mechanisms of bullying, alliances, bargaining, negotiation and coalitions.

These three theories predict different, even opposite impacts of the Internet era and of ubiquitous IT. We will compare these predictions with the emerging phenomena of Virtual Organizations and e-Marketplaces that will be described in Chaps. 5 and 6.

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