



Trust in knowledge exchanges between service providers and clients: a multiple case study of KIBS

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Abstract

For some sectors, the management of client–provider knowledge exchanges is the core element of the business. This is especially the case for knowledge-intensive business services (KIBS) whose delivery entails intensive supplier–client cognitive interactions: KIBS firms supply clients with precious elements of technical and applicative knowledge, while clients give KIBS companies the knowledge items needed for designing a successful solution. Although trust has proved to be an essential ingredient of knowledge exchanges, empirical studies about its role are still scarce, especially as regards KIBS. The paper contributes to this topic by discussing the results of a multiple case study of computer services. Particularly, it (a) offers a knowledge-oriented description of client–provider interactions; (b) investigates the main mechanisms that govern such interactions; (c) analyses the role played by trust as antecedent and consequence of the interaction; (d) discusses the issue of development of trustworthy interactions between KIBS and clients.

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Introduction

In the current economic climate, no firm is able to internally develop and manage all the knowledge that is required to run the business (Priestley, 2006), and thus the capacity to access and exploit external cognitive sources has become one of the most important competitive factors (Chesbrough, 2003). Accordingly, scholars and practitioners are increasingly focusing their attention on the mechanisms that govern inter-organizational knowledge exchanges (Easterby-Smith *et al*, 2008). Particularly emblematic are the cases of companies whose business involves the development and delivery of knowledge to their clients, for example the so-called knowledge-intensive business services (KIBS) firms, whose sector has been experiencing a relevant growth in recent years (Pro Inno Europe, 2009).

The term KIBS was introduced by Miles *et al* (1995) to indicate private companies whose job consists of collecting, generating, analysing, and distributing knowledge with the purpose to deliver customised services that can satisfy the particular requirements of client firms. KIBS companies rely on highly educated professionals who are experts on specific technical disciplines or functional domains, and supply knowledge resources or other knowledge-based services to clients. Popular examples include business consultancy and human resource management, marketing and

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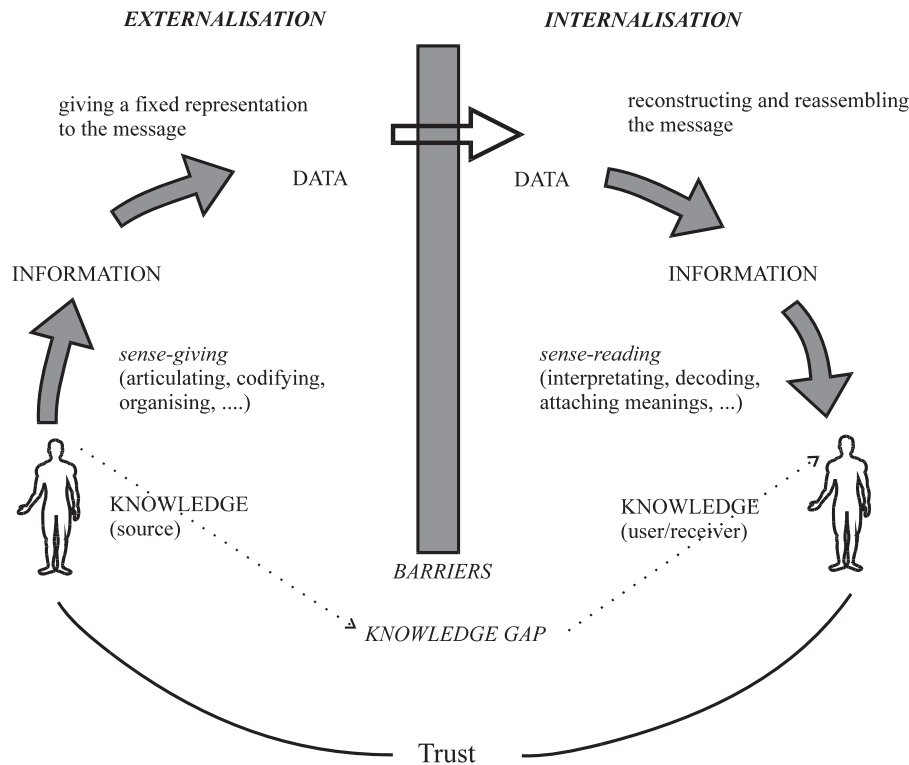


Figure 1 Knowledge transfer process.

advertising, R&D services, legal services, and technical services. A well-known and widely used distinction is between P-KIBS (pure professional KIBS) and T-KIBS (technology-based KIBS). The latter includes the additional category of C-KIBS (computer and software-related services) as indicated by Martinez-Fernandez *et al* (2004). These are the object of the paper.

According to Strambach (2008), three core features denote KIBS companies: (a) knowledge is both their key production factor and the kind of goods they sell; (b) the delivery of knowledge-intensive services generally requires in-depth interactions between supplier and user client, which become co-producers of the supplied services and are involved in mutual learning processes (Bettencourt *et al*, 2002); and (c) all KIBS firms perform an activity of consulting in the form of a process of problem solving, where they adapt their general expertise and knowledge to the specific problem of the individual client. Usually, the provision of such services entails a bilateral exchange of knowledge between the involved actors along with the entire supplying process – from problem formulation to delivery of solutions and ongoing after-sales support (Miles, 2005). During this process, not only do KIBS companies provide clients with precious elements of knowledge (for instance, how to implement a specific application, how to re-engineer a process), but also client firms supply KIBS firms with pieces of knowledge that are necessary for designing,

developing, and delivering successful service solutions. This is the reason why the issue of how knowledge is exchanged between KIBS and their clients deserves to be analysed thoroughly (Huggins & Weir, 2009).

According to a KM perspective (Scarso, 2009), the knowledge transfer/exchanging process can be described as in Figure 1. A piece of knowledge, owned by some source, is first externalised, that is, represented in a message through an appropriate format, language and so on. Then the resulted message is transmitted by various means, ranging from electronic channels to verbal communications. Once received, the message is internalised, that is, read, understood, assimilated, and exploited by the recipient. Internalisation consists of applying the tacit (contextual) dimension to the relevant explicit representation (the message), in order to reconstruct the original meaning. The successful execution of this process requires: an 'interpretative context' (or background) shared by the inter-acting partners (the sender and the receiver should give the same meaning to the message); a reciprocal interest in transferring knowledge; and mutual trust, as the parties should not doubt the quality of the knowledge transferred and its proper use. Hence, as well underlined by Ford (2003), any knowledge exchange requires a trustworthy environment to be effectively accomplished.

This becomes especially critical when inter-company interactions are far from being pure market transactions

of a commodity, as in the case of KIBS–client business relations (Miles, 2003; Wood, 2005; Weterings & Boschma, 2009). Furthermore, the supply of a knowledge intensive service is not an instantaneous process, but consists of several phases whose accomplishment often grounds on the existence of mutual trust.

Despite the important role of trust in the service delivery processes of KIBS companies, research on this topic is still scarce, particularly in empirical terms. Also, there is lack of detailed studies about the various kinds of knowledge exchange that occur in the distinct steps of a KIBS–client interaction and the consequent trust-building mechanisms that companies may need to put into action.

The paper contributes to this topic by illustrating and discussing the results of a multiple case study of a particular pool of KIBS firms, that is, the computer service companies located in the Northeast of Italy. In particular, the study: (a) proposes a knowledge-oriented description of the interactions that take place during the service delivery process involving computer service companies and clients; (b) investigates the main mechanisms that govern these interactions; (c) analyses the role played by trust, as antecedent and consequence of the interaction itself; (d) makes some remarks about the development of trustworthy interactions between computer services providers and their clients.

The paper is articulated as follows. In the next section, the nature and the different phases of the knowledge exchange that takes place between provider and client during the delivery of a knowledge-intensive service are illustrated. Subsequent section discusses the role of trust in knowledge transfer process as examined in the literature. The section after that provides information about the empirical investigation, and the main findings are then illustrated. Penultimate section summarises and discusses the main results of the study, while final section proposes some concluding remarks about its theoretical and practical implications, and underlines its main limitations.

Knowledge exchanges in service provision

It is commonly agreed that recurring interactions between customers and providers are the most distinctive feature of the service delivery activity. This is particularly true in the case of knowledge-intensive services where a supplier and a customer may engage in a long process of co-operation and mutual learning (Leiponen, 2006). Especially in the initial stage (i.e., when the relationship is initiated), players need to achieve a mutual understanding of the situation. This interaction implies a continuous exchange of knowledge that spans the whole delivery process, from problem formulation and needs identification to implementation and after service support (Figure 2). According to Aslesen & Isaksen (2007), such process strongly relies on reciprocal trust, common understanding, and shared know-how.

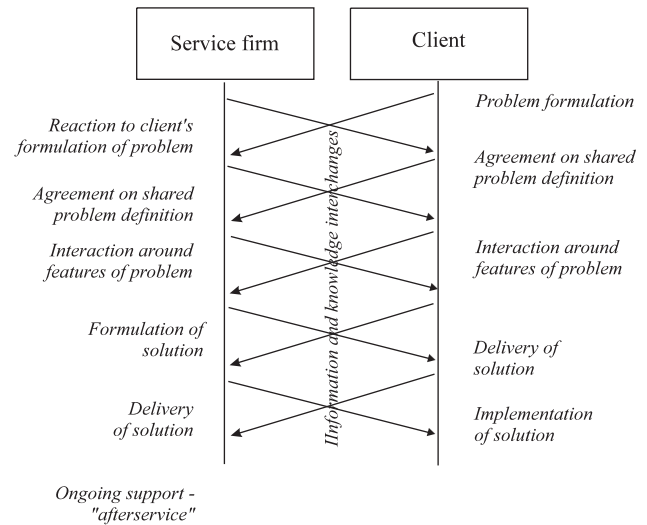


Figure 2 Knowledge exchanges between KIBS and clients.
Source: Martinez-Fernandez and Miles (2006).

It is worth noting that the points of interaction (i.e., of knowledge exchange) during the delivery process, as well as the depth of the interaction (Päällysaaho, 2008), depend on the nature of the existing relationship which, in turn, is affected by the degree of customisation of the supplied service. As indicated by Miles (2003), three main types of relationship can be identified, namely:

- *Sparring relationships*: here the service content is typically negotiated between provider and client, the communication as roughly being equal in status, knowledge, and competence (even though the client usually lacks some expertise in the specific problem). Trust and rapport are especially important in this case;
- *Jobbing relationships* which involve less interaction and require the provider to perform a specialist and technical task, clearly defined by the client (who may be expert on the topic or at least on the content of the service to be provided). The client may direct the process of service provision;
- *Sales relationships* which imply (more) standardised services, or services produced in relatively standardised ways that can be developed before the transaction.

The opportunity of and the need for knowledge exchanges can vary in accordance with the different types of relationship. Although the latter case offers little scope for cognitive interaction, the former two show potential for co-production and dissemination of new knowledge, and require reciprocal commitment and trust.

The nature of the relationships is also affected by the highly intangible nature of KIBS services that produces information asymmetry leading to clients being unable to fully evaluate the quality of service delivered. In point of this, de Bandt (1995), quoted by (Miles, 2003), states

that five types of 'knowledge deficit' may concern KIBS's clients:

- it can be hard to establish the KIBS' competence and expertise in dealing with relevant problems;
- the client may not be able to accurately assess the skill level required to treat specific problems, nor to match the nature of these problems to the KIBS' offerings;
- the highly specific and complex nature of the service can make it hard to find a satisfactory agreement on the specific services to be rendered, or on the criteria for assessing their quality;
- the estimation of the effort required by the KIBS for supplying the service can be difficult;
- as the impact and effectiveness of the service provided by the KIBS may be affected by many factors (some due to the clients, some due to unpredictable external circumstances), it is hard to determine the KIBS' responsibility for possible arising problems.

As underlined by Bagdoniene & Jakstaite (2009), these cognitive asymmetries lead the client and the service provider to engage in long-term relationships, as this can enable them to exchange the knowledge that is required and to establish the trustworthy climate that can facilitate exchanges.

To sum up, the issue of trust is significant in KIBS-client interaction, especially when customised services delivered by means of a sparring relationship are involved. Furthermore, as this interaction consists of different phases, we might expect that the role played by trust varies from one phase to another, especially because the type of knowledge exchanged usually changes. In some phases, a more informal exchange of ideas, opinions, personal judgments and so on (i.e., substantially tacit knowledge) tends to prevail, whereas others imply the exchange of more formal or explicit contents (e.g., data, written documents, artefacts). This distinction is important because, as the KM literature well underlines, the exchange of different kinds of knowledge requires different kinds of trust (Ford, 2003; Roberts, 2003).

Role of trust in knowledge exchanges

The role played by trust in knowledge exchanges has been deeply analysed by several authors. It is commonly agreed that trust is a necessary condition to persuade people to share their knowledge, especially tacit components (Ford, 2003). This is particularly the case of exchanges that involve different organisations, for instance in inter-firms alliances or business networks (Panteli & Sockalingam, 2005; Becerra *et al.*, 2008), or in the provision of knowledge-intensive services (Miles, 2003) that is the object of our study.

Before analysing how trust comes into play during the different phases of a KIBS delivery process, it is necessary to specify what can be intended by trust. Extant literature abounds of conceptualisations and explanations of the meaning of trust, but in the end an agreed definition of

the term seems not to exist. As well underlined by Castaldo *et al.* (2010) in a recent work that analyses the most prominent articles about the role of trust in market relationships, we know what trust does better than what trust is. Probably, the lack of a unifying view has to be ascribed to the fact that this concept has been analysed in different disciplines, including social psychology, philosophy, economics, law, and marketing (Blomqvist, 1997).

A formal definition, which is often quoted and recalls the essence of other definitions (see e.g., Mayer *et al.*, 1995) is that of Gambetta (2000) who defines trust as the subjective probability with which a player agent assesses that another agent will perform a particular action. In accordance with this view, when we say that we trust someone or that someone is trustworthy, we mean that the probability that he/she will perform an action that is beneficial or at least not detrimental to us is high enough for us to consider engaging in some form of cooperation. A working definition that can be applied to the business context is that of Blomqvist (1997), who considers trust as an actor's expectation of the other party's competence and goodwill, where competence concerns technical capabilities, skills and know-how, and goodwill implies moral responsibility and positive intentions towards the others; this author also underlines that, in a business context, trust derives from some level of conscious judgement of the other party's competence and goodwill. Similarly, Castaldo *et al.* (2010) define trust as the expectation that a subject, distinguished by some specific characteristics (e.g., honesty, benevolence, competencies), will perform future actions aimed at producing positive results for the trustor in situation of consistent perceived risk and vulnerability.

All the above definitions highlight three essential aspects of trust. First, uncertainty, vulnerability, and attempt to avoid risks are seen as the main causes of the need for trust. To put it in other words, in case of perfect information, any decision or action that a player may take would be a question of rational calculation and not of trust.

Second, trust is generally seen as the expectations by the trustor that the trustee will perform an action that is beneficial or at least not detrimental to the former. Hence, any effort to raise these expectations facilitates the building of a trustworthy climate between the parties.

Third, trust is a multidimensional concept consisting of several dimensions or faces (as called by Blomqvist, 1997) such as: dependability/reliability (confidence, loyalty, respect), honesty, reputation, competence, personal knowledge, mutual orientation (altruism, congruence, motivation), and friendliness (acceptance, benevolence, liking). According to Şengün (2010), these dimensions can be aggregated into two basic components: competence/reliability/predictability and goodwill/benevolence/non-opportunism, where the first one indicates the capability of the trustee to obtain a certain result, and the second his/her willingness to do it. Especially the

latter component implies *subjective* elements linked to how individuals perceive the reality in which they operate and the actions of the counterparts.

As a consequence, the establishment of a trustworthy environment – that is, a context where the parties can trust each other sufficiently enough to engage in effective business relationships – is based on a mix of rational assessments or expectations, and social-psychological mechanisms that are more ambiguous and difficult to manage. To face this complexity, as real life experience shows, economic players tend to adopt different trust-building mechanisms that can be classified as follows (Ford, 2003; Panteli & Sockalingam, 2005):

- *institution-based mechanisms*, established on warranty, certification, safety nets, or other formal structures;
- *deterrence-based mechanisms*, derived from the presence of costly sanctions for opportunistic behaviours;
- *calculus-based mechanisms*, grounded on the rewards that come from pursuing and preserving a relationship, and fear of punishment for the violation of trust;
- *knowledge-based mechanisms*, relying on the information about involved parties, which is developed through repeated interactions. The assumption is that the more information one has about others, the more able is to predict their actions;
- *identification-based mechanisms*, based on mutual understanding (i.e., empathy and a sharing of common values) among parties to the point that each can effectively act in favour of the others;
- *personality-based mechanisms*, emerging from reciprocally sensitive, thoughtful, and concerned relationships.

It is commonly agreed that the different types/dimensions of trust are not mutually exclusive, and therefore trust can rely on several mechanisms. In addition, these mechanisms can play a different role and have a different weight during the various steps of a business relationship. Indeed, in each step various kinds of knowledge are exchanged, and there exist a connection between the kind of knowledge exchanged (and the means adopted for this) and the kind of trust needed to make the exchange possible. For instance, as stated by Roberts (2003), the type of trust and the related trust-building mechanisms that are needed for exchanging tacit knowledge are different from those that can be used for transferring codified or explicit knowledge. The former case (that the author denotes with the term 'hard trust') requires that participants rely on a set of formal institutions (e.g., contracts, intellectual property rights, laws) that can facilitate the validation and protection of the knowledge exchanged. The latter case ('soft trust') is based on the existence of common social context, mutual understanding, and long-term relationships.

Empirical survey

In the next sections, we present and discuss the findings of an exploratory study aiming to examine the knowledge exchanges that occur between KIBS and their

clients. In particular, the analysis concerns the cognitive interactions of computer services companies with business clients. This sector includes services such as local IT infrastructures, network management, security and access control, customised ERP solutions, Business Intelligence software implementations, applicative business software, IT consulting. These services are particularly emblematic for our analysis, because their provision to business users involves complex interactions and knowledge exchanges.

The study focuses on the delivery of customised computer services developed through the *project-based approach* that is usually employed by these kind of companies: each business relationship is handled as a new project that starts from a preliminary analysis of needs, and ends with implementation and after sales assistance. Consequently, the investigation focuses on the typical steps of a project (see below): by analysing the cognitive interactions that occur in each of these steps, the central issue examined is the kind of trust involved in this process.

The research questions addressed are as follows: what is the nature of the knowledge exchanged in the various phases of the KIBS delivery process? What dimensions of trust are important, and in which steps of the delivery process? How can trust be supported in the various steps of a project? What types of trust-building mechanism support each dimension of trust in the distinct steps?

The set of hypotheses and statements that the study attempts to verify can be schematised as follows (Figure 3): (a) the kind of exchanged knowledge varies along the various stages of a project-based interaction between KIBS firms and clients; (b) this involves different types of trust;

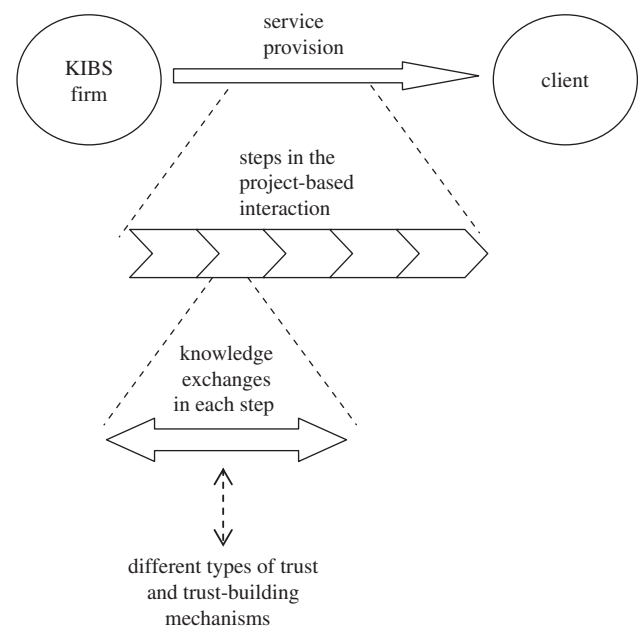


Figure 3 Research hypotheses and investigation profile.

Table 1 Outline of the cases examined

Company	Specialisation	Main markets	Size
Array System	IT infrastructure	SMEs	7
ASI	ERP	Retailing; manufacturing	50
Eniac	ERP	SMEs; beverage	60
Eusosystem	ERP; business intelligence	Manufacturing SMEs	110
IKS	IT infrastructure	Finance; insurance	50
Infonet	IT infrastructure	SMEs	20
Infracom IT	ERP	Manufacturing SMEs	100
ICM.S	Test and measuring systems	Manufacturing; laboratories	22
IRS	Network management	Large enterprises; public organisations	53
Lantech	Software applications	Large manufacturing firms	40
MBM Italia	Security; business intelligence	Manufacturing firms	26
Miriade	IT infrastructure	PA; medium enterprises	30
Mycroft	Services; connectivity	PA; private companies	60
Ne-T	ERP; consulting	Manufacturing SMEs	10
Netek	ERP	Manufacturing	250
SanMarco Informatica	MIS	Finance	273
SEC Servizi	Information systems	SMEs; retailing; hospitality	140
Serenissima Informatica	ERP; MIS	Large distributors	70
SIPE	ERP	Manufacturing SMEs	50
Soluzioni Software	BPR	Large distribution	15
Tria	Consulting	Public organisations; large firms	9

and consequently (c) companies need to adopt (implicitly or explicitly) different mechanisms of trust building, which has evident conceptual and managerial implications.

Given its exploratory aim, the research was carried out using a case-study methodology (Yin, 2003). This approach, in fact, well fits the nature of the study and the complexity of the phenomenon under investigation (Leedy & Ormrod, 2005). The multi-case study methodology seemed particularly useful to address the research questions mentioned before, because it allows to find regularities in the information collected and to classify variations and diverging cases or situations. The survey involved 21 small firms (Table 1) in a specific area (Northeast of Italy, and particularly the Veneto Region).

In detail, the empirical analysis was based on these activities:

- Selection of a sample of significant companies:* This was done with the help of representatives of the local industry association, with the purpose to identify companies that may have been willing to collaborate. This was reputed to be essential. Also, in order to cover a broader picture, the companies included in the sample were different in size, technical specialisation, and market.
- Design of direct collection of data, by means of in-depth semi-structured interviews with managers:* For each company, one executive (in case of small companies) or two executives (for larger companies) were identified. Preferably, executives having direct experience of customer relationship (i.e., commercial directors or project managers) were selected. Interviews were

conducted following a framework previously sent to the interviewees, to make respondents aware of the questions in advance. The framework was tested by means of a pilot interview with two company executives, which allowed adjusting it, especially in relation to language and terms used. For instance, concepts such as 'trust' or 'knowledge exchange' (that may be clear for researchers but may be misunderstood by managers) were paraphrased into terms that are more understandable in business, or are indirect manifestations of them. Each interview aimed to examine how the single company is able to generate economic value through external acquisition, internal processing (creation/elaboration, storage, retrieval), and transfer of the elements of knowledge that are incorporated in computer services and/or are needed to supply these services to the clients. Although each interview was flexible and open (meaning that it was possible to collect specific details in each case), the use of a common framework made the comparison between the different situations possible, and allowed the similarities and common approaches to be highlighted.

- Collection of data:* All interviews were completed between April 2008 and January 2009. To check the data collected and reduce bias, all interviews were made by a team of two people, and the information collected, as well as the possible different perceptions of each interviewer, was shared and discussed by the team's member. Significant answers and issues raised by a respondent during an interview were also discussed in the subsequent interviews. This made it possible to check similarities or explain differences in

the different companies. To improve the validity of the analysis (Yin, 2003), the information gathered through the survey was integrated with other secondary elements coming from multiple sources, such as company documents, web sites, industry literature, and data collected by means of additional interviews with special observers and informed experts (e.g., clients or suppliers of the sampled firms, public agencies, representatives of trade associations).

- (d) *Analysis*: The data collected were analysed, with the main purpose to identify recurring issues and regularities between companies as regards the problem of trust and related mechanisms along with the various phases of provider-customer relationship.

Further details about the empirical investigation not explained here for lack of room can be asked to the authors directly.

First of all, it is useful to describe some general features of the examined companies, which are relevant to the business interaction with clients and can be important for explaining the trust-building mechanisms employed for knowledge exchange. This can enable the reader to better understand the findings of the study, as well as its limitations.

Although the average size of the companies is small, they are rich in technical and applicative competencies, which allow them to meet the local demand for computer services. The typical computer services firm in Veneto provides highly personalised solutions developed through sparring relations. The core of its business is the capability to identify and analyse the problems of a client, and to find the proper solution, and this makes knowledge exchanges with clients vital. Hence, clients are not only final users of services, but also sources of fresh knowledge that providers can use for future projects. As mentioned before, although each provider is an independent company and operates differently from the others, they usually follow some typical steps when developing and delivering a product or service to a client. These steps are:

- first contact with the customer;
- preliminary analysis, requirement identification;
- feasibility study, formulation of an offer;
- negotiation, signing of the contract;
- technical development, release, test, and implementation;
- post-sale assistance.

Each step involves a bilateral exchange of knowledge with the client, where trust plays a specific role. The duration of the relationship with the main clients is generally long. Cases of loss of clients are rare.

Empirical findings: trust mechanisms in knowledge exchanges

This section describes the role of trust and the different trust-building mechanisms employed to implement

effective knowledge exchanges, as they were identified in the case-study investigation. The description follows the different steps of a project-based interaction between KIBS firm and client; for each step, the typical knowledge exchanges and the related trust-building mechanisms are discussed.

First contact with the customer

This is a crucial phase especially in case of new clients: first impressions are extremely crucial, as often the provider will not get another chance to illustrate its proposal. Initial contacts are generally the responsibility of the provider's commercial staff. Technical reputation appears to be the fundamental factor, and the word-of-mouth advertising still plays a significant role in marketing communications. But once the prospective client has been identified and contacted, the situation changes. The service provider has to describe the offer completely and in detail, and this is a moment of mutual acquaintance between providers and clients. The result of this activity can deeply influence the continuation of the business relationship. Very often the customer is approached by showing a demo of the product that illustrates its main functions. The provider's selling team incorporates the standard elements of their knowledge into the demo, and leaves the rest to direct explanations by interacting with the client's buying team. Sometimes, the demo is configured using preliminary information about the specific requirements of the customer collected by the sales force. This phase can go a long way, especially with a difficult new customer, whereas they can be very short in case of regular ones.

In some cases, *institution-based trust* (e.g., public and private certifications, the registration in an industry association) proves to be useful here, especially for first contacts with prospective customers. However, it is the *knowledge-based trust* mechanism that takes the lion share, given the crucial role played by the word-of-mouth in the communication process.

Preliminary analysis, requirement identification

After the prospective client has confirmed to be interested in the proposal, the service delivery process continues with the analysis of customer needs and the identification of the service requirements as more precisely as possible. A complete solution is then proposed. Only the full understanding of the client's problems allows them to be solved; hence, the contribution of the client is decisive and implies active collaboration. The interviews confirmed that this attitude prevails with long-lasting clients. Problems can arise when a client lacks some minimal technical knowledge to appreciate the value of the proposed solution. Sometimes there may even be a hostile behaviour, mainly for two reasons: first, the proposed technical solution can have a significant organisational impact, and this can raise internal conflicts that negatively affect the project; second, the

client's IT staff may prefer a technological solution that is different from that suggested by the provider.

This preliminary phase may not be short, as many interactions could be needed for a good definition of the client's requirements that allows arranging an effective proposal. Again, things become easier with old clients, because the provider has already known their business processes, and the client is more disposed to assume a co-operative behaviour. The competence of the client and their willingness to collaborate are vital for the success and quality of the delivered service. In case of high-tech services, computer service companies may also need to develop trustworthy relationships with the IT technical staff of the client, given the influence that these people exert on the entire process.

To sum up, the capability to cultivate personal relations is necessary here. For this reason, the mechanisms of *identification-based trust* or *personality-based trust* can have special significance.

Feasibility study, formulation of an offer

The preliminary analysis previously described provides the inputs for the subsequent feasibility study that goes into the technical aspects thoroughly. Such inputs are formalised into a written document on which the two parties have to agree. This document is fundamental for developing the commercial offer, which generally consists of a technical and an economic part that can be articulated in several papers.

A key aspect of this phase regards how the price is fixed. Two are the more diffused approaches:

- upon final balance, that is, on the basis of the effective use of some factors (especially manpower) whose unit price is contractually fixed;
- turnkey (fixed price), that is, when the economic aspects are all established *ex-ante*.

The interviewed companies affirmed that, in the recent years, clients are increasingly preferring the second option, which tends to transfer the risk to the provider especially in the case of non-recurring relationships. This may mean that a *calculus-based trust* prevails on the client's side.

As regards providers, once the contract has been signed, the execution of the project can start. But before this can happen, they have to show and transfer a pool of technical and managerial knowledge to the client. This is necessary to explain the ideas of the possible services that the provider proposes, but has no economic return. These ideas may be used by the client, for instance to compare the provider's proposal with those of competitors. The client can also try to apply these ideas to solve the problems without the provider's help. For the provider, all this is risky, especially in the case of new clients. A *calculus-based trust* – that is, an estimation of the risks and opportunities to engage in a new project – comes into play here.

Negotiation, signing of the contract

During this phase, the provider must have the capability to effectively communicate the value of the proposal to the client, which, in turn, needs to understand and appraise it and eventually formulate counterproposals. Usually, the supplier–client communication is a combination of direct face-to-face interactions and transfer of contractual agreements. The choice of the contract format varies from case to case, usually in accordance with the size of the client. Generally speaking, bigger and more structured clients use their own contractual formats and require the provider to adopt them; the opposite occurs with smaller customers.

In principle, the use of contracts is associated with a mechanism of *deterrence-based trust*. However, a careful analysis shows that other forms of trust prevail, for instance, those based on calculus of mutual convenience or (even more important) those based on the reciprocal knowledge of parties, especially with reference to the more intangible contractual aspects, difficult to define. This can be explained by the fact that the contract is seen by the companies more as a working tool and a necessary formal act rather than a real warranty against the possible opportunistic behaviours of the counterpart. In fact, it is widespread opinion among the investigated companies that the complex nature of the delivered services requires flexibility by both parties: usually, in case of misunderstandings, requests for changes, delays, and other exceptional occurrences, it is more convenient for providers and clients to come to an arrangement rather than taking legal steps. In addition, to be sure of having a real time validation of the job, clients are asked to designate an internal referent. This person takes the responsibility for the project on the customer's side, and acts as interface with the provider's team. The selection of a delegate is critical, because she/he can influence the level of trust between the parties. Elements of *identification-based trust* and *personality-based trust* play a role here.

Technical development, release, test, and implementation

This activity is largely accomplished by the provider internally, and does not involve many interactions with the client. But in some cases, the scheduling of the project is shared with the client who can therefore control the progress of the work more closely. This raises the level of trust between the parties, especially in the form of *knowledge-based* and *identification-based trust*.

The project ends with the installation, test, and implementation of the application/system at the customer's offices. Very often the client's workforce has to be trained to use the new application. This is another crucial point especially for customised systems, whose functioning is difficult and complex to learn, and cannot be done only through written handbooks. Hence, a training session of employees frequently concludes the knowledge exchanges.

Table 2 Summary of the main results of the study

Project phase	Knowledge exchanged	Type of trust	Type of mechanism
First contact	General knowledge about provider's competence and its offer	Technical reputation	Institution-based
	Preliminary elements of client's needs	Competence/personal knowledge	Knowledge-based
Preliminary analysis	Detailed knowledge about the client's problem	Goodwill	Identification-based
		Mutual orientation	Personality-based
Feasibility study	Written specifications about the proposed technical solution	Economic rewards	Calculus-based
Negotiation, contract	Contractual terms including prices, delivery time, penalties and so on Indications for the economic valuation of the proposed solution Willingness to solve problems	Contract	Deterrence-based
		Mutual understanding	Identification-based
		Friendship	Personality-based
Delivery	Information about the project's working progress Knowledge about the actual abilities of the provider Training on site	Competence	Knowledge-based
		Mutual acquaintance	Identification-based
Post-sale	Updated information about provider's offer and client's needs	Mutual knowledge	Identification-based

The implementation step raises special problems of trust. There are cases when, during this process, the computer services company has direct access to the information system of the client, and may come into possession of crucial information or even manipulate it. However, rather than strict contractual agreements, the reported experience shows that the establishment of a mutual *knowledge-based* and *identification-based* trust, made possible by the co-operation in the project, has much more importance for both the clients and the KIBS companies.

In any case, it is the positive conclusion of the project and the delivery of a successful solution that represent the best way, for providers, to improve their reputation. This, in turn, sets the grounds for building a trustworthy environment for future projects with the same client or even with others. Therefore, this phase is crucial to strengthen the client's knowledge-based component of trust.

Post-sale assistance

This phase may or may not be contractually provided, but in any case the continuous management of the customers' base represents a substantial part of the providers' job. Also, maintaining a constant relation provides opportunities for acquiring new orders and for upgrading the offer. Almost all the surveyed firms are very committed in cultivating relations with their main clients, as testified by the periodical visits that the commercial staffs usually do. Such visits are denoted by mutual exchanges of knowledge, concerning, on the one hand, the recent technical and application developments and, on the other, the last news about the client firm and the business situation. Other ways to maintain relations with customers are the sending of newsletters,

the arrangement of workshops, the setting of a website and so on. It is worth noting that this activity of customer care contributes to create and enforce the *identification-based trust*, and benefits from the proximity between computer services companies and clients.

Discussion

The empirical evidence confirms that delivery of a computer service is a complex and articulated process, consisting of a sequence of cognitive interactions that allows the involved parties to increase their knowledge about the problem and the ways to deal with it.

Trust proves to be an essential ingredient of the different project phases, and the establishment of a trustworthy environment is required by the intense knowledge exchanges that are necessary. This can be explained in relation to a main fact: the development and delivery of complex services call for a continuous interaction between client and provider, where both players have to 'reveal' something to the counterpart. But as knowledge is an intangible and volatile element whose transfer and exploitation are difficult to regulate by means of contractual agreements, the parties need to trust each other and consequently to establish a trustworthy environment.

As the study shows (Table 2), several forms of trust play a role in this process, and the awareness of that is particularly important for executives and managers of a KIBS company: the selection of the appropriate trust building mechanism in the various steps of the project becomes critical.

Generally speaking, soft forms of trust seem to prevail over hard forms. Even though computer services imply technicalities, the codified knowledge assumes a minor role than the informal or tacit components. Consequently,

rather than formal mechanisms (e.g., contracts and certifications) trust is based on personal relationships, even among the individual employees of the two organisations. This increases the likelihood that provider–client relationships will last long, and also the possibility that providers can find new customers. This is the reason why KIBS companies need to develop not only technical competencies (i.e., those strictly related to the delivered service), but also relational capabilities and skills. In this mechanism, geographical, social, and cultural proximities are of help.

A last point, which was revealed by the study, is that trust is important both for clients and for providers. This reciprocal importance of trust has been less considered in the literature (Schoorman *et al.*, 2007), and there is still lack of empirical studies about it.

Conclusion

The present work aimed at examining the role that trust plays during the different phases of the service delivery process of KIBS companies. This has been done through an empirical investigation involving 21 computer services companies located in the Veneto Region (Northeast of Italy). From a theoretical viewpoint, the study contributes to the analysis of the relevance of trust in knowledge exchanges, and the related trust-building mechanisms. Findings not only confirm that trust assumes a crucial weight in the success of service provision, but also show that different kinds of trust come into play during the different steps. This raises relevant challenges for KIBS firms that have to be acquainted to and use a range of trust-building mechanisms. From a managerial viewpoint, the study provides suggestions for the development of guidelines or good practices, which can be the agenda of future research.

A first limitation of the study is that the main effort was to focus on similarities and regularities between

companies as regards trust management in the various phases of customer–provider knowledge interaction. Although a significant number of companies were surveyed, a larger sample or a statistical analysis might reveal significant differences between companies. Also, future research should focus on very large providers, not included in this sample, and for which the situation can differ significantly.

Another limitation of the study is that findings cannot be generalised directly to all knowledge-intensive companies, and particularly other KIBS sectors. The computer services sector is characterised by the application or novel combination of existing knowledge, low levels of R&D, and an orientation on solving the problems that are expressed by customers. Learning by doing, practical skills and tacit knowledge are crucial and mainly lead to incremental innovations. Things may radically change for KIBS companies characterised by a strong reliance on scientific inputs and codified knowledge (e.g., R&D services in the life science industry): here, knowledge processes are more systematic and outcomes are often documented. Consequently, there is the need to extend the analysis to other KIBS sectors, with the aim of investigating how the different kinds of knowledge exchanged within a KIBS–client interaction may affect the role played by trust.

Also, it should be useful to make cross-national comparisons. Actually, KIBS companies located in different countries that can be characterised by different cultures as well as business conditions, might find themselves in different situations, and the role that trust plays in the interactions with clients can change accordingly.

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