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***INTERNATIONALISATION
STRATEGIES OF KNOWLEDGE-
INTENSIVE PROFESSIONAL
SERVICE FIRMS IN THE LIFE
SCIENCES***

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Administration

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Markus Orava

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1 INTRODUCTION

1.1 The internationalisation of service firms as a research area

The literature on international business has given relatively little attention to the internationalisation of service firms: the emphasis has rather been on the internationalisation of manufacturing firms (McLaughlin & Fitzsimmons 1996, 43; Buckley, Pass & Prescott 1999, 149; Masurel 2001, 80). Yet, the internationalisation of service firms is assuming greater importance in the global economy as international trade in services is growing (Léo & Philippe 2001, 63; White, Griffith & Ryans 1997, 188; Erramilli 1990, 50; Zeithaml & Bitner 1996, 36; McLaughlin & Fitzsimmons 1996, 44; Aharoni 1993b, 131–132). This trade¹ (worth USD 1,460 billion) accounted for approximately 20% of total international trade in the year 2001 (WTO 2003).

In Finland the proportion of services² of total trade output is smaller than in most other industrialised countries³ (Mankinen, Ali-Yrkkö & Ylä-Anttila 2001, 5). Likewise, international trade in services is exceptionally low⁴ (Tilastokeskus 2002, 7) – the lowest in the European Union (13.4% of total trade output). This may be partly explained by the dominance of the public sector in service production, even though international trade in services is relatively high in a country like Sweden (19.5%), which also has a large public sector.

Theoretical literature and empirical research on services in general have been quite abundant, especially in the Nordic countries, and this has been embodied in the so-called Nordic School (Grönroos 1991, 1998, 2000; Gummesson 1987, 1995). Despite the fact that the special characteristics of

¹ The World Trade Organization (WTO) uses the definition “commercial services” for internationally traded services. This category includes transportation, travel and other commercial services. According to the WTO International Trade Statistics 2002, the reported trade in commercial services is understated (WTO 2003, 28).

² Tilastokeskus (Statistics Finland) (2002, 7–10) uses the following classification: Services are divided into tourism, transportation and other services.

³ Finnish services accounted for 63.2% of the total output in 2000, whereas in Sweden the share was 69.6%, in the UK it was 71.3% and in the USA it was 72.5%.

⁴ Finnish exports of commercial services were worth USD 5.78 billion and imports USD 8.02 billion in 2001, of which “other services” accounted for approximately 50% of the exports and imports of all services (€3.355 billion and €3.626 billion, respectively) (WTO 2003, 28).

services – compared to manufacturing – have been defined and widely accepted, the internationalisation of service firms has not come under extensive empirical evaluation and the research seems to be lagging behind that on the internationalisation of manufacturing firms (Grønhaug & Holmlund 2001, 122; Majkgård & Sharma 1998, 1; Cicic, Patterson & Shoham 1999, 83; White et al. 1997, 188). Service firms have been slower to internationalise than manufacturing firms – many are still operating mainly in domestic markets. However, the situation is changing rapidly, driven by competition from abroad and the overall globalisation of the economy (Winsted & Patterson 1998, 294). As the situation is changing, the proportion of services in international trade is growing and the internationalisation of service firms is becoming an increasingly visible and important issue. Along with the growth of international trade in services, internationalisation of service firms has aroused increasing interest among academics and practitioners in the field (White et al. 1997, 188; Aharoni 1993a, 1; Grönroos 1999, 290). Consequently, during the end of 1990s and in the early 21st century, studies and articles regarding the internationalisation of service firms have emerged in increasing numbers.

Knowledge-intensive services have become one of the core sectors behind the economic growth and dynamism in the industrial world (Mankinen et al. 2001, 2). According to studies conducted for the Research Institute of the Finnish Economy (ETLA), there is tremendous potential in the internationalisation of service firms, and especially of *knowledge-intensive professional service firms*, for the Finnish economy in the near future (Mankinen et al. 2001, 35). Competitiveness and the prerequisites of internationalisation such service firms should therefore be thoroughly researched.

There are still many barriers to the internationalisation of service firms – it may be especially difficult in professional services due to obstacles restricting expansion (Aharoni 1993b, 132; Reardon, Erramilli & Dsouza 1996, 32–33; Masurel 2001, 81). Aharoni lists restrictions on local ownership and rights of establishment, on international payment transfers, on the mobility of personnel, technology transfer, trans-border data flow and procurement policies, and local restrictions on business scope and on the use of the firm's name (Aharoni 1993b, 132). There are nevertheless many other issues contributing to the increase in internationalisation of such firms: increasing deregulation, privatisation and competition in many industries (e.g., health care), changes in demographics (increased demand for several types of professional services, especially health-related), and new service-delivery channels enabling and facilitating the internationalisation of many types of

knowledge-intensive professional service firms (see e.g., Mankinen et al. 2001, 1).

1.2 Research design and the problem-setting

1.2.1 The research process

The scarcity of conceptual and empirical studies on the internationalisation of knowledge-intensive professional services prompted this study of the internationalisation of such firms. Life sciences were selected as the industrial context of the research. The research process was initiated in 1999 in the field of medical services, and the research focus was originally on the service-interaction process (i.e. service production and consumption) of private special-care medical services. This, together with the previously gained experience of working with the companies in the field, provided the pre-understanding⁵ for research on the internationalisation of knowledge-intensive professional service firms in the life sciences. Subsequently, the focus of study turned to the international delivery of private special-care medical services. Such international delivery is accomplished through international operational modes, i.e. methods of serving international markets. Next, international delivery of pharmaceutical-contract service firms and food-testing service firms was studied. Thus it was possible to compare these knowledge-intensive professional service firms, which are similar in many ways. Examining these cases opened up multiple perspectives on the phenomenon at hand, i.e. the internationalisation strategies of firms offering relatively similar knowledge-intensive professional services in the field of the life sciences. The research process is illustrated in Figure 1.

⁵ On the issue of pre-understanding and understanding as a central theme in hermeneutic philosophy, see Alvesson and Sköldböck (2000, 57). On generating pre-understanding, see Gummesson 2000a, 57.

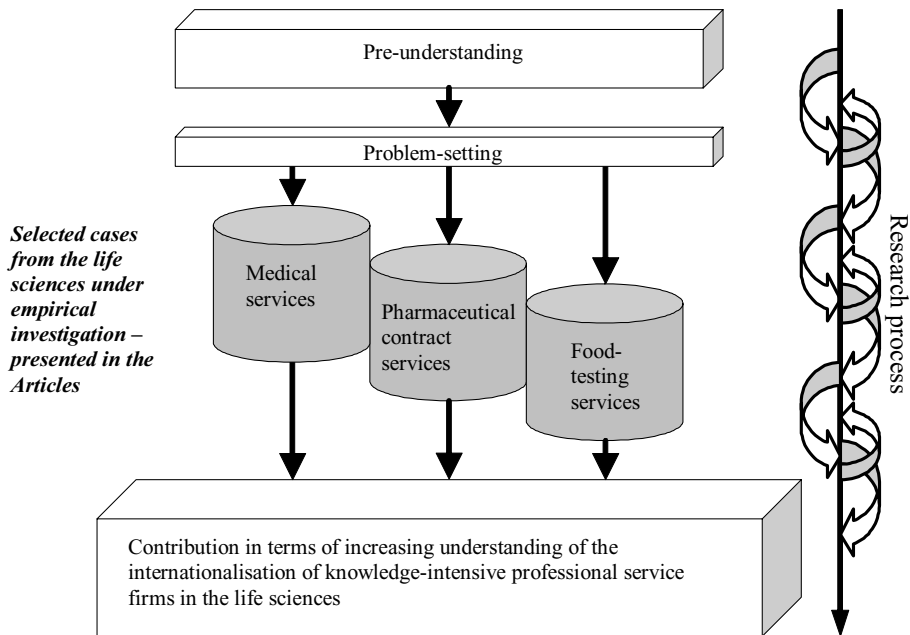


Figure 1 The research process

The research comprised six separate articles, which were based on the research conducted on the chosen firms and written and published one after another. The main contribution of Articles 1 and 2 is to enhance understanding of the service-interaction process and service quality in knowledge-intensive professional services in the life sciences. Articles 3, 4, 5 and 6 concern the internationalisation strategies of such firms. Figure 2 gives the outline of the study.

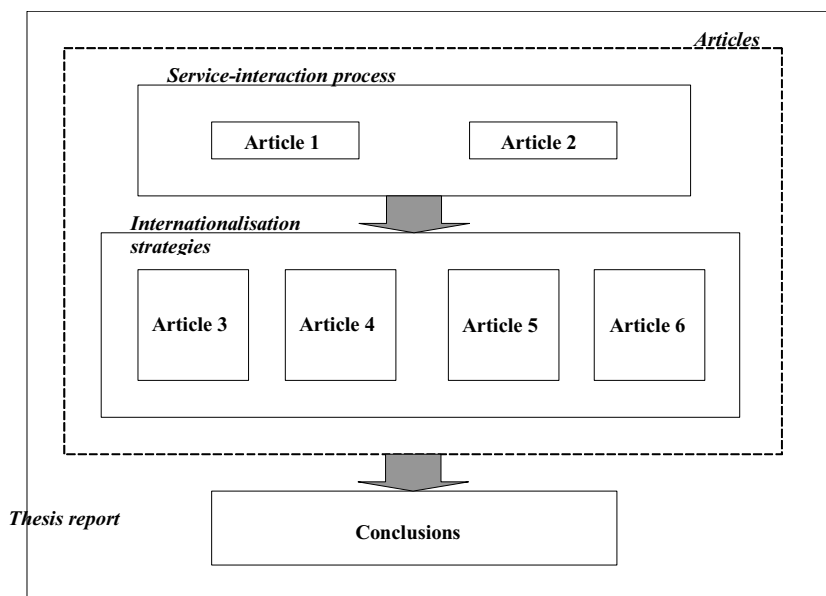


Figure 2 Outline of the study

The theoretical view adopted in this study could be labelled a *knowledge-based approach to the internationalisation of firms* applied specifically to the *internationalisation strategies* of knowledge-intensive professional service firms in the life sciences. Reijo Luostarinen (1979) has published influential studies on the internationalisation strategies of firms, and his influence is evident in the conceptual framework of this dissertation. The present study specifically focuses on services, and on knowledge-intensive professional services in particular, however. The industrial context – the life sciences – brings in another less-researched element.

1.2.2 The research purpose

The research purpose of this study was to describe and analyse the internationalisation strategies of knowledge-intensive professional service firms in the life sciences by examining their international service, market and operation strategies, and the role of knowledge resources. The study was conducted by applying the knowledge-based approach to internationalisation. The specific research objectives were as follows:

1. To describe and analyse the international service strategies of knowledge-intensive professional service firms in the life sciences

2. To describe and analyse the international market strategies of knowledge-intensive professional service firms in the life sciences
3. To describe and analyse the international operation strategies of knowledge-intensive professional service firms in the life sciences
4. To describe and analyse the role of knowledge resources in conjunction with the international service, market and operation strategies of knowledge-intensive professional service firms in the life sciences.

The structure of the study is as follows. The introduction gives the background to the study and presents the research purpose, and Chapter 2 describes the special characteristics of knowledge-intensive professional services, the service-interaction process and service quality, as well as the industrial context of the life sciences.

The concept of internationalisation, the main theoretical avenues for studying the internationalisation of professional service firms, and previous studies in this area are introduced in Chapter 3, and the knowledge-based approach to the study of internationalisation strategies is presented.

Chapter 4 covers the key conceptualisations in the study of the internationalisation strategies of professional service firms from a knowledge-based approach. The elements of the internationalisation strategy, including international service, market, and operation strategy, as well as knowledge resources, are also presented. Chapter 5 describes the methodological issues involved.

Chapter 6 reviews the empirical results reported in the Articles in a body and in the light of the framework created while aiming to answer the specific research objectives. The internationalisation strategies of knowledge-intensive professional service firms in the life sciences, involving international service, market and operation strategies, are presented. The industry competition and market characteristics influencing internationalisation strategies are also dealt with, and the identified internationalisation strategies are described. The Chapter 6 also presents the role of knowledge resources in international service, market and operation strategies. Core and foreign-business knowledge, other internal resources and external knowledge resources are presented. Chapter 7 summarises the study and offers theoretical discussion and managerial as well as policy implications.

2 KNOWLEDGE-INTENSIVE PROFESSIONAL SERVICES AND INTERNATIONALISATION

2.1 Characteristics and classifications of professional services

Services are usually distinguished from manufactured goods by four generic factors (Grönroos 1979; Gummesson 1995, 295–296; Zeithaml & Bitner 1996, 19): inseparability of production and consumption, intangibility, heterogeneity (i.e. they are less standardised than products), and perishability (i.e. they cannot be stored).

Services are performances or experiences (Winsted & Patterson 1998, 295). Grönroos (2000, 47) identifies three basic characteristics: (i) services are processes consisting of activities or series of activities rather than things, (ii) they are at least to some extent produced and consumed simultaneously, and (iii) the customer participates in the service-production process at least to some extent. These characteristics are accepted in the present study as basis on which to study professional services.

Many companies are involved in business that includes both service and product elements, and the differences should not be over-emphasised (Hellman 1996, 8). Many services involve physical “goods” in their make-up (Buckley et al. 1999, 150). Nevertheless, as Buckley et al. (1999, 150) argue: “The greater the degree of intangible elements in market entity, the greater will be the divergence from product marketing in priorities and approach.”

Contemporary literature usually treats services as a heterogeneous group (Lovelock 1983, 9; Aharoni 1993a, 4). The present study deals with *professional services* – a subcategory within the service industry, as often portrayed in the literature (for more about divisions within services, see e.g., Vandermerwe & Chadwick 1989, 81; Nusbaumer 1987, 40–44; Aharoni 1993a, 7–8; Kyrö 1995, 75). Professional services incorporate industrial services such as business consultancies, advertising agencies, market research firms, law firms and architects’ organisations, and also many consumer services such as medical services (Kyrö 1995, 75). One definition of professional services as portrayed in the literature is (Aharoni 1993a, 7): “The application of knowledge and skills by experts to meet the client’s need.” Another definition stresses the importance of training (Aharoni 1993a, 7–8): “The provision of intellectual or specialised skills on a personal, direct basis,

based on extensive educational training.”. According to Ojasalo (2000, 23), professional services are provided by qualified persons with substantial fund of specific knowledge. Further, professionals’ knowledge is based on education, and also on experience and special skills. Typical features associated with such services are complexity, skill and demanding problem-solving activity (Halinen 1994, 41). Professional service firms often rely on intensive technology to solve customers’ problems (Stabell & Fjeldstad 1998, 414). Verma (2000, 13) emphasises high customer-contact and customisation levels, while Ojasalo (2000, 23–25) lists a problem-solving approach, codes of ethics, professional associations, societal acceptance and confidentiality among the typical characteristics (for more information on the characteristics described by various authors, see e.g., Ojasalo 1999, 23–32; Verma 2000, 11). In sum, it appears that the essence of professional services is the problem-solving activity involving qualified persons with a substantial fund of knowledge that is based on education, experience and special skills.

According to the definitions given above, knowledge is seen as an essential feature and a common denominator of professional services (Aharoni 1993a, 8; Kyrö 1995, 119), although there is no generally accepted definition of the term. A recent view⁶ suggests that it comprises a tacit and an explicit part, and that the tacitness makes transacting knowledge difficult (Nonaka, Toyama & Nagata 2000, 5; Eisenhardt & Santos 2002, 141). It has been described in Western epistemology as “justified true belief”, and the focus has been on its explicit nature (Eisenhardt & Santos 2002, 140) – knowledge has been modelled as an unambiguous, reducible and easily transferable construct (Eisenhardt & Santos 2002, 140). The notion of knowledge involving tacit and explicit elements is accepted in the present study.

Professional services are considered *knowledge-intensive* due to the importance of knowledge inherent in their activities (Lindsay, Chadee, Mattsson, Johnston & Millett 2003, 11). Ylirenko, Autio and Tontti (2002, 280) argue that knowledge-intensity refers to the exploitation of knowledge in the value-adding processes of firms, while Autio, Sapienza and Almeida (2000, 913) define it as: “The extent to which the firm depends on the knowledge inherent in its activities and outputs as a source of competitive advantage.”

⁶ Another, different view of knowledge is put forward in an approach based on cognitive psychology and sociology. The focus is more on the process of knowing than on knowledge as an objective and transferable resource, and knowledge is seen as socially constructed – it is the creative activity of constructing reality (Eisenhardt & Santos 2002, 141).

No generally accepted approach to the measurement of knowledge-intensity has been developed (Autio et al. 2000, 916). Its extent in manufacturing firms is usually assessed in terms of the proportion of research and development (R&D) spending – thus, given their high R&D expenditure, pharmaceutical companies are considered to be highly knowledge-intensive. In services, where production and consumption occur simultaneously at least to some extent, the knowledge-intensity must be based on different grounds than in manufacturing firms. Furthermore, there are not necessarily particular R&D costs as such in many professional service firms because their business is R&D⁷ (e.g., contract research firms in the pharmaceutical industry). The stand is taken in the present study that R&D costs are not necessarily the best measure of knowledge-intensity in life-science firms in general, and not a valid measure at all in the case of professional services. A more holistic view incorporating intangible assets⁸ is likely to give a more comprehensive picture of knowledge-intensity in professional service firms. The need is for more firm- and industry-specific investigation rather than for statistics. This would benefit from a more idiosyncratic approach and in-depth analysis of the knowledge inherent in a particular professional firm's activities.

Grønhaug and Holmlund define knowledge-intensive professional services as services in which knowledge dominates the service process: it is required to produce the services (Grønhaug & Holmlund 2001, 127). Professional service firms could be described as providing inputs into a process resulting in the solution of the customer's problem (output) (Gummesson 1977, 137; Gummesson 1979, 7). Knowledge-intensity in professional services refers to knowledge as the main source of inputs into such processes. Therefore, the definition used to describe such services – knowledge-intensive professional services – in the present study is: *“Services that are provided by qualified*

⁷ R&D costs as a measurement of knowledge-intensity are not necessarily always a good choice. For example, a large pharmaceutical company is engaged in several very costly late-phase (phase 3) clinical trials. As a consequence, its R&D costs are very high. However, most of the expenditure goes to staging and sustaining clinical trials among several hundred participants in hospital(s) around the world - often employing contract research service firms to deal with it. R&D costs may be very high, but is knowledge input necessarily high on the part of the pharmaceutical company, especially if the trial is outsourced? Does it say anything about knowledge-intensity in that particular firm? Not necessarily: it says more about overcoming regulative barriers in order to get the drug onto the market. It does not say as much about the innovative capacity of the firm as would earlier-phase research and development (which is not as costly, however).

⁸ The studies conducted by Autio et al. (2000) and Yli-Renko et al. (2002) measured knowledge-intensity in technology-based firms on a scale that was devised following input from interviews conducted in a sample of firms. The managers responded to three statements focusing on the extent to which knowledge-intensity was characteristics of firms' business (Yli-Renko et al. 2002, 292).

persons with a substantial fund of knowledge applied through the service production and consumption process in order to solve customers' problems.”⁹

2.2 The service-interaction process and service quality in knowledge-intensive professional services

The main body of research on service marketing is based on the view that the consumption of a service is process consumption (Grönroos 1998, 322). The customer is a co-producer of the service (Gummesson 2000b, 175). The (at least partial) simultaneity of production and consumption requires interaction between the customer and the service provider, and emphasises the importance of the relationship between them (Gummesson 1995, 296). Knowledge-intensive professional services are based on applying knowledge to problem-solving activity. Such activity involves customer participation in the production and consumption process. Intellectual inputs – derived from knowledge – from professional service providers are the main inputs to the process, and the main output is customer problem solving. Value is created for the customer as a consequence of the problem solving.

The interactive character of the service production and consumption process makes the customer's role important. The customer participates in the process, often actively, and as a consequence may become quite knowledgeable about the particular service (Devlin 1997, 1106; Lindsay et al. 2003, 11). Grønhaug and Holmlund (2001, 131) stress the importance of the customer's knowledge in the internationalisation of knowledge-intensive service firms.

The notion of quality is formed as a perception of the service received in the service-interaction process (see Grönroos 2000, 62–64). Quality is another major issue in service marketing: indeed, service quality is a branch of research in itself and extensive studies have been conducted in the past two decades (see Grönroos 2000, 1998, 1991; Lehtinen & Lehtinen 1991; Gummesson 1987, 1991; Ojasalo 1999; Storbacka 1993; Zeithaml & Bitner 1996; Berry & Parasuraman 1993; Brown, Fisk & Bitner 1994). Quality has also been researched specifically in the professional-services context (see e.g., Brown & Swartz 1989; Ojasalo 1999; Gummesson 2000b; Sheppard 2002). Indeed, it is such an essential aspect of services that it also influences the internationalisation of service firms.

⁹ The definition covers both entrepreneur-type professional service firms as well as larger organisations comprising several professionals.

Quality is seen as the major issue in the internationalisation of knowledge-intensive professional service firms (O'Farrell, Wood & Zheng 1998, 25). The importance of the customer's role in this consumption process is again highlighted: customer participation, and often their physical presence during the whole (or part) of the service-interaction process, is a prerequisite. The notion of quality, which is formed during the process, must be high enough for service firms to compete successfully in foreign markets. As many professional service firms focus on service quality and compete on that basis (Caruana, Ramaseshan, Ewing & Rouhani 1998, 2), the issue is linked to the formation of competitive advantage in foreign markets. Dunning (1993, 90) also sees quality as contributing to the competitive advantage of service firms.

Service quality is crucially important for service firms, but does high quality provide a basis for internationalisation? Quality may become a competitive focus, but "good quality" may also become a basic requirement upon which other elements are built, as is the case in pharmaceutical contract services, for example: quality in such services is linked to industry-specific regulations determining and controlling the service operations – sometimes called quality standards (in the case of contract services, such sets of instructions are called GLP, GCP and GMP) (Brännback & Wiklund 2001, 13).¹⁰ Quality standards give direction to the industry, and if not widely possessed by firms may become a significant differentiating tool in terms of competition. It should be pointed out, however, that they could also constitute a minimum requirement in the industry. Service quality embraces more than mere standards, however: there is a strong subjective element that is difficult to determine solely on a technically oriented basis (Gummesson 1991, 14). Quality perception is formed on the customer's side through the interactive service-production-and-consumption process between the customer and the service firm's tangible and intangible resources (Orava & Tuominen 2002, 288).

Service quality is defined here as follows (adapted from Duncan, Ginter & Swayne 1998, 61): *service quality is an attitude reflecting a customer's perception of service-firm excellence in performance*. The quality of services provided by knowledge-intensive professional service firms is a central issue

¹⁰ Good Laboratory Practice, Good Clinical Practice and Good Manufacturing Practice are not really quality standards, but sets of regulations the purpose of which is to ensure that the quality and data used by the regulatory authorities are sound. These regulations determine and control the operations of the service firms by addressing matters such as laboratory organisation and personnel, facilities, equipment, facility operations, test and control articles, and study protocols and conduct. (Brännback et al. 2001, 13.)

in the internationalisation of such firms. Arguably, a high level of service quality (i.e. service excellence) is the ultimate requirement of professional service firm's internationalisation. Service excellence must be assumed as a cornerstone of all operations, and such service quality – if perceived to be higher than that of competitors – may form the basis of competitive advantage in international markets. Understanding the process of interactive service production and consumption, and how quality perception is formed in it, is a prerequisite in studying the internationalisation of professional service firms. Erramilli (1992, 264) argues that the production and delivery of services is distinct enough to render inappropriate the lessons learned from goods marketing, and that the study of the internationalisation of knowledge-intensive professional service firms therefore requires a particular perspective.

2.3 The life sciences as an industrial context

The industrial context of the present study is the life sciences. The term is relatively broad, and includes a rather diverse range of activities, depending on the perspective. It includes several convergent industries unified by research on and the development and production of *health-care-related products and services*, most notably medical care¹¹, pharmaceuticals and other human-health-related industries such as the food industry. The term health-care sector can be used to describe the larger context in which life-science companies operate. Companies in the above-mentioned three convergent industries include pharmaceutical companies (large pharmaceutical companies as well as smaller drug-development/biomedical companies), medical device companies (including biomaterials companies), diagnostic companies, several types of technology-based companies developing technology platforms, several companies in the food industry developing health-related products (most notably functional foods), as well as firms providing medical services¹². The present study only concerns services, and in particular knowledge-intensive

¹¹ In the scope of this study, medical services are understood to be part of medical care, and medical care to be part of the health-care sector.

¹² A distinction can be made between academic research, discovery companies, technology companies, integrated companies and service companies (Lammintausta 2003, seminar). It is nevertheless difficult to draw a clear line between them, as there are different types of hybrid companies and many of the technologies used may have applications in several sectors (and in other industries, e.g., information technology, environmental technology, mining and agriculture) (on biotechnology and its industrial applications, see e.g., EuropaBio 2003; on the characteristics of biotechnology-based business, see e.g., Elomaa 2002, 44–45).

professional services in the life sciences. There are different types of service companies in this field, and the ones focused on here represent *private medical services*, *pharmaceutical contract services* and *food-testing services*.

The health-care sector appears to be generally more domestic than international in nature. In fact, until very recently, European health care tended to be almost entirely domestic, and this pattern has been very slow to change. In most countries, this has been due to the fact that the principal source of health-care finance in many EU member states has been taxation (e.g., the Nordic countries, the UK and Spain) (Mossialos & Le Grand 1999, 3). The Finnish health-care sector closely resembles those in the other Nordic countries and the UK, as it covers the whole population, and services are to a large extent produced by the public sector and financed through general taxation. In addition, the use of specific private medical services and medicines is also subsidized to some extent. Yet it is worth noting that private expenditure in the form of direct payments in certain countries¹³ is also relatively high (e.g., Greece and Italy), whereas in Germany and France the majority of health care is financed by social-insurance contributions (Mossialos & Le Grand 1999, 6–7).

Medical services are defined in this dissertation as health-care-sector services intended to influence directly or non-directly a person's health through medical treatments and therapies executed by health-care professionals such as medical doctors. The supply of these services is concentrated on hospitals, clinics and other premises. Medical services can be divided into those provided by the public sector and those provided by the private sector. The present study concerned only private, special-care medical services. The private sector in this context means the medical-care-service *companies* that are not controlled directly by the state or the local authorities. This differentiation is not valid in some countries, such as the United States where practically all health-care services are private, but it holds in most European countries – and very clearly in Finland. Major differences include the patient's ability to choose his or her operating doctor, to avoid queues as

¹³ Health-care sectors within the EU have fundamental similarities, yet there are also certain major differences, such as in the principal methods of providing services (Mossialos & Le Grand 1999, 15). In countries such as Finland, Sweden and the UK, hospital beds are 90% publicly owned, whereas in Belgium, the Netherlands and Luxemburg most acute hospitals are private. Countries such as Finland and Italy are experimenting with independence for providers coupled with a greater use of private or non-profit providers operating in market or quasi-market systems of delivery (i.e. local purchasers such as counties or municipalities are encouraged to experiment with new provision patterns). In countries such as Greece and Portugal, private services are contracted to supplement those owned by insurers. (Mossialos & Le Grand 1999, 14.)

well as to determine the desired time of visit/operation. It is worth noting that the range of services in the private sector is limited, as many heavy and acute treatments are not included in the service range (for a more thorough description of private medical services, see Article 1).

The Finnish private-health-care sector¹⁴ has been growing steadily in recent years, and it is increasingly important in providing crucial medical services, especially in connection with outpatient ward services¹⁵ (Stakes 2003) and doctors' consultations. The private sector service providers are in a good position to increasingly develop their activities by expanding domestically and internationally. Since the state-run hospitals are generally meant to provide services for the specific population of Finnish nationals in a certain geographical area, the most relevant organisations in case of *internationalisation* are the *private-sector firms*.

Pharmaceutical contract services are services provided by pharmaceutical service firms (called contract research organisations, CROs or contract manufacturing organisations, CMOs), for various stages of drug development¹⁶. These firms play an increasingly important role in fulfilling demands from biotech and pharmaceutical companies seeking to outsource their drug-development processes. Pharmaceutical research and development is lengthy, costly, and high-risk. Once a new compound with the potential to act as an effective medicine has been identified in the laboratory, the development process is as follows: during pre-clinical testing, laboratory and animal studies are conducted to assess the chemical, biological and toxicological properties of the compound against the targeted disease. When these tests show favourable results the company can proceed to conduct clinical trials, which are experiments conducted on human beings (on the drug-development process see e.g., Derra 2003, 44–46; Rogorski 2004, 19). Contract service firms operate in each of the pharmaceutical research and development fields mentioned above (for more on pharmaceutical contract services see Article 4).

Food-testing services are used at many different stages of the food-supply chain. The raw materials are tested during the primary production on-farm and on-field, and tests are taken during the secondary processing stage e.g., during

¹⁴ The public sector still manages the majority of health-care services, and exclusively provides certain services such as emergency and so-called "heavy treatments".

¹⁵ The private sector accounts for approximately a quarter of all outpatient ward care in Finland (Stakes 2003).

¹⁶ Drug development is understood here to cover the process from discovery to phase-IV clinical trials.

canning, drying or brewing. The finished products may also be exposed to tests when they reach the retailer or caterer. When demands on traceability and quality increase, the processing industry is also more aware of having control of the whole process, meaning that the role of information processing becomes important as do the relationships between the different stakeholders involved. Control often means closer and longer-term relationships with suppliers and service providers. Food-testing services mainly involve the microbiological and chemical analysis of foodstuffs, although the laboratories also sometimes offer other services such as consulting (for a more detailed description of food-testing services, see Article 5).

Medical, pharmaceutical contract and food-testing services are typical professional services: they involve problem-solving activity relying on the knowledge and skill of experts with extensive educational training for providing these services. They are thus *knowledge-intensive professional services*. The three above-mentioned types of service are labelled *knowledge-intensive professional services in the life sciences* in the present study.

Figure 3 gives a general view of how the services in question are positioned in the field of the life sciences from the perspective of this study. The Figure was compiled by the author based on a review of various industry descriptions in the field.

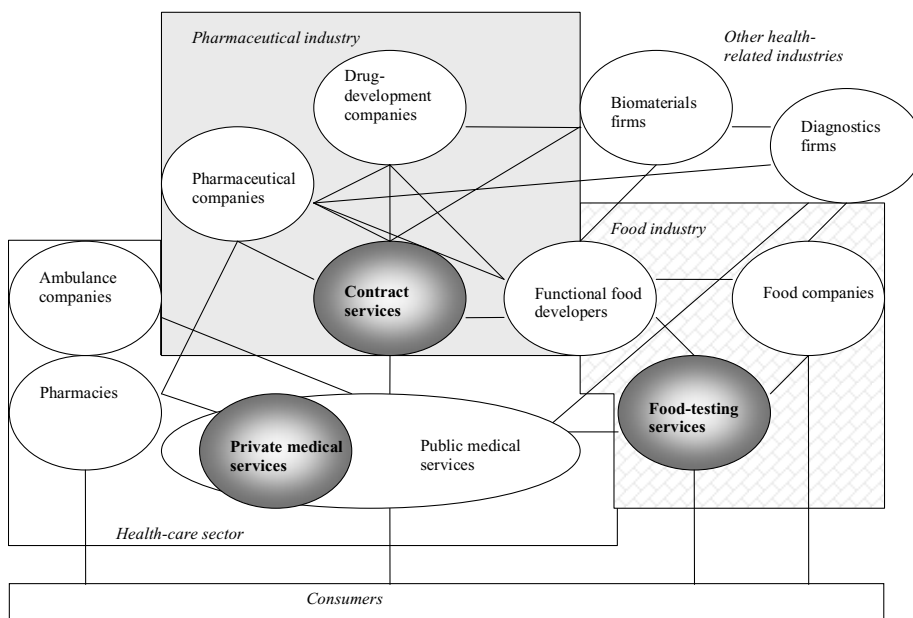


Figure 3 The services studied positioned in the field of the life sciences

Figure 3 highlights the services in question within the field of the life sciences. The perspective on this field is not exhaustive (there are, for instance, a number of different types of services as well as university-based research facilities, which are not presented here). However, it illustrates the number and diversity of actors in the field and shows how such actors are linked. The different players are connected in many ways: for example, drug-development companies outsource their clinical trials, which are organised by clinical CRO firms and implemented in different public and/or private hospitals. Trial results are further analysed by the CRO firms, or are again outsourced to data-management firms for data storage, for example. Functional food developers, for their part, are engaged in research and development activities with both food and pharmaceutical companies, often involving food-testing laboratories, but also incorporating non-clinical and clinical testing through CRO firms.

Value-chain thinking (orig. Porter 1985) could also be applied to the analysis of the roles of different activities in the field of the life sciences (Devine, O’Clock & Lyons 2000, 188; Walters & Jones 2001, 320–321). If patient health is considered the desired output, all aspects from health education to fitness and wellness, to activities associated with routine and acute care would be included (Devine et al. 2000, 188). Various actors in different industries in the field of life sciences can be seen to participate in this kind of value process (for more on the value-creation process in professional services see e.g., Stabell & Fjeldstad 1998; Devine et al. 2000; Walters & Jones 2001). Different actors naturally have their own defined value processes: for example, a private hospital’s value chain would include suppliers of pharmaceutical products, manufacturers of diagnostic equipment and surgical equipment, part-time private-practice physicians, and the ambulance services that transport patients to the hospital (Devine et al. 2000, 188).

The three types of knowledge-intensive professional services are studied in the context of three different yet heavily converging industries within the field of the life sciences: medical care, the pharmaceutical industry and the food industry. All are involved in different kinds of businesses (pharmaceutical contract service firms are involved in industrial business, whereas medical-service and food-testing firms are involved in both consumer and industrial business), but there are also similarities. It is becoming increasingly difficult to clearly separate the different activities in these industries, as they are increasingly convergent – a good example being the area of functional foods (for definitions of functional foods see Brännback & Wiklund 2001, 199–200), which involves elements from the food and the pharmaceutical industries. Thus the industry boundaries clearly overlap. In addition, life-science

professional services are not necessarily clearly distinguishable, clear-cut processes, but may include different services and product elements.

There are differences between the life-science industries in terms of international competition: whereas the medical-service business is marked by low levels of international competition, food-testing firms are operating in an environment characterised by increased international competition reflecting the situation in the food industry in general. The pharmaceutical industry could be described as a global business characterised by strong international competition (on the internationalisation of pharmaceutical firms see Hansén 1981). Firms involved in pharmaceutical contract servicing seem to lag behind the general trend of global nature of the pharmaceutical industry, but the competition is becoming increasingly international due to strong mergers and acquisitions (M&A) in the field, for instance (Donati 2001, seminar).

The term market should be defined here, too. According to Luostarinen (1979, 124), the main definition of a market is a country. Ayal and Zif (1979, 86) argue that in market strategy, two considerations are of particular importance for the detailed identification of strategies: market segments within national markets and the allocation of effort to different markets (and market segments). Four approaches are then possible (Ayal & Zif 1979, 86–87): specific market segments can be involved (in a few countries), products (or services) can be targeted on different segments (in a limited number of countries), many countries may be involved (for specialised products or services), and many segments can be targeted in many markets. Expansion to different markets is achieved by different means, the issue of resources being an important one (Ayal & Zif 1979, 87). The term market may therefore imply one or several countries or segments within a particular country.

The encompassing of more than one country in the term “market” is appropriate in the present study in the case of transnational areas of industrial concentrations for example, where company origin and ownership cannot be clearly defined. An example of such an area is the Medicon Valley area in the life sciences. Medicon Valley consists of the area of Scania in Southern Sweden (especially around the cities of Lund and Malmö) and the Copenhagen area of Denmark. It is one of the strongest concentrations of life-science industries in Europe, and it would be difficult to distinguish between the Danish and Swedish markets. Hence, the term Nordic market is used consistently in the present study to describe the markets consisting of the Nordic countries of Denmark, Sweden and Norway. Similarly, the term Baltic market is used to bundle together the countries of Estonia, Latvia and Lithuania. The term Nordic-Baltic area refers to the regional area at close geographical proximity to Finland consisting of the Nordic countries, the Baltic countries and other areas around the Baltic Sea, i.e. (north-western)

Russia, (northern) Poland and (northern) Germany. Likewise, specific segments in these particular countries may be markets for the individual firms involved. The terms international markets and foreign markets are both used to distinguish between operations involving domestic (Finnish) and other (international) customers.

3 TOWARDS A KNOWLEDGE-BASED APPROACH TO THE INTERNATIONALISATION OF PROFESSIONAL SERVICE FIRMS

3.1 A review of the main theoretical perspectives on internationalisation of firms

3.1.1 On theories of internationalisation related to foreign direct investment

Several theories¹⁷ covering the internationalisation of the firm are described in the *international business*¹⁸ literature.¹⁹ The choice between the alternatives of service delivery via direct trade (export) or through foreign direct investment (FDI) has been analysed from a variety of theoretical perspectives (Baark 1999, 57). The internationalisation of the firm has often been viewed as an export-led phenomenon (Fletcher 2001, 25), but the majority of the earlier theories concentrated on investments in internationalisation. One influential approach, the so-called *market power approach*, is based on market imperfections.²⁰ Hymer assumed that the foreign firm must have some firm-specific monopolistic advantage in order to compete with local firms. Firms internationalise if they can use their established advantages in foreign countries at little or no additional cost (see e.g., Westhead, Wright & Ucbasaran 2001, 337). *Internalisation theory*²¹ became one of the predominating explanations of foreign direct investment (FDI) in the 1970s

¹⁷ Only some of the theories are presented here: neo-classical economic theory, international trade theory, location theory and product life cycle theory are not discussed, as their relevance to the present study is relatively minor – for a more detailed presentation see e.g., Hansén (1981, 35–53) and Wilska (2002, 29).

¹⁸ International business literature has strong roots in international economics (Kogut 2002, 161).

¹⁹ It could be said that the theoretical focus in the field of international business is blurred by the multidisciplinary nature of the field (Melin 1992, 99).

²⁰ Hymer 1960, Kindleberger 1969 and Caves 1971 (as cited in Wilska 2002, 29).

²¹ Buckley and Casson 1976, 1985, as well as Rugman 1980, 1981, 1985, but the foundation of internalisation theory can be traced back to the work of Coase in the 1930s (as cited in Wilska 2002, 22).

(Borsos-Torstila 1999, 28). The theory is linked to the above-mentioned market-power approach: a multinational enterprise has somehow developed a firm-specific advantage in its home market, and for this advantage (usually in the form of internally developed intangible assets) an “internal market” has to be created through horizontal and/or vertical integration. Internalisation theory introduces the *transaction costs* of exchange between individuals or groups of individuals, which vary in a market relationship compared with a cooperative relationship (Cantwell 1991, 23). Where the transaction costs of an administrated exchange are lower than those of a market exchange, then the market is internalised and the collective efficiency of the group is thereby increased (Cantwell 1991, 23).

The *Eclectic theory* (sometimes called the eclectic paradigm) developed by Dunning (1980) appeared as a synthesis of past theories in that it stresses the importance of the overall strategic posture of the firm (see e.g., Hill, Hwang & Kim 1990, 117). It suggests three sets of advantages that explain the involvement of firms in foreign production: ownership-specific advantages, internalisation advantages and localisation advantages (Dunning 1980, 13). The theory is based on economic theory: transaction costs and factor costs are the main exploratory variables, and it carries the assumption of rational decision-making in international firms making foreign direct investments (Melin 1992, 103). Moreover, according to Cantwell (1991, 26), eclectic theory combines elements of different approaches to international production, and should not be regarded as a general theory in itself.

In sum, the theories presented in this chapter predominantly concern FDI issues in manufacturing industries. Even the eclectic theory focuses upon explaining the decision of service firms to engage in FDI abroad – rather than exporting (Baark 1999, 57). On the other hand, internationalisation viewed as a process involves *development* from export towards investment. Internationalisation process models are discussed in the following section.

3.1.2 Internationalisation as a process

Welch and Luostarinen define internationalisation as *the process of increasing involvement in international operations* (Welch & Luostarinen 1999, 84). This is accepted as a general definition of internationalisation in the present study, although the view is adopted that it is not a deterministic process of steady

increase in involvement in international operations – it may also include switching between methods of serving international markets or possible de-internationalisation²² (for more about de-internationalisation see e.g., Benito & Welch 1997, 9–12).

Several models of the internationalisation process²³ of firms have been published in the international business literature during the last two decades (Leonidou & Katsikeas 1996, 521). The stimuli for firm's internationalisation in these models are manifold (Leonidou & Katsikeas 1996, 537–538). According to Leonidou and Katsikeas (1996, 538), a firm is influenced by multiple internal and external factors with varying degrees of frequency, intensity and importance. Fletcher (2001, 26–27) gives examples of such factors: management characteristics, the nature of the product, actions of competitors, costs, domestic demand, and excess capacity. Manolova, Brush, Edelman and Greene (2002, 13–14), for example, emphasise international business skills and environmental-risk perceptions as important stimulating factors. Fillis (2001, 776) emphasises the importance of global vision, a focused approach to doing business, the ability to recognise technological opportunities and the insight of the founder. Another stimulating factor is the unsolicited order (Bell, Crick & Young 2004, 54) that may initiate internationalisation. In small countries such as Finland, the internationalisation of firms is explained in terms of environmental push and pull factors, the most influential home-country push factors being the small size, openness and peripheral location of the domestic market (Luostarinen 1979, 205–207; 1994, 7).

During the 1970s, Nordic researchers at the University of Uppsala, in Sweden (Johanson & Wiedersheim-Paul 1975; Johanson & Vahlne 1977) developed a model of company choice of foreign markets and form of entry when going abroad (see Johanson & Wiedersheim-Paul 1975, 17). According to this theory – also called the *stages theory* – internationalisation is a process of gradual commitment in foreign markets based on learning and the accumulation of knowledge (Björkman & Forsgren 2000, 11–12; Forsgren 2002, 258; Jones 1999, 17). In Finland, Reijo Luostarinen studied the internationalisation of the firm (focusing thus on the company level), and he extended the use of the incremental model by analysing the sequence of

²² According to Benito and Welch (1997, 9), de-internationalisation refers to any voluntary or forced actions that reduce a company's engagement in or exposure to current cross-border activities, including possible complete withdrawal.

²³ Leonidas and Katsikeas (1996, 517) use the term "the export development process", but this is understood here to be synonymous with the term "internationalisation process".

different kinds of products (or services) offered by internationalising firms (Luostarinen 1979; Gabrielsson 1999, 41; Björkman & Forsgren 2000, 11). The studies of the Nordic researchers revealed a gradual process of evolutionary development in the internationalisation of the firm. The firm thus gradually increases its international involvement through sequential steps starting from exporting towards FDI. The firm is successively increasing its commitment to foreign markets.²⁴

The work of the Nordic researchers coincided with other internationalisation models developed in the late 1970s and early 1980s in North America by Bilkey and Tesar 1977, Cavusgil 1980, Reid 1981 and Czinkota 1982 (as cited in Gankema et al. 2000, 16; Bell 1995, 60–61; Mäkinen 1987, 5; Leonidou & Katsikeas 1996, 522). The different models vary greatly in structure and usage, and in the underlying paradigms behind the chosen approach. Reid's (1981) model, for example, is innovation-based, whereas Bilkey and Tesar (1977) approach it from the perspective of learning theory (for a detailed presentation of internationalisation models see Mäkinen 1987, 44–48; Leonidou & Katsikeas 1996, 522–526).

In recent years, the stages theory of internationalisation has been the subject of criticism: it is regarded as too deterministic, as ignoring the fact that “leapfrogging” over intermediate stages is relatively common, and perhaps most important of all, sometimes as describing only the early stages of internationalisation (Melin 1992, 104). In the literature on services in particular, there was discussion in the 1990s on whether the stages theory of internationalisation was valid at all (Erramilli 1992, 264; Hellman 1996, 21; Björkman & Forsgren 2000, 4). Some empirical research does seem to support its application in services (Hellman 1996, 21; Majkgård & Sharma 1998, 31), but nevertheless it has been strongly criticised. According to several authors, firms do not necessarily adopt consistent approaches to internationalisation, the existing models are too deterministic, and the internationalisation processes and patterns of individual firms are quite unique and highly situation-specific (see e.g., Bell 1995, 61; Melin 1992, 104). This is especially the case in high-technology (see e.g., Jones 1999, 38) and service industries. According to a study conducted by Bell (1995, 72), there is hardly any evidence that small knowledge-intensive high-technology firms follow any

²⁴ Johanson and Vahlne (1990, 12) further developed this idea and presented a dynamic model in which the outcome of one cycle of events constitutes the input to the next (as cited in Andersen 1993, 211). According to them, “a basic assumption is that market knowledge and market commitment affect both commitment decisions and the way current decisions are performed – and these in turn change market knowledge and commitment”.

clear linear pattern of internationalisation. Moreover, Melin argues that internationalisation processes are characterised by high degrees of complexity, variability and heterogeneity (Melin 1992, 115), and Erramilli (1990, 53) observes that the service sector is characterised by diverse patterns of internationalisation.

3.1.3 The network approach

The *network approach* (see e.g., Johanson & Mattsson 1988; Easton 1992; Håkansson & Johanson 1992) provides a different view on internationalisation by presenting market exchange as the result of interaction within individualised exchange relationships (see e.g., Törnroos & Nieminen 1999, 8–11; Hadley & Wilson 2003, 699; Tikkanen 1998, 111; Nummela 2000, 31–33). According to Johanson and Mattsson (Axelsson & Johanson 1992, 218; Johanson & Mattsson 1988, 309), internationalisation is achieved through (i) the establishment of positions in relation to counterparts in country-based networks that are new to the firm, e.g., international extension or foreign-market entry, (ii) the development of positions in country-based networks in which the firm already has a position, i.e. penetration, and (iii) increasing co-ordination between positions in different country-based networks, i.e. international integration. Both the network perspective and the stages theory stress the cumulative nature of the firm's activities: the stages theory focuses on the internal development in firms, whereas the network-based model is of the market and the firm's relations to it (Johanson & Mattsson 1988, 309). The view advocated in the network approach, i.e. that a firm is always part of the network(s) of exchange relationships, and that interdependence is manifested in the form of co-operative arrangements and the use of external resources in internationalisation (Chetty & Wilson 2003, 62; Coviello & Munro 1999, 116; Nummela 2000, 30), is an increasingly important phenomena, and offers important insights into the internationalisation of knowledge-intensive professional service firms.

3.2 The concept of internationalisation in the present study

The present study deals with the internationalisation of knowledge-intensive professional service firms in the life sciences. Internationalisation can be analysed on many levels, including that of the country, the industry and the firm level (Cantwell 1991, 17; Luostarinen 1994, 3–6). The scope of this study is clearly on the firm level, even though the other two levels provide the

context in which the firms are operating, and this context cannot be ignored. Given the chosen scope, the present study relies strongly on the earlier theory building in internationalisation of a firm provided by Luostarinen (1979; 1994). The term internationalisation is used only in the context of firm-level activities, even though the industry influences internationalisation in terms of its characteristics and the level of international competition.

Internationalisation is sometimes divided into inward and outward operations (Welch & Luostarinen 1999, 84). Inward operations were not explicitly studied and therefore the emphasis here is on outward operations.

Internationalisation is emphasised in relation to strategy. It is linked to the company's strategy (Gabrielsson 1999, 45) and can be seen as purposeful action related to company's strategic aspirations: in that case explanation of the firm's internationalisation is strategic in nature (Mäkinen 1987, 30). Different phases in firm's internationalisation have been identified in some studies based on the strategy perspective to internationalisation although the process itself is often considered more important than its particular phases. Nevertheless, the dimensions along which internationalisation strategies are evaluated should be presented – most notably characteristics of the product/service, growth, the number of markets, operational modes, and also the question of resources (Mäkinen 1987, 29–32).

It could be argued that small firms in particular do not always make strategic plans and thus the strategy perspective is not relevant in internationalisation. This may be the case in some firms, and especially so if strategic planning is understood as a formal planning process. It does not mean, however, that there is no strategy. Strategy does not imply formal planning: Jones (1999, 38) argued, on the basis of a survey including high-technology firms, that although small high-technology firms may not have specific plans to internationalise, they might expect that some areas of their operations would extend to cross-border linkages and arrangements. Furthermore, in their study of the internationalisation strategies of knowledge-intensive firms Bell et al. (2004, 45) noted the proactive approach to strategic thinking in those firms (compared with non-knowledge-intensive firms). The importance of *intention* should be stressed (Mintzberg, Ahlstrand & Lampel 1998, 219). Whether manifested through vision or through vague ideas of getting somewhere somehow, the rationale behind operations deriving from intention is *strategic* in nature, regardless of whether it is explicitly expressed or not. This perspective cannot be considered irrelevant – neither in the case of large firms with (usually) a more formal strategic planning process nor in the case of smaller firms with (usually) a more informal and implicit strategy process.

There are several schools of strategy adopting different perspectives on strategy (for more on strategic schools see Mintzberg et al. 1988, 354–359). Strategy can be understood as a plan, a pattern, a position or a perspective (Mintzberg et al. 1998, 9–13). Näsi (1991, 31) defines it as the plot of the firm’s action, the string that pulls together the events. Strategy is understood in the present study as a plot of the firm’s intention according to set long-term goals. One of the key determinants separating different schools of thought is whether strategy is seen as deliberate or emergent (Mintzberg et al. 1998, 191). In this regard, the adopted view in the present study is that strategy is seen as a *process* (see Mintzberg et al. 1998, 191) – strategies originate in a process and are partly deliberate, partly emergent²⁵. Consequently, internationalisation is seen as part of the *strategy process*.

The strategy perspective to internationalisation emphasises the importance of internationalisation as part of the strategy process (Melin 1992, 110). This is the view to internationalisation adopted in this dissertation, i.e. internationalisation is seen and dealt with as a strategic issue consisting of goals and actions related to the resources of the firm.

Welch and Luostarinen summarised the major elements of an internationalisation strategy as follows (Welch & Luostarinen 1999, 85–88; Luostarinen 1979, 94–95).

First, there are three elements concentrating on the foreign market activity:

1. “How” – referring to the method/s by which firms serve foreign markets
2. “What” – referring to the sales objects (e.g., products or services)
3. “Where” – meaning the significance of the target markets.

Welch and Luostarinen (1999, 93) also stress the importance of the *ability* of a firm to undertake any form of international operations, which is limited by the means accessible to the firm to carry them out. The following elements are related to the issue of ability in internationalisation of firm:

1. Personnel (international skills and experience, training)
2. Organisational structure (export department, international divisions)
3. Finance (availability of funds for sustaining activities).

Internationalisation of the firm is closely linked to the *resources* of the firm. As Johanson and Mattsson (1988, 310) put it: “Driving forces for increased

²⁵ What this means is that leadership controls the process aspects of strategy (structure etc.), leaving the content aspects to other actors. Strategies are thus partly deliberate, partly emergent (and, again, deliberately emergent) Mintzberg et al. 1998, 191.

internationalisation are that the firm wants to utilise and develop its resources in such a way that its long-run economic objectives are served.”

Strategy is linked to the strategic goals of the company, and it is not fruitful to consider internationalisation without linking it to strategy. Bell et al. (2004) emphasise the importance of strategy issues in internationalisation, and Knudsen and Madsen (2002, 477) argue that internationalisation must be treated and analysed as a strategic matter.²⁶ In other words, internationalisation is related to the company’s strategy in that it is an important and integral part of it. In internationalisation a number of factors must be taken into consideration (Welch & Luostarinen 1999, 85), the key one being the issue of resources, i.e. the firm’s internal ability to carry out the internationalisation strategy. Other factors determining the internationalisation strategy include industry (referring to the competitive situation) and market characteristics (i.e. the situation of the home and foreign markets in terms of size and growth, for instance).

3.3 The knowledge-based view – positioning the study

The fundamental question in the field of strategic management is how firms achieve and sustain competitive advantage (Teece, Pisano & Shuen 1997, 509). In the increasingly global competitive environment this issue is crucially important for internationalising knowledge-intensive professional service firms. The dominant paradigm in the field of strategic management during the 1980s was Porter’s (1985) competitive forces approach, which emphasises the actions a firm can take to create defensible positions against competitive forces (Teece et al. 1997, 510). New theoretical perspectives emerged to challenge the predominance of the external environment as the main focus of strategy research in the 1980s. The firm’s internal elements were again raised as the main source of competitive advantage. These new perspectives emerged as *the resource-based*²⁷ *view of the firm*, which was largely based on Penrose’s

²⁶ It is acknowledged that the international activity of small firms in particular does not necessarily involve strategic planning, such as when a contract is suddenly obtained from abroad (see O’Farrell et al. 1998, 31), and such activity is more of an anomaly than part of the regular operations. However, the view is adopted in the present study that such activity can hardly be called internationalisation in the defined sense of the term.

²⁷ Here a distinction must be made between the resource-based view of the firm and resource-dependency theory, the latter being considered one of the general explanations of inter-organisational relationships (see e.g., Olkkonen 2002, 36). The focus of the resource-based view is on internal resources, whereas resource-dependency theory explicitly focuses on resources that must be obtained from external sources (Olkkonen 2002, 36). However, new resource-based approaches (most notably

(1959) work and the notion that a firm can be conceptualised as a bundle of resources²⁸ (as introduced by Wernerfelt 1984; on the resource-based view see e.g., Dierickx & Cool 1989, 1504; Amit & Schoemaker 1993, 33; Teece et al. 1997, 510; Eisenhardt & Martin 2000, 1105). The resource-based view introduced into strategy theory the conception of firms as heterogeneous accumulations of resources, and sought to explain differences in performance by individual firms in terms of their distinctive resource endowments (Sanchez & Heene 1997, 305) (for more information concerning the main theoretical perspectives in strategy and organisation research leading to the resource-based view, see e.g., Sanchez & Heene 1997, 305).

According to Collis and Montgomery (1995, 119), the resource-based view combines the internal analysis of phenomena within companies (a preoccupation of many management studies) with the external analysis of the industry and the competitive environment (the central focus of earlier strategy approaches). Thus, it complements rather than replaces by combining internal and external analysis (Collis & Montgomery 1995, 119). Valuable, rare, inimitable and non-substitutable resources and related sets of operational routines and technological skills are considered sources of competitive advantage (Barney 1991, 106–108; Eisenhardt & Santos 2002, 142; Collis & Montgomery 1995, 180–183; Bloodgood, Sapienza & Almeida 1996, 64): in other words, competitive advantage depends on the ownership of resources that enable the company to perform its activities better or more cheaply than its competitors (Collis & Montgomery 1995, 37).

The resource-based view has been further developed and several conceptual and theoretical insights have been emerging based on this tradition. A short summary of the three main approaches – the dynamic-capabilities view, the knowledge-based view and the competence-based view – is provided here. The resource-based view has been extended by (e.g. Teece et al. 1997) adding the issue of *dynamic capabilities*²⁹ to convey the important role of the firm's managers in integrating, building and reconfiguring internal and external

the competence-based view) acknowledge the importance of external resources and incorporate such thinking (as firm-addressable resources; see Sanchez & Heene 1997, 306) into the theory development.

²⁸ It should be pointed out that Penrose actually regarded the firm as “a collection of productive resources” (Penrose 1959, 24).

²⁹ According to Eisenhardt and Martin (2000, 1107), dynamic capabilities are defined as follows: “The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match and even create market change. Dynamic capabilities thus are the organisational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die.”

competencies³⁰ in market situations of rapid and unpredictable change (Stalk, Evans & Shulman 1992, 62; Eisenhardt & Martin 2000, 1106). This is considered especially important in terms of the sustainability of competitive advantage (Rindova & Kotha 2001, 1263). Thus, a certain degree of strategic flexibility is required in order to compete in changing conditions. The importance of knowledge resources is also emphasised (Eisenhardt & Martin 2000, 1106). Studies based on dynamic capabilities do not seem to undermine the resource-based view, and rather enhance it (Eisenhardt & Martin 2000, 1106).

During the last few years, the knowledge perspective has been increasingly used in several areas within the field of strategy (Eisenhardt & Santos 2002, 139; Autio et al. 2000, 909). The knowledge-based view underlines the importance of knowledge as the strategically most significant resource of the firm: knowledge, and especially intangible (from hereon called tacit) knowledge, is seen as the source of competitive advantage (Yli-Renko et al. 2002, 280; Ahokangas 1998, 47).

Pitt and Clarke (1999, 302) emphasise the importance of tacit know-how especially in knowledge-intensive firms. They argue that the links between intellectual inputs and tangible outputs can be hidden, and thus the fundamental sources of the firm's advantage remain ambiguous. Penrose (1959, 25) emphasised that it is never resources themselves that are the inputs in the production process, it is only the services that the resources can render, and this must be borne in mind in the context of inputs into the service-interaction process. The services yielded by resources are a function of the way in which they are used – the same resource can be used for different purposes (Penrose 1959, 25). Even though the word “service” is used in a totally different meaning in the present study, service as defined by Penrose could be seen to emphasise the fact that it is crucial for resources to be used in a meaningful way and for certain purposes. Thus knowledge as such is not input into the service-interaction process: it is its meaningful and purposeful use in the service-interaction process that yields the intellectual inputs required in problem-solving activity. This is a very important point in the light of this study: the focus is on knowledge-intensive professional services in the life sciences, thus the importance of knowledge must be highlighted given the fact that the creation of competitive advantage of such companies is related to it. Then again, since production activities (and in the case of these services –

³⁰ According to the dynamic-capabilities approach, resources are firm-specific assets containing explicit and tacit knowledge (Teece et al. 1997, 516).

consumption) usually require the combination of a wide array of specialized knowledge residing in individuals, organisational capabilities (routines) are essential to the achievement of such advantage (Eisenhardt & Santos 2002, 144).

The concept of core competence (orig. Prahalad & Hamel 1990, 81–82; also Hamel 1994, 11–12) emerged in the resource-based approaches in the 1990s. For competence³¹ to become core, it should provide access to a wide variety of markets, make a significant contribution to customer perceptions of benefits, and be difficult for competitors to imitate (Prahalad & Hamel 1990, 83–84). Teece et al. (1997, 516) argue that core competence refers to competencies that define a firm's fundamental business – the degree to which they³² are distinctive depends on how well endowed the firm is related to its competitors, as well as on how difficult it is to replicate them.

The concept of competence is a central theme in the competence-based view (see Sanchez & Heene 1997), which also stems from the resource-based view. One of its objectives is to explain competitive advantage and strategy development by focusing on the internal elements of the company, while exchanges with customers determine the market value of its competencies (Mäkinen 2000, 183). Sanchez and Heene (1997, 305–306) built the groundwork for a theory of competence-based strategic management, which complements earlier resource-based thinking, and Hunt (2000, 82) stresses that resource-based view and competence-based view are complementary. The adopted view in this study is that all these views (resource-based, competence-based and knowledge-based) represent essentially the same ideas stemming from the resource-based view of the firm: it is henceforth called the *knowledge-based approach*.

For the purposes of this study the following general definitions – based on Sanchez and Heene's (1997, 306) work – are given and accepted as terminology³³: *firm* is characterised as an *open system* of asset stocks and

³¹ The problem, according to Melin (1992, 110), is that concepts such as core competence – even if intuitively reasonable – are vague and lack descriptive precision. They were also created to study multinational corporations – therefore requiring some adjustments when applied to smaller, knowledge-intensive professional service firms.

³² Core competencies are not the same thing as competitive advantage (Bogner & Thomas 1994, 114–115): core competencies underscore competitive advantage, but competitive advantage is realised through core products/services which, in turn, are offered to markets wrapped with other traits to create the final product/service. Brännback further argues that this requires the building up of cognitive traits, which include (i) methods of tackling ill-structured problems, (ii) means of directing action in unique situations in terms of a common value system, and (iii) a tacit understanding of the technology, organisational dynamics and product markets (Brännback 1996, 67).

³³ According to Hunt (2000, 83), the competence-based view has fulfilled the important task of developing a conceptually adequate, internally consistent language for discussing strategy, the firm,

flows including tangible assets such as equipment and intangible assets such as capabilities.³⁴ The firm as a managed open system pursues a set of organisational *strategic objectives* that motivate the *strategic actions* of the firm. Firms develop (implicitly or explicitly) a *strategic logic*, which is the organisation's rationale for identifying and undertaking actions that will help it to achieve its goals. The strategic logic shapes the *management processes* the firm adopts to identify, acquire and use its *tangible and intangible resources* in pursuing its goals. The resources may reside within the firm (*firm-specific resources*), or in other organisations (*firm-addressable resources*). As the firm links resources into a system for carrying out its goal-seeking actions, managing of the *systemic interdependencies* among firm's own internal and between the internal and external resources is required. Further, an organisation achieves *competence* when it has an ability to sustain the coordinated deployment of resources in ways that help it to achieve its goals (Sanchez & Heene 1997, 306).

Hunt (2000, 83) further defines *assets* as anything tangible or intangible a firm can use in processes for creating, producing and/or offering its products to the market, *capabilities* as repeatable patterns of action in the use of assets to create, produce and/or offer products to market, and *resources* as assets that are available and useful in detecting and responding to market opportunities or threats. Capabilities could also be considered part of resources³⁵ (see Ahokangas 1998, 61): resources are then seen as stocks, and capabilities as flows, because capabilities refer to the firm's capacity to deploy resources by using organisational processes. In terms of competence, both resources as such and the capability to use them are required in competence building. Capabilities underline the usage of resources, and the concept of capability could be seen as integrated with that of resource.

Given the knowledge-based approach adopted, it was not considered fruitful in the present study to make a distinction between resources and capabilities, especially when it comes to knowledge resources: capabilities are included – according to knowledge-based approach – in tacit knowledge. Tacit knowledge is divided into experiential and routinised (Nonaka et al. 2000, 15),

and competition. The terminology created by Sanchez and Heene (1997; 2002) is used in the present study for the above-mentioned reasons. The knowledge-based approach adopted is seen as complementary to the competence-based view and therefore the terminology is well suited to the study of the internationalisation of knowledge-intensive professional service firms from a knowledge-based approach.

³⁴ The notion of a firm as a goal-seeking open system of interrelated asset stocks and flows is called the *systems* view of a firm (Sanchez & Heene 1997, 308).

³⁵ Some authors (e.g., Warren 2002, 44) do not include capabilities under the term resources.

and capabilities are thus skills and practices embedded in experiential and routinised tacit knowledge.

The present study lies on the contact point of the two research traditions: internationalisation research and strategy research (international strategic management).³⁶ It could be said that it represents the evolving research field of *international strategy and management*.³⁷ The theoretical view adopted could be labelled the *knowledge-based approach to the internationalisation of firms*, applied specifically to the internationalisation strategies of knowledge-intensive professional service firms in the life sciences. The adopted theoretical view of the study has thus been able to combine both research traditions³⁸ in the study of internationalisation strategies of knowledge-intensive professional service firms.³⁹ The following section reviews previous studies on the internationalisation strategies of professional service firms, and the application of the knowledge-based approach to study internationalisation strategies of such firms.

3.4 The concept of internationalisation strategy in professional services

3.4.1 Research on the internationalisation strategies of service firms

Studies dealing with the internationalisation strategies of professional service firms are reviewed in the following. The issue of internationalisation mode is related to the internationalisation strategy. The majority⁴⁰ of the literature of the service firms' internationalisation has concentrated on the choice of internationalisation mode (Weinstein 1977; Erramilli 1990; Erramilli 1992;

³⁶ Given the professional-services context, the present study is clearly influenced by theories of services marketing, especially by the so-called Nordic School (Grönroos 1991, 1998, 2000; Gummesson 1987, 1995), as also emphasised in Chapter 1.1 and in the articles.

³⁷ The field of *international strategy and management* concerns the study of the international activities of firms (Kogut 2002, 261–261).

³⁸ According to Kogut (2002, 261), the resource-based view (or knowledge-based) view of the firm is well compatible with the literature on international business.

³⁹ Katsikeas (2003, 139) argues that researchers in international marketing would find it fruitful to draw from other areas (e.g., strategy research), insofar as cross-functional approaches may yield more meaningful theoretical developments and solutions for managers.

⁴⁰ The issue of performance of internationalisation is another important area of internationalisation research (White et al. 1997; Dhanaraj & Beamish 2003; Lu & Beamish 2001; Lages & Lages 2003). The issue of performance has been strongly linked to the choice between different entry modes. It is not focused on in the present study, whereas internationalisation strategies and internationalisation modes come under closer scrutiny.

Agarwal & Ramaswami 1992; Aharoni 1993a; Majkgård & Sharma 1998; Ekeledo & Sivakumar 1998; Masurel 2001; Erramilli, Agarwal & Dev 2002; Javalgi, Griffith & White 2003), and the terms internationalisation mode and entry mode are used extensively. The present study treats these terms as synonymous. There are studies that specifically concern *internationalisation strategies* adopted by service firms (e.g., Vandermerwe & Chadwick 1989; McLaughlin & Fitzsimmons 1996; Reardon et al. 1996; Hellman 1996; Majkgård & Sharma 1998; Grönroos 1999; Baark 1999; Gummesson 2000b).

Internationalisation strategies are often classified from the market/customer-perspective. This approach is often used in the literature, and the two types of internationalisation strategy for service firms are called *client-following* and *market-seeking* (Baark 1999, 56; Aharoni 1993a, 8; Majkgård & Sharma 1998, 7–9).

McLaughlin and Fitzsimmons (1996, 51–52) identified five different internationalisation strategies for service firms in their study of several service sectors. They used customer involvement and customisation, complexity of inputs and outputs, and labour intensity to classify services and identify strategies based on these service characteristics. The five strategies identified are (McLaughlin & Fitzsimmons 1996, 51–52):

1. Multi-country expansion
2. Importing customers
3. Following customers
4. Service unbundling
5. Beating the clock.

The main characteristics of the strategies are as follows (ibid., 52–56). Multi-country expansion refers to a strategy aimed at strong growth with expansion to several markets/countries often involving a relatively standardised service offering. Importing customers is a multi-service single-site approach with characteristically heavy investment on the site with (the presumed) on-site advantages. Following customers closely resembles the above-mentioned “customer-following”, with the emphasis on serving existing internationalising customers. Service unbundling refers to specialising in pieces separated from the complex value-chain while also emphasising relatively few direct customer contacts. This often involves developing new service concepts. Beating the clock refers to advantages stemming from bypassing the constraints of the clock and time zones, for example. Information-technology applications (e.g., online reservation systems) play a crucial role here, as does the requirement for reliability.

Previous studies specifically concerning the internationalisation strategies of professional service firms in the case of Finland are still relatively scarce: in addition to Hellman’s (1996) study of the internationalisation of the Finnish

financial service sector are a number of studies that include professional services as a sub-sector within other services: Pakkanen (1976) studied Finnish service firms' foreign investments, Sivonen (1983) analysed the internationalisation of Finnish service firms in the early 1980s, Rytönen (1993) investigated services and Finnish foreign trade, and Pietikäinen and Tynnälä (1994) looked at several service sectors and their internationalisation strategies. Mankinen, Ali-Yrkkö and Yli-Anttila (2001) also studied the internationalisation of service businesses in Finland from the sector perspective, and highlighted the special characteristics of knowledge-intensive service firms in internationalisation. Other studies related to the internationalisation of professional service firms include those on licensing and know-how agreements in Finnish firms (including some professional service firms) (Oravainen 1979), international co-operation in the Finnish construction industry (regarding consultation) (Keravuori 1981), and the internationalisation of Finnish municipal services⁴¹ (Palola 1996). Grönroos (1999) studied internationalisation strategies in service firms, and service firms have also featured in Reijo Luostarinen's (1979; Welch & Luostarinen 1999) extensive research on internationalisation. Nevertheless, it could be concluded, that research on the internationalisation strategies of Finnish service firms – and in particular professional service firms – is not extensive.

3.4.2 Elements of the internationalisation strategies of professional service firms

According to the view adopted in this study, internationalisation strategy is seen as closely related to firm's overall strategy. Internationalisation strategy should be consistent with it, but concentrating on international activities. Internationalisation may, in effect, become the key part of the strategy (O'Gorman & McTiernan 2000, 141) if the goals set for internationalisation become *the strategic goals* of the firm.

According to Luostarinen (1979, 94–95), the internationalisation strategy comprises product, operation and market (POM) elements. These elements provide a basis for investigating internationalisation strategies in the present study: with regard to knowledge-intensive professional service firms in the life sciences, such internationalisation strategies are considered to comprise *the*

⁴¹ Some of which can be understood as professional services (e.g., municipal infrastructure planning).

international service strategy, the international market strategy and the international operation strategy. This approach is applied in the following chapters to describe and analyse the internationalisation strategies of knowledge-intensive professional service firms in the life sciences.

Vandermerwe and Chadwick suggested in 1989 that modes of service internationalisation are influenced by a combination of the nature of the service and the way in which it is delivered (Vandermerwe & Chadwick 1989, 89). McLaughlin and Fitzsimmons (1996, 44) also raised the question of how service characteristics translate into strategies for internationalising services. The international service strategy dimension incorporates the type and characteristics of the service. The international service strategy determines *the international service offering* of the professional service firm.

The international market selection is an important aspect of the internationalisation strategy: firms have to decide where or with whom the transactions should be performed (Andersen & Buvik 2002, 347). In professional services this means where the service delivery to customers will occur. Thus the international market strategy determines the international market selection of the professional service firm.

As emphasised earlier, the terms internationalisation mode and entry mode are extensively used in the literature to describe methods of serving foreign markets. Aharoni (1993a) used the term modes of delivery. These three terms are replaced in the present study by the term *international operational mode* (as introduced in Article 3). The international service delivery (for example the delivery of a day-care surgery service or of a microbiological-analysis service to international customers) is accomplished through such international operational modes, i.e. methods of serving international markets. The international operation strategy determines the international operational mode.

3.4.3 The international service strategy concept

Whereas the international operation strategy of service firms has been extensively studied in the literature, the concept of an international service strategy has been underrepresented. However, there are some studies that have highlighted the importance of service type and characteristics – thus emphasising the service strategy dimension – with regard to the internationalisation mode and the separation of professional and other types of services (O'Farrell et al. 1998; Vandermerwe & Chadwick 1989; Erramilli 1992; Aharoni 1993a). One such endeavour was that of Vandermerwe and Chadwick (1989, 84) who separated certain services from others based on high consumer/producer interaction and low involvement of goods in service.

These services – professional services – were seen as a different group in terms of internationalisation.

According to some researchers, it is possible to distinguish between the internationalisation of hard and soft services (Erramilli & Rao 1990, 140–141). The first refers to services in which production and consumption can be fully decoupled, i.e. they are “exportable”, and the latter to those for which production and consumption occur simultaneously (Erramilli 1990, 57). According Cicic et al. (1999, 87; see also Javalgi et al. 2003, 187), soft services are more often offered directly through contractual and various investment modes, i.e. disregarding the first mode (exporting). Cicic et al. (1999, 83) argue that “hard” services are more likely to internationalise using traditional internationalisation modes⁴², whereas “soft” services require major adaptation of existing models. Here again, the special characteristics of different services are already taken into account to some extent.

There are some studies that have highlighted the characteristics of services as an important issue in internationalisation. Bharadwaj, Varadarajan and Fahy (1993) presented a model of sustainable competitive advantage in service industries that takes full account of the characteristics of services as well as of resources.

Clark, Rajaratnam and Smith (1995, 12) classified services in internationalisation based on what crosses borders. They specifically identified *contact-based services* as a special group, given the fact that such services require the movement of people into and out of the nation to engage in service production and consumption. They represent many professional services (e.g., medical services) that require a professional’s presence in the service-production and -consumption process. There are, however, professional services in which the service provider’s participation in the service production and consumption process is not required all the time (e.g., pharmaceutical contract services).

A significant aspect of the internationalisation strategies of knowledge-intensive professional services is the issue of customer relationships. Relationships between service organisations and their clients are important in the internationalisation of professional service firms⁴³ (O’Farrell et al. 1998, 31). The long-term character of relationship development and its particular

⁴² The authors use the term *entry mode*, which is understood to be synonymous with the term internationalisation mode.

⁴³ According to Samiee and Walters (2003, 193), despite the increasing importance of international marketing, insufficient attention is being paid to exploring and theorising relationship marketing in international contexts.

role in knowledge-intensive professional services must be emphasised (Sharma 1994, 16; Lovelock, Vandermerwe & Lewis 1996, 173; Wang & Mowen 1997, 56–57; Laing, Fischbacher, Hogg & Smith 2002, 111; Aung & Heeler 2001, 622; Halinen 1997, 180). Uncertainty in exchange situations due to intangibility, and the interactive and customised character of these services, explain the willingness to build long-term relationships (Halinen 1997, 30–31; also Ojasalo 2000, 48) – such relationships militate against switching the service provider (Laing et al. 2002, 111). Accordingly, Westhead et al. (2001, 338) argue that a realistic theory of service firms' internationalisation needs to appreciate the role of relationships.

Buckley and Chapman (1997, 47) argue that specific relationship skills may induce the firm to internationalise. Blankenburg Holm and Eriksson (2000, 193–195) emphasise the importance of foreign-market development through customer relationships (see also Holmlund & Kock 1998, 48), and relationships may offer significant assistance in internationalisation especially for small- and medium-sized (SME) firms (Nummela 2000, 37). Lindsay et al. (2003, 10–11) also emphasise the importance of relationships as enabling the sharing of knowledge and other resources. In addition, they argue that they facilitate the information and knowledge flows that are necessary for international service delivery (Lindsay et al. 2003, 11). Consequently, a service strategy may involve the extensive use of relationships.

3.4.4 The international market strategy concept

As mentioned earlier, internationalisation strategies are often classified based on the market/customer-perspective. These two types of internationalisation strategy for service firms are often called *client-following* and *market-seeking* (Baark 1999, 56). Sometimes professional service firms have to internationalise as their customers internationalise (Aharoni 1993a, 8), and this demand-driven internationalisation strategy could be called client-following (see e.g., Majkgård & Sharma 1998, 7–9). Another kind of strategy – driven by the aspirations of growth through new markets – could be labelled a market-seeking strategy (see e.g., Majkgård & Sharma 1998, 7–9). This kind of approach brings in only one aspect of the internationalisation strategy – it essentially represents the market/customer element.

Whereas the market element has been one of the areas of research (international market selection) (Andersen & Buvik 2002, 348) on the internationalisation of firms, analysing physical, cultural and economic distances was not considered a fruitful approach in the present study. Andersen and Buvik (2002, 348) stress that the focus of studies on

international market selection should move towards the relationship approach. Whereas traditional international market selection studies concentrate on country selection, the relationship approach takes the foreign customer as the unit of analysis (Andersen & Buvik 2002, 248). Coviello and Martin (1997, 53), in their study of professional service firms, found out that international market selection was not influenced by sophisticated cost/benefit analysis, local infrastructures or psychic distance: it was a question of client location and network contacts. Likewise, according to the study conducted by Bell et al. (2004, 39) on knowledge-intensive firms, international market selection is based on relationships with clients and global industry trends rather than on the geographic or psychological proximity of markets.

The view adopted in the present study is that the market element involves customers – and firms target the markets in which customers are located. This is especially important in the case of small and open economies (such as Finland) that lack large-volume markets for most businesses. The emergence of born-globals (see Gabrielsson & Kirpalani 2004, 556), especially in these countries, illustrates the notion of the market element tied in with the customer location. Firms in small and open economies need to expand internationally and to reach their customers abroad in order to survive and grow. Gabrielsson and Kirpalani (2004, 558) furthermore argue that conventional ways of raising resources and expanding internationally are too slow and risky, and that firms aiming for rapid growth in international markets should rather become involved in networks to lessen their risks (Gabrielsson & Kirpalani 2004, 558). In the present study, the market/customer element is incorporated into the present study included through market-seeking or customer-following as the two international strategies for knowledge-intensive professional service firms. Industry competition and market characteristics as external factors influencing the internationalisation strategies of professional service firms are dealt with as separate issues.

3.4.5 The international operation strategy concept

As noted earlier, the majority of earlier studies have concentrated on choice of internationalisation mode (Erramilli 1990; Erramilli 1992; Erramilli et al. 2002; Majkgård & Sharma 1998; Masurel 2001; Aharoni 1993a; Ekeledo & Sivakumar 1998; Weinstein 1977). A review of the literature suggests that the service firms' mode choices could be clustered in three generic categories:

1. Exporting
2. Contractual modes
3. Investment modes.

Internationalisation mode choice is, however, only one (if an important) part of the firm's internationalisation strategy (Welch & Luostarinen 1999, 85; Benito & Welch 1994, 10), thus focusing exclusively on this is not necessarily a fruitful approach to studying the internationalisation of professional service firms. Services never "cross" borders as such. What occurs is *the movement of the people, capital, goods and information* that embody a given service, which has been provided in the exporting country or in the importing country (Nicolaidis 1993, 53). Given the nature of knowledge-intensive professional services, the investigation of goods is beyond the scope of the present study.

Aharoni argued that firms can offer their services internationally in one of three different modes of delivery⁴⁴ – a definition that could be understood to mean internationalisation mode in professional services – (Aharoni 1993a, 6): (i) through pure cross-border trade; (ii) purchase of service is done in the country where the firm is situated by customers coming to the firm's premises; (iii) an employee of the firm (or a partner) is moved – temporarily or permanently – to where the customer is. Investment by establishing / acquiring a physical infrastructure in a foreign country in order to deliver the service through a foreign affiliate could be seen as the fourth internationalisation mode. Léo and Philippe use another, somewhat similar classification (2001, 71): (i) cross-border transaction, (ii) movement of the provider, (iii) movement of the customer, and (iv) delivery through foreign affiliates.

Luostarinen divided the operation strategy dimension into (i) non-direct-investment marketing operations (NIMOS), (ii) non-direct-investment production operations (NIPOS), (iii) direct-investment marketing operations (DIMOS) and (iv) direct-investment production operations (DIPOS). Each category includes various operation types (most are typical of manufacturing industries). The major difference between different operations is whether they contain direct-investment capital flow or not (Luostarinen 1979, 108), and export operations do not although they may include various co-operative arrangements with third parties (e.g., with foreign clinics to perform examinations / operations). Such operations involving contracts (compared with earlier generic contractual operational modes) are thus included in service-export operations and are not regarded as separate internationalisation modes in knowledge-intensive professional services. Luostarinen's (1979, 109–111) classification is mentioned here due to the comprehensiveness of his presentation, but only the ones relevant for the present study are included in

⁴⁴ The term mode of delivery as used by Aharoni is synonymous with the term internationalisation mode.

this investigation and compared with the professional-services-oriented classifications of Aharoni (1993a) and Léo and Philippe (2001).

Figure 4 represents an attempt to compare Luostarinen's classification with Aharoni's, and with that used by Léo and Philippe in the context of the internationalisation of knowledge-intensive professional service firms.

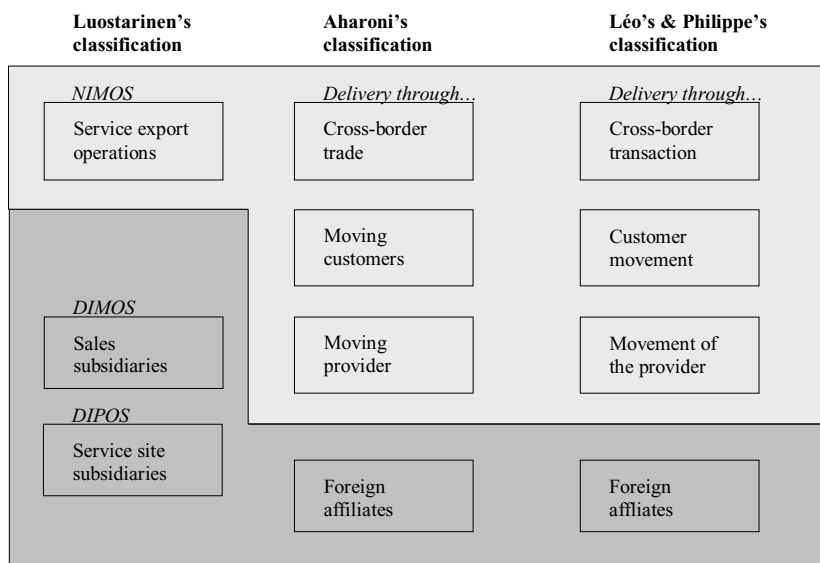


Figure 4 Comparing the classifications of international operational modes in the context of professional services

From a synthesis of the above classifications, it appears that the international operational modes of knowledge-intensive professional services comprise: (i) *export operations* involving own/direct export of services (by using travelling service personnel with or without foreign intermediaries) and indirect export of services (inviting foreign customers to the domestic site) and (ii) the delivery through *foreign affiliates* involving foreign direct investment (FDI), which can be in the form of sales subsidiaries (without laboratory equipment and personnel, for example) or service subsidiaries (with the capacity for service delivery). If not wholly owned, these could be called joint ventures.

3.5 The knowledge-based approach to studying the international service, market and operation strategies of knowledge-intensive professional service firms

There are several classifications of resources in the literature on the knowledge-based view. Barney (1991) defined resources as including all assets, capabilities, organisational processes, firm attributes, information, and knowledge controlled by the firm that enable it to conceive of and implement strategies that improve its efficiency and effectiveness (Barney 1991, 101; Hunt 2000, 78). Grant's (1991, 119) classification suggests six major categories of resources: financial, physical, human, technological, reputation-related and organisational. Sanchez and Heene (1997, 309) distinguish between intangible and tangible resources, and Hunt (2000, 77) categorises them as tradeable and non-tradeable. Ahokangas (1998, 60) added relationships as a further category.

Resources in the context of internationalisation of firms have also come under scrutiny, and several specific ones have been identified as being important (Ahokangas 1998, 63). Table 1 reviews⁴⁵ studies based on the knowledge-based approach as a basis for classifying resources:

Table 1 A review of studies for classifying resources

Authors	The view adopted	Resources identified	External resources acknowledged	Empirical / theoretical
<i>Theoretical / generic studies</i>				
Barney (1991)	Resource-based	All assets, capabilities, organisational processes, firm attributes, information and knowledge controlled by the firm	No	Theoretical
Grant (1991)	Resource-based	Financial, physical, human, technological, organisational resources and reputation	No	Theoretical

⁴⁵ This is not a comprehensive review – the four generic studies (Barney 1991; Grant 1991; Sanchez & Heene 1997; Nonaka et al. 2000) serve as examples of the main approaches to resource classification. The selection of internationalisation studies is not comprehensive either: it includes some of those that contributed to the conceptual thinking behind the present study.

Sanchez and Heene (1997)	Competence-based	Intangible (knowledge, intellectual property, reputation, relationships) and tangible (physical resources)	Yes	Theoretical
Nonaka et al. (2000)	Knowledge-based	Tacit knowledge (experiential and routinised), explicit knowledge (conceptualised and systemised)	Yes	Theoretical
<i>Studies in the international business context</i>				
Bloodgood et al. (1996)	Resource-based	Management's international work experience, innovation, firm size, pursuit of product differentiation	No	Empirical
Ahokangas (1998)	Resource-based	Internal resources (process-related, technology-related, pricing-related, product-related, customer-related and channel-related) and external resources (information, networking)	Yes	Empirical
Elango (2000)	Resource-based	Invisible and measurable (intangible, physical, financial, operational and economic) resources	Yes	Empirical
Kotha, Rindova and Rothaermel (2001)	Resource-based	Reputation, technology and knowledge-based assets, website traffic; partnering	Yes	Empirical
Westhead et al. (2001)	Resource-based (service perspective)	General human resources, principal founder's management know-how and specific industry know-how, ability to obtain financial resources	Yes	Empirical
Yli-Renko et al. (2002)	Knowledge-based	Market knowledge (experiential and non-experiential), core knowledge (e.g., technological expertise and knowledge)	Yes	Empirical
Dhanaraj and Beamish (2003)	Resource-based	Organisational, entrepreneurial and technological resources	No	Empirical

Empirical studies on the internationalisation of firms by Dhanaraj and Beamish (2003), Elango (2000), Kotha et al. (2001), for example, have built on the resource-based approach. Dhanaraj and Beamish (2003, 246) distinguish resources in internationalisation of firms between organisational, entrepreneurial and technological resources, while Elango (2000, 12) classified them as “invisible” and “measurable”, further categorising

measurable resources as intangible, physical, financial, operational and economic (Elango 2000, 12). Kotha et al. (2001, 775) considered intangible assets in the internationalisation of Internet firms, and highlight the importance of reputation and technology, and of knowledge-related assets. Interestingly, they also have a further factor, partnering,⁴⁶ which they suggest is significant (Kotha et al. 2001, 777) – this could be considered closely related to relationship resources. Ahokangas (1998, 123–124) distinguishes between internal and external resources, and further divides the former into process-related, technology-related, pricing-related, product-related, customer-related and channel-related resources. Note that in Ahokangas's (1998, 123) study, process-related (i.e. manufacturing processes) and technology-related resources are considered more important than all other resources in internationalisation. He identified externally available resources as information and networking (Ahokangas 1998, 124), and his resource category "information" can be associated with market knowledge (non-experiential), and "networking" with relationship resources.

As valuable as these studies are, they do not deal explicitly with the internationalisation of professional service firms. There are some empirical studies on the internationalisation of service firms emphasising resources: O'Farrell et al. (1998, 30) combined internal and external elements in their study of service firms' internationalisation and also argued that a greater understanding of the internationalisation process of business-service companies is required. O'Farrell et al. (1998) do not explicitly classify resources in their study, however. Aung and Heeler (2001, 619) also considered the resource-based view in the internationalisation of service firms in their study of hotel chains, and identified specific core competencies for service industries in their international strategy formation (Aung & Heeler 2001, 638). They did not have a resource classification in their study.

Bloodgood et al. (1996) also studied resources in internationalisation of firms and found an association with firm-specific resources, such as management's work experience (Bloodgood et al. 1996, 72). Westhead et al.'s (2001) study of the internationalisation of new and small firms – more than half of which (62%) were service firms (Westhead et al. 2001, 346) – was based on the resource-based view, and highlighted the importance of resources

⁴⁶ Partnering in the study carried out by Kotha et al. (2001, 777) refers to the co-operative activity of firms in the form of partnering agreements.

in regard to internationalisation.⁴⁷ There are also studies on the internationalisation of firms that are built on the knowledge-based view: Yli-Renko et al. (2002), for example, studied the internationalisation of new technology-based firms specifically from that perspective. Although they did not focus on services, their explicit focus on knowledge makes the study an important benchmark for the present study. The knowledge-based view specifically emphasises knowledge in internationalisation. The studies conducted by Yli-Renko et al. (2002) and Nonaka et al. (2000) gave important insights for the present study.

Nonaka et al. (2000, 15) classify knowledge as tacit and explicit: tacit knowledge is further divided into experiential and routinised knowledge, and explicit knowledge into conceptualised and systemised knowledge. Tacit knowledge emphasises individual-oriented experiential knowledge, as well as routinised knowledge embedded in actions and practises. Explicit conceptualised knowledge is articulated through images, symbols and language (e.g., concepts and design), whereas systemised and packaged explicit knowledge refers to documents, manuals and databases: systemized knowledge also includes explicitly stated technologies (Nonaka et al. 2000, 15–16). This view expressed by Nonaka et al. (2000) is *accepted as basis for classifying knowledge in the present study*.

⁴⁷ Westhead et al.'s (2001, 351) study revealed that resource-related factors were significantly associated with the propensity or inclination to internationalise. However, the propensity to internationalise is not within the scope of the present study.

4 ELEMENTS OF THE INTERNATIONALISATION STRATEGIES OF KNOWLEDGE-INTENSIVE PROFESSIONAL SERVICE FIRMS

4.1 Internationalisation strategy

4.1.1 A layered design of the elements

The view is adopted in the present study that investigation of the internationalisation strategies of knowledge-intensive professional service firms in the life sciences requires a special view, thus the key conceptualisations to study internationalisation strategies of professional service firms from knowledge-based approach are discussed in this chapter. Framework to study internationalisation strategies of knowledge-intensive professional service firms comprises two different layers. First, the inner layer (firm-level) consists of the elements of resource availability and their use, as well as the strategy elements in internationalisation. Second, the outer layer (industry-level) comprises the industry dynamics⁴⁸, i.e. external competitive interactions and the market characteristics influencing internationalisation strategies. The layered design of the elements of the internationalisation strategy is shown in Figure 5.

⁴⁸ The term dynamic here implies a state of change over time (the opposite of static).

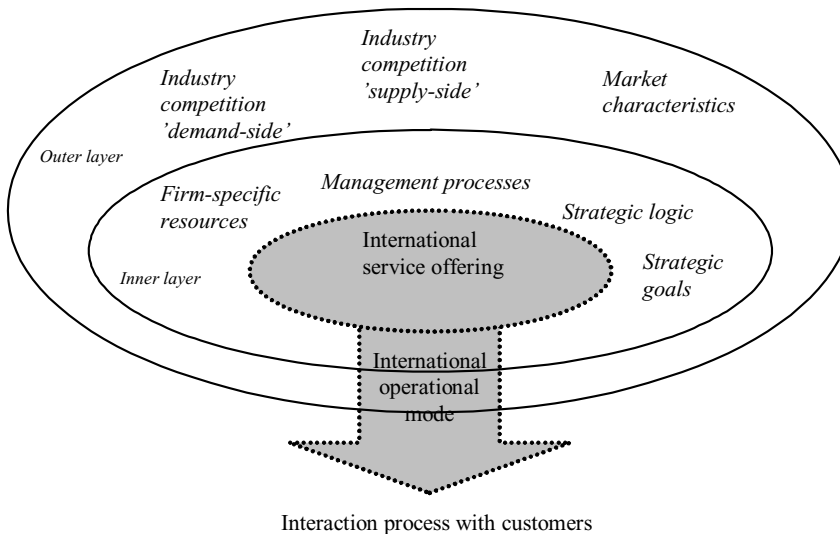


Figure 5 A layered design of the elements of the internationalisation strategy

The inner layer refers to the dynamics of the firm's internal processes. As specified in Chapter 3, strategic logic⁴⁹ shapes the management processes it adopts to identify, acquire and use resources in pursuing its goals. Strategic logic is seen as the rationale for achieving firm's goals through the coordinated allocation and deployment of resources (Sanchez & Heene 1997, 309). This also applies to the determination of resource allocations and deployments in internationalisation. The international service offering is formed through such internal processes (as will be specified later in Chapter 4.1.2).

The outer layer refers to industry dynamics consisting of external competitive interactions and market characteristics. Here, both the "demand" and "supply" sides are included. The demand side refers to the traditional idea that industry competition focuses on competitive interactions in the "product

⁴⁹ Strategic logic does not just represent the strategic thinking of top managers, but also includes all the ideas that influence all decision makers determining the composition of the organisation's resource stocks and flows (Sanchez & Heene 2002, 73). It may be expressed (according to the company's organizational structure and culture) as (i) a detailed strategic plan, or (ii) emerging through a flat organisational structure (Sanchez & Heene 2002, 74). A company thus implicitly or explicitly develops a strategic logic that directs actions that can be seen to help it to achieve its goals.

markets”, whereas the supply side refers to the dimension of industry that recognises competition (and cooperation) between firms in terms of acquiring resources for competence building (Sanchez & Heene 1997, 307).

The layers are connected – there are several levels of interactions between the elements of the inner (firm-level) and the outer (industry-level) layers (Sanchez & Heene 1997, 307). The interactions between the industry and the firm consist of interactions of individuals and groups within firms, interactions between firms and customers, and interactions between competing and cooperating firms.

The term ‘market characteristics’ is included to correspond with both domestic and foreign market characteristics influencing internationalisation. These include the size and growth rate of the domestic and foreign markets, as well as the number and characteristics of (existing and potential) customers in the domestic and foreign markets.

Given the adopted knowledge-based approach⁵⁰, a revised and specified definition of the internationalisation strategy of the knowledge-intensive professional service firm is suggested: “*Motivated by strategic goals and driven by strategic logic, a process of allocating and deploying resources and managing systemic interdependencies among the firm’s own internal and between the internal and external resources in order to deliver the international service offering through international operational modes to international customers.*”

Figure 6 depicts how the internationalisation strategy, and the international service offering, international operational modes and resources are linked in the internationalisation of knowledge-intensive professional service firms:

⁵⁰ The terminology specified in Chapter 3.3. is used.



Figure 6 Linkages between the internationalisation strategy, the international service offering, international operational modes and resources

As argued earlier, strategy and resources are linked. Resources provide the basic direction for strategy – firms need to define their market based on the kind of resources they have or can acquire to serve their customers (Grant 1991, 116). Strategic logic directs resource allocations and deployments accordingly for internationalisation purposes.

According to the knowledge-based approach adopted in this study, the international service offerings and international operational modes of knowledge-intensive professional service firms are linked to the resource element. Internationalisation is consequently seen as a strategic issue and as an integral part of a company's strategy. The internationalisation strategy is considered a broader approach to internationalisation than the international operational mode – internationalisation strategies are put into practice through international operational modes. The internationalisation strategy of knowledge-intensive professional service firms involves their *international service strategy* (determines the international service offering), their *international market strategy* (determines the international market selection) and their *international operation strategy* (determines the international operational mode).

4.1.2 International service strategy

The international service offering of knowledge-intensive professional service firms in the life sciences is *essentially a promise of problem-solving to the customer*. The problem-solving activity is only realised in interaction with customers. The service offering must be made accessible to them (on accessibility, see Heinonen 2004, 71–72), and the process of doing this could be called service delivery. The service is not delivered only in interaction between the customer and the service provider, but can also involve customer interaction through intermediaries or technology (Heinonen 2004, 68).

The knowledge-based approach incorporates models for conceptualising how competitive advantage is achieved based on the internal elements of a firm (Bogner & Thomas 1994, 114; Sanchez & Heene 1997, 310; Brännback & Wiklund 2001, 202). Basically, the general view is that core competence derives from the knowledge base of the company. It is then embodied in core products (or services), which are “wrapped” with other traits to create the final product for a certain market. Core competence should enable the maintenance and creation of unique and value-adding offerings – products and/or services – to customers, which presumably leads to competitive advantage in the corresponding market.

Derived from earlier models (Bogner & Thomas 1994; Brännback & Jelassi 1999; Brännback & Wiklund 2001), Figure 7 depicts the service offering of knowledge-intensive professional service firms.

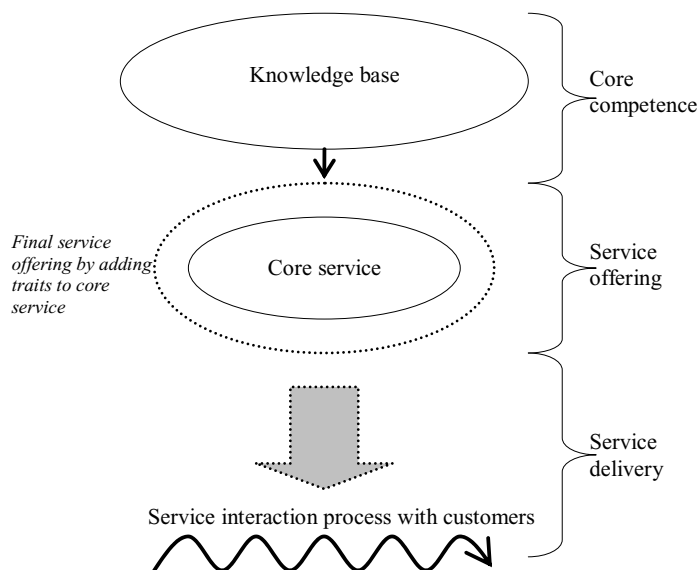


Figure 7 The offering of knowledge-intensive professional service firms

The service offering is built up by adding other “traits”⁵¹ to the core service (e.g., supplementary services). A good example is surgery operation, which requires several additional and supplementary services (e.g., anaesthesiology, laboratory tests and radiological examinations) in order to be produced and consumed.⁵² The importance of knowledge resources in the international service offering should be acknowledged.

In the case of internationalisation, the service offering must be delivered to customers in international markets – hence the term *international service offering* is used from here on to describe service offerings in conjunction with the internationalisation strategy. For knowledge-intensive professional services characterised by complexity and demanding problem-solving activity this means that an international service offering consisting of the core service and supplementing services is delivered to a particular international customer in order to engage in the service-interaction process of producing and consuming.

Delivery is the main differentiating element between domestic and international operations. Compared to international delivery, domestic operation is relatively uncomplicated process (e.g., patients coming to the premises of a private hospital), whereas international delivery is complicated by several barriers, including regulative barriers, language / cultural barriers and problems in transferring intangible service elements between countries. In internationalisation, the international service delivery is accomplished through international operational modes.

The role of the international service offering in the internationalisation strategy of knowledge-intensive professional service firms in the life sciences is an important one: the type of the service offering influences the choice of international operational mode. The type of offering refers to its comprehensiveness in terms of whether it represents the *focused* or broad, *full-service type*, and for international markets it limits the options available for international operational modes. Thus the international service strategy (determining the international service offering) and the international operation strategy (determining the international operational mode) are closely linked.

The international service strategy of a knowledge-intensive professional service firm includes a number of dimensions. Table 2 describes them: the descriptions are adapted from Luostarinen (1979) and McLaughlin and

⁵¹ Bogner and Thomas (1994, 115) described how core products / services are wrapped with other traits to create the final product/service for a market.

⁵² For a more detailed presentation of the surgical / medical service process, see Orava and Tuominen (2002, 286–287).

Fitzsimmons (1996), and have been modified to better reflect the context of the present study).

Table 2 The dimensions of the international service strategy of knowledge-intensive professional service firms

Dimension	Criteria	Short explanation
Level of interaction	High level of interaction / low level of interaction	Service production and consumption requires high or low level of customer interaction in the process
Level of customisation	Customised/standardised	The services provided are (more) customised or (more) standardised
Number of service-providing firms	Sole service provider / several service providers	Other service providers are needed (or not needed) for the international service offering
Length of customer relationships	Short-term-oriented / long-term-oriented	Relationships characterised by shorter- or longer-term interactions with customers

The dimensions are: the level of interaction (between professionals and customers), referring to the extent to which the customer participates in the service-production and -consumption process; the level of customisation, referring to whether the services require tailoring (customisation) to the customer or whether they are more standardised; the number of service providers, referring to whether the service offering is provided by a sole provider firm or together with others; and the length of the customer relationships, referring to their longer- or shorter-term character.

The varied nature of relationships with customers in knowledge-intensive professional services should be acknowledged. These relationships are generally considered important in this field (Sharma 1994, 16; Lovelock et al. 1996, 173; Wang & Mowen 1997, 56–57; Laing et al. 2002, 111; Aung & Heeler 2001, 622). However, some professional services are problem-solving activities that aim to “rid” the customer of his/her problem once and for all: for instance, medical services are aimed at making the patient healthy, and most patients would prefer never to come again to the doctor for consultation. In reality, of course, treatments often have to be repeated, or the treatment

process otherwise consists of several operations/therapies over a long period of time. In the case of chronic diseases, relationships are long-term.

4.1.3 International market strategy

International market strategy is understood in the present study as the aspect of the internationalisation strategy that concerns the process by which professional service firms select where and with whom the service delivery occurs. According to the views presented by Andersen and Buvik (2002), Coviello and Martin (1997), and Bell et al. (2004), the customer is the unit of analysis in the international market selection of knowledge-intensive professional service firms.

Andersen and Buvik (2002, 358) argue that customer-focused international market selection may influence and be influenced by the international operational mode. Depending on where and with whom the service delivery occurs, the service offerings may also have to be modified (e.g., different kinds of traits can be added to the core service in different markets). The view adopted in the present study is that the international market strategy influences both the international service offering and the international operational mode. Table 3 presents the dimensions of the international market strategy of knowledge-intensive professional service firms:

Table 3 The dimensions of the international market strategy of knowledge-intensive professional service firms

Dimension	Criteria	Short explanation
Customer procurement	New (seeking) / existing (following)	New-customer seeking or existing-customer following prevails in customer procurement
Number of customers in the foreign markets	Small/large number	Whether the company has few or several customers in the foreign markets
Dispersion of customers in the foreign markets	Regional, European, global	Whether customers are from areas of regional markets of close proximity, from other European countries or from outside Europe
Customer type	Consumer/industrial	Customers are consumers / business organisations

Customer procurement (seeking new or following existing customers) is the first dimension. It is based on earlier studies, in that new-customer seeking and existing-customer following are specified as the two principal roads to customer procurement for professional service firms (e.g., Aharoni 1993a; Majkgård & Sharma 1998; McLaughlin & Fitzsimmons 1996). The second and third dimensions are added here to make a distinction between the number of customers and where those customers are in terms of geographical dispersion. The number of customers is divided between the categories large and small/medium. Dispersion is categorised as regional (areas of close proximity, i.e. customers from the Nordic-Baltic area), European (customers from other European countries), and global (customers from outside Europe). The customer-type dimension refers to whether consumers or industrial customers (business organisations) are served.

The international market strategy of a knowledge-intensive professional service firm thus involves the customer-procurement dimension (new customers are sought from foreign markets or existing customers are followed to foreign markets), and also dimensions referring to the number of customers in the foreign markets, where they are from and what kind of customers are served. The international market selection of knowledge-intensive professional service firms, i.e. where and with whom the service delivery occurs, is based on these international market strategy dimensions.

4.1.4 International operation strategy

The aim in this section is to conceptualise how international service delivery is accomplished through international operational modes. The international operational mode is an important part of the internationalisation strategy. Service delivery to international markets is often much more complicated than delivery in domestic markets (due to regulations and restrictions, for example) (Winsted & Patterson 1998, 295), and delivery through international operational modes often requires new resources. A certain amount of critical mass, in other words the accumulation and acquisition of resources, and an explicit direction of firm's posture towards internationalisation, i.e. focusing the organisation's attention (Mintzberg et al. 1998, 219) on it, is required to provide a basis for the delivery. The "amount" of the critical mass remains a controversial issue: it is highly firm- and context-specific, and falls beyond the scope of the present study.

The international operational mode is linked to the type of service to be delivered to international customers. Coviello and Martin (1997, 55) argue that the extent of the firm's ability to perform the required services is one of the

key factors guiding the mode decision in the internationalisation of professional service firms. Hence the international service and operation strategies of knowledge-intensive professional service firms are closely linked.

Table 4 presents the dimensions of the international operation strategy of knowledge-intensive professional service firms. The dimensions derive from earlier studies, but are modified to better reflect the context of the present study. Those of location of delivery and type of movement derive from Aharoni's (1993a) and Léo and Philippe's (2001) studies, and McLaughlin and Fitzsimmons (1996) also noted the importance of the business site for the service firms' internationalisation strategies. The dimension of service-delivery effort is an addition to international operation strategy that derives from the knowledge-based approach and refers to the importance of individual vs. organisational effort in the service delivery. Collaboration as a dimension is also highlighted here – the importance of collaboration with partners should be emphasised in the internationalisation strategies of knowledge-intensive professional service firms.

Table 4 Dimensions of the international operation strategy of knowledge-intensive professional service firms

Dimension	Criteria	Short explanation
Service-delivery effort	Person-based / process-based service delivery	The international service delivery is based on one individual or on organisational effort
Location of delivery	Provider's country / customer's country	Service delivery occurs in the service provider's country or in the customer's country
Business sites	Single-site / multi-site	Services delivered through one or several business sites
Type of movement	Customers / employees / information / capital	Refers to whether customers, employees, information or capital is moved
Collaboration	High level of collaboration / no collaboration	Refers to whether collaboration with partners is involved in international service delivery

The first dimension, service-delivery effort (which has two sub-dimensions), directly influences the international operational mode as operations are centred on (i) one individual professional or a group of individuals, and (ii) include an organisational service process involving single

service event or a series of service events (e.g., a longer treatment process). Location of delivery (in the service provider's or the customer's country) forms the third dimension. Business-site type (single-site or multi-site) refers to the number of delivery sites: single-site refers to one site in the domestic country, whereas multi-site refers to several sites in more than one country. Type of movement is the next dimension: pure information rather than people or capital may be transferred, but both information and people or information and capital can also be moved. If investment capital is transferred, it means investment-type arrangements and the service is delivered through foreign affiliates. Export operations do not require investment capital flows, but they may include capital movement in conjunction with various co-operative arrangements with third parties (e.g., with foreign clinics where examinations/operations can be performed): hence, the dimension "collaboration" is included. Operations involving such collaboration with other companies are included in export operations in knowledge-intensive professional services.

None of the dimensions alone constitutes the international operational mode of a professional service firm. It is clear that dimensions involving delivery effort, location and business site, and those referring to the type of transfer and collaboration, all influence the choice of international operational mode. The international operation strategy of a professional service firm thus involves several dimensions that jointly determine the appropriate international operational mode through which international service delivery is accomplished.

The criteria for international service, market and operation strategies are described according to two opposite, polarised ends – in reality, there are variations between the "arch-types" presented above. For example, the customisation dimension (i.e. whether the services require tailoring or not) is not necessarily a choice between customised or standardised service: even the (more) standardised services may require occasional tailoring. Another example is the customer dimension (i.e. new-customer seeking or existing-customer following), which is an important aspect of the international market strategy of knowledge-intensive professional service firms. Seeking and following are not mutually exclusive: even if existing customers are followed to foreign markets, it does not necessarily hinder new-customer procurement.

4.2 Knowledge resources and the internationalisation strategy

Welch and Luostarinen (1999, 93) stress the fact that the ability to engage in internationalisation is limited by the means accessible to the firm to carry it out. Resources and their usage determine the ability of the firm to

internationalise. Resources are a consistent factor in internationalisation – in both the initial decision and subsequent developments (Coviello & Martin 1997, 55). Resources may not suffice: there may be an obvious lack of funding or a lack of international business skills, for example. Such a situation may discourage firms from engaging in internationalisation. However, even though resource availability may be a hindrance (e.g., a lack of financial resources), the constraint is not static, and different actions or developments may provide a basis for internationalisation (Welch & Luostarinen 1999, 94). Here, knowledge about foreign markets, techniques of foreign operations, ways of doing business and key people in relevant organisations is emphasised (Welch & Luostarinen 1999, 94). The availability of appropriate resources may encourage firms to internationalise, and the supply of suitably educated and experienced individuals with a wide variety of skills may encourage them to sell specialized and innovative services internationally (Westhead et al. 2001, 338).

As far as the source of the knowledge is concerned, Nonaka et al. (2000, 16) argue that knowledge can be acquired externally through markets, given that the knowledge is tradable. Acquiring knowledge externally means the firm is deprived of the opportunity to learn and build up knowledge, but on the other hand time can be saved by acquiring knowledge externally (Nonaka et al. 2000, 16).

The internationalisation strategy of knowledge-intensive professional service firms involves international service strategy (determines the international service offering), international market strategy (determines the international market selection) and international operation strategy (determines the international operational mode). Knowledge (and other resources) is needed in conjunction with the international service strategies (as described in the previous section) and with the international market and operation strategies. Several studies on service firms' internationalisation point to a clear link between resources and the international operational mode (e.g., O'Farrell et al. 1998; Ekeledo & Sivakumar 1998; Lu & Beamish 2001). Table 5 below represents an attempt to classify resources in conjunction with the international service, market and operation strategies. The classification of knowledge is adapted from Nonaka et al. (2000, 15) (with regard to the tacit/explicit, individual/organisational categories) and Yli-Renko et al. (2002, 282) (with regard to core/foreign-business knowledge), but modified to reflect the context of the present study. Other resources are derived from Grant (1991, 119), and Ahokangas (1998, 60), and modified for the present study.

Table 5 The classification of knowledge and other resources in conjunction with the international service, market and operation strategies of knowledge-intensive professional service firms

Knowledge for the international service strategy (core knowledge)	Residing in individuals	Residing in the organisation
Tacit (subjective and intangible)	Experiential individual expertise (special service skills)	Routinised (daily operations, culture-related routines)
Explicit (objective and tangible)		Conceptualised/systemised (designs, documents, databases, technologies)
Knowledge for the international market and operation strategy (foreign-business knowledge)	Residing in individuals	Residing in the organisation
Tacit (subjective and intangible)	Individual expertise (in e.g., international management, languages, cultures, communication)	Operational routines in international business (e.g., invoicing)
Explicit (objective and tangible)		Training/courses for international business, market intelligence (data, reports)
Other resources	Residing in individuals	Residing in the organisation
Physical		Facilities, rooms, buildings
Financial		Financial capital
Reputation	Individual's reputation	The organisation's reputation
Relationships	Personal relationships	Organisational relationships

According to the viewpoint adopted in the present study, human resources (as in Grant 1991, 119) are understood to comprise individuals possessing the knowledge needed to produce particular services. Knowledge is seen as the strategically most important resource of knowledge-intensive professional service firms: it is possessed by individuals and by organisations (see e.g., Lindsay et al. 2003, 12). Individuals may also possess specific knowledge of internationalisation – foreign-business knowledge – e.g., knowledge about markets, culture and operations. Such knowledge is seen as person-related and

based on experience. Other foreign-business knowledge that is non-experiential and more tangible includes externally acquired market intelligence (e.g., in the form of reports).

Organisational resources – as presented by some authors – are understood to be routinised or conceptualised/systemised knowledge. Physical and financial resources are considered complementary but nevertheless important resources in internationalisation, and reputation⁵³ and relationships⁵⁴ are understood to comprise a specific class of resources.

Technology is not treated as a separate resource in the present study, but rather seen as an integral part of the systemised knowledge used by professional service firms. Technology in professional services is an integral part of the problem-solving activity. Technology and knowledge are often linked in the internationalisation of knowledge-intensive professional service firms: explicit knowledge (systemised) in particular could be seen to be associated with it. For instance, many pharmaceutical contract services are technology-oriented, thus technology could be considered an integral part of the systemised knowledge in such firms: it is particularly important in the transfer of information in internationalisation, and may facilitate the communication of results, for example. The role of technology as part of systemised knowledge especially in technology-oriented knowledge-intensive professional service firms (such as contract services) is therefore very important.

A major distinction is made between the resources needed for the international service strategy and those required for the international market and operation strategies. The knowledge required in conjunction with the service strategy is called *core knowledge*, whereas in conjunction with market and operation strategies it is called *foreign-business knowledge*. A classification resembling this (core knowledge and foreign-business knowledge) is used by Yli-Renko et al. (2002, 282), for example, and refers directly to the use of knowledge resources in the internationalisation of knowledge-intensive professional service firms. Core knowledge refers to knowledge inherent in professional service firm's production and consumption activities – in interactive problem-solving process with the customer. Yli-Renko et al. (2002) use the term foreign-market knowledge, referring to the information and experiential knowledge possessed by a firm about its international operating environment (Yli-Renko et al. 2002, 283). Eriksson,

⁵³ The notion of reputation as a resource is based on Grant (1991, 119).

⁵⁴ The notion of relationships as a resource is based on Ahokangas (1998, 60).

Johanson, Majkgård and Sharma (2000, 29–30) distinguish between three categories of knowledge in internationalisation of the firm: internationalisation knowledge, business knowledge and institutional knowledge. The term foreign-business knowledge is used in the present study to describe the tacit and explicit knowledge possessed by the firm about its international operating environment (country-based markets and operations) and about how to conduct operations (firm-level operations) within this environment, and based on learning, also from resembling environments. It thus encompasses the knowledge of both country-based markets and operations, and also generic company-level knowledge of international operational modes.⁵⁵ This approach takes in the definitions of both Yli-Renko et al. (2002) and Eriksson et al. (2000).

Sometimes the service offering is built upon the resources of more than one organisation. This requires links to external resources (see also Sanchez & Heene 1997, 307). In such a situation, the core service of the firm is supplemented with other services in order to provide a broader service offering. External resources may also be needed for international operational modes. Given these assumptions, internationalisation may involve external (firm-addressable) in addition to internal (firm-specific) resources. Such a process of allocating and deploying resources and managing systemic interdependencies among the firm's own internal and between the internal and external resources is considered an integral part of the concept of internationalisation from the knowledge-based perspective.

4.3 Elements of the internationalisation strategy linked to the research objectives of the study

This section links the research objectives of the study to the conceptual framework presented in Chapter 4. The research purpose of the study is to describe and analyse the internationalisation strategies of knowledge-intensive professional service firms in the life sciences by examining their international service, market and operation strategies and the role of knowledge resources. The study was conducted by applying the knowledge-based approach to internationalisation. The specific research objectives are as follows:

⁵⁵ The country- and firm levels are understood as presented by Luostarinen (1994, 3–6), and are earlier described in Chapter 3.2.

1. To describe and analyse the international service strategies of knowledge-intensive professional service firms in the life sciences
2. To describe and analyse the international market strategies of knowledge-intensive professional service firms in the life sciences
3. To describe and analyse the international operation strategies of knowledge-intensive professional service firms in the life sciences
4. To describe and analyse the role of knowledge resources in conjunction with the international service, market and operation strategies of knowledge-intensive professional service firms in the life sciences.

The present study is based on six articles. As mentioned earlier, the main purpose of Articles 1 and 2 was to enhance understanding of the research by giving a good description of the complex and interactive nature of knowledge-intensive professional services in the life sciences, and by providing information on how value is created for customers through the value process (i.e. the interactive production and consumption process), and on how the notion of quality is then formed. A further aim was to combine the knowledge-based approach to service process by studying customer quality perceptions as a reflection of the competences of the service firm. Articles 3, 4, 5 and 6 provide input on the specific objectives of the study in the context of the internationalisation strategies of knowledge-intensive professional service firms in the life sciences. The articles based on different cases provide slightly different perspectives to the internationalisation strategies of such firms. Table 6 introduces the articles and their contributions to the present study.

Table 6 The articles and their contributions

Article	Service type and industry	The main research issues and contribution to the present study
<p>Article 1: Curing and Caring in Surgical Services: A Relationship Approach Journal of Services Marketing, 2002 Vol. 16, No. 7, 677–691. Markus Orava and Pekka Tuominen</p>	<p>Medical services / Health care</p>	<p>Contribution to the theory by providing understanding of the complex service-interaction process and how the notion of quality is formed as a result of such a process.</p>
<p>Article 2: Identifying Competences Using Service-Process Model in Quality Management: Empirical Evidence from Medical Services. Applied Business Strategy, 2005, Vol. 7, 111–128. Markus Orava and Malin Brännback</p>	<p>Medical services / Health care</p>	<p>Contribution to the theory by providing understanding of competences in knowledge-intensive professional services, and of how the issues of competences and service quality are linked in such services.</p>
<p>Article 3: Globalising Medical Services: Operational Modes in the Internationalisation of Medical Service Firms. International Journal of Medical Marketing, 2002, Vol. 2, No. 3, 232–240. Markus Orava</p>	<p>Medical services / Health care</p>	<p>Investigates the internationalisation of medical service firms by evaluating international service offerings and international operational modes.</p>
<p>Article 4: Globalisation in the Field of Pharmaceutical Contract Research Services – Creating Value Through Networks. In: Viewpoints on the Economic Dimension of Globalisation, ed. Nummela, Niina, Publications of the Turku School of Economics and Business Administration, Series A–8:2002, 115–132. Markus Orava and Maija Renko</p>	<p>Contract services / Pharmaceutical industry</p>	<p>Investigates how pharmaceutical preclinical service firms aim to utilise networks for internationalisation (to provide a full-service international service offering). Also provides understanding of value creation through networks and of how networks can enable and facilitate the internationalisation of knowledge-intensive professional services in the life sciences.</p>

<p>Article 5: Prerequisites for Internationalising Professional Services: Ability, Inclination and Action Original version published in the proceedings of the 11th International Relationship Marketing Colloquium Conference, Cheltenham, UK, September 2003 Markus Orava</p>	<p>Contract services / Pharmaceutical industry</p>	<p>Investigates the internationalisation of a pharmaceutical custom-synthesis and process-development company, and how relationship resources are evident in the internationalisation of such firms. Also provides understanding of the interplay between the identified elements in the internationalisation of knowledge-intensive professional service firms in the life sciences.</p>
<p>Article 6: Internationalization Strategies of Food-Testing Firms in the Changing Nordic Food Market. British Food Journal, 2004, Vol. 106, No. 2, 128–140. Markus Orava and Patricia Wiklund</p>	<p>Analytical food-testing laboratory / Food industry</p>	<p>Investigates the internationalisation of a food-testing firm employing the investment mode (providing services through foreign affiliates). Also provides understanding of the changes in industry competition and how such a factor influences the internationalisation of knowledge-intensive professional service firms in the life sciences.</p>

A conceptual framework for studying the internationalisation strategies of knowledge-intensive professional service firms from the knowledge-based approach was created in Chapter 4. The framework is based on both theoretical (the knowledge-based approach) and empirical considerations (the empirical evidence presented in the articles and other empirical research increasing understanding as specified in Appendix 2). The framework is connected to the specific research objectives (1–4) of the study. The research objectives and their linkages to the framework are presented in Figure 8.



Figure 8 The research objectives linked to the framework of the study

There are limitations and restrictions regarding the study framework. The analysis of decision processes does not fall within the scope of the study, and furthermore, the framework is not necessarily applicable to all services, as the perspective is explicitly that of knowledge-intensive professional services. The conceptual framework relies on the knowledge-based approach. It is used to deal with complex real-life phenomena, i.e. the internationalisation strategies of knowledge-intensive professional service firms in the life sciences and gives outlines, tools and the conceptual clarity for dealing with such an issue. It will not be tested by quantitative, statistical means, but is used as a conceptual tool to facilitate discussion of the empirical studies reported in the several articles that comprise the dissertation.

5 DATA AND METHODOLOGY

5.1 Case Descriptions

The medical services

Three private hospitals providing special-care service offerings for international customers were researched: a Turku-based private hospital providing orthopaedic surgery, a Tampere-based private hospital providing ETS (endoscopic transthoracic sympathectomy) reversal surgery, and one Helsinki-based private hospital offering various types of consultations and medical treatments. The first two were smaller (SME) companies, whereas the third was considerably larger. The international service offerings of the two smaller hospitals resembled each other, in that they both were highly specialized, focused surgical treatments. They were also essentially based on the knowledge of one renowned medical doctor (of the corresponding clinics).

In addition, a special project involving virtual medical consultations was planned in the first-mentioned hospital. This kind of medical service is largely built upon technological expertise, and the project was about developing new methods of service delivery enabled by the new information technology (often called eHealth in medical services, see e.g., Raunio 2000, 10). It should be noted that this and the last mentioned larger hospital merged during the research period. Nevertheless, the above-mentioned types of service remained as they were – thus in reality the merged (even larger) private hospital continued to offer different kinds of international service offerings simultaneously. The virtual project was later abandoned in the form in which it was initially planned, and it was not connected with the internationalisation.⁵⁶

The pharmaceutical contract services

Two kinds of pharmaceutical contract service providers were investigated, a custom-synthesis and process-development company, and a network of service

⁵⁶ It was to become an integrated part of *all* service operations.

providers comprising 16⁵⁷ organisations (of which three were preclinical CRO companies, two were clinical CRO companies with preclinical functions, and the rest were preclinical service units within research institutes and universities). The plan was to create a network of preclinical service providers in order to develop a broad, full-service type of offering (of preclinical services) for international markets. This network never fully took off as planned, at least not during the research period. The individual companies continued to pursue internationalisation strategies of their own, and two firms (offering specific preclinical services) were further investigated. It should be noted that, despite several interviews in the companies and extensive studies conducted regarding their internationalisation no articles have been published on the subject. The research projects were confidential and the reports were classified. They were not presented as separate empirical cases in the present study. Nevertheless, these research projects contributed a great deal in terms of promoting general and industry-specific understanding around the research theme. Hence the interviews conducted in these companies are added to the primary data of this dissertation (Appendix 2).

The food-testing laboratory services

Total of five Nordic food-testing laboratories were investigated. The international service offerings of the firms were quite similar, consisting of a broad range (full-service type) of microbiological and chemical analyses of foodstuffs. Four of the firms were studied through desk research, but as they did not have a presence in Finland, no interviews were carried out, and they are not analysed as cases in the present study. More information on the internationalisation strategies of these four firms (Steins Laboratorium, AlControl Sweden, Norsk Mat-og-Miljøanalyse and LabNett) is given in Article 6. One Swedish company, which had expanded into Finland through the purchase of the municipal food-testing laboratory of Tampere, was studied in detail by means of interviews, and is analysed in the present study as a case company operating in Tampere.

The food-testing case was slightly different from the other cases due to the fact that ownership of the company changed from Finnish to Swedish hands when the municipal food-testing laboratory of Tampere was acquired by a Swedish firm. While being different in terms of current ownership, it is an interesting comparison case of a previously Finnish, locally operating

⁵⁷ An additional expert interview was conducted in a pharmaceutical company in order to gain a customer perspective.

professional service firm becoming part of an internationally operating professional service firm. As there were no other similar cases among the professional service firms in the industries in question (at least during the research period), its inclusion facilitated comparison with the internationalisation strategies of the other case firms. It should be noted that the food-testing firm was different from the other case firms in terms of standardization of service offering, for example. Table 7 summarises the studied cases.

Table 7 The studied case firms and their international service offerings

Cases	Cases 1 & 2	Case 3	Case (group) 4	Case 5	Case 6
Case firms (with international service offerings)	Turku-based hospital* providing orthopaedic surgery and Tampere-based hospital providing ETS reversal surgery	Helsinki-based hospital* providing several special-care medical services	Multiple Finnish firm offering several pharmaceutical preclinical services	Oulu-based contract-service firm providing pharmaceutical contract research services	Tampere-based food-testing firm (in Swedish ownership) providing food-testing services
Article	Article 3*	Article 3	Article 4	Article 5	Article 6
Types of international service offering of the case firms	Focused service (two types of highly specialised surgical treatment)	Full service (various kinds of treatments and consultations, the latter including a special case of virtual medical services**)	Full service (various kinds of preclinical services in the field of pharmaceutical contract research)	Focused service (specialised pharmaceutical custom-synthesis and process-development services)	Full service (several micro-biological and chemical analyses)
Cases called from here on	Medical service type 1	Medical service type 2	Pharmaceutical contract service type 2	Pharmaceutical contract service type 1	Food-testing service
	*Note that in Articles 1 and 2 the case firm was the Turku-based hospital (i.e. Case firm 1)	*Note that the two firms (with an asterisk*) merged in the research period **Later abandoned			

Thus the empirical part of this dissertation comprised studies of three different knowledge-intensive professional services in three life-science service industries, as presented in Table 7: medical services, pharmaceutical

contract services and food-testing laboratory services (for more detailed presentations, see the Articles).

The cases could be considered well suited to the study of internationalisation in life-science knowledge-intensive professional service firms. The medical service firms (as presented in Articles 1, 2 and 3) represented both large (over 250 employees) and smaller (SME) players, which is representative of the current field of Finnish private medical care. The large case company is the biggest of its type in Finland, and it has grown considerably during the last few years - mostly by acquiring small or medium-sized companies. The two types of services researched highlight the two quite different kinds of approaches to private, special-care medical care – full service and focused, specialised service.

The study of the network of pharmaceutical preclinical service providers reported in Article 4 was a full study of the field, therefore providing a comprehensive picture of the organisations involved (all 16 organisations involved in preclinical CRO services in Finland were included and their representatives interviewed). However, the services of single firms are not analysed in detail (for reasons of confidentiality).

The detailed study of a custom synthesis provider reported in Article 5 was centred on a single firm, and could be considered comprehensive due to the amount and intensity of the research conducted (for detailed information see Appendix 1 and Article 5). This also meant strong researcher involvement with the company, and thus a change in role from a neutral observer towards an active participant.

The food-testing company studied in detail (i.e. through interviews see Article 6) was a major player in Finland as well as in the other Nordic countries. Thus the picture provided through this research process could be considered relevant and significant for the industry giving the perspective of a larger, international company. Smaller, more focused companies in Finland were not studied, and this could be considered a deficiency. On the other hand, such small players do not seem to be engaged in international activities and their perspective would not be so relevant for the purposes of the present study.⁵⁸

⁵⁸ Note, that the author has conducted earlier studies with smaller food-testing companies, and this argumentation is based on those– it could be called industry-specific understanding.

5.2 Paradigm and methodological choices

According to Burrell and Morgan (1979, 1), all social scientists approach their subject via explicit or implicit assumptions about the nature of the social world and the way in which it may be investigated. There are assumptions regarding ontological nature, epistemological nature, human nature and methodological nature, and the three foremost sets of assumptions have direct implications on the fourth. (Burrell & Morgan 1979, 2–3.) Such assumptions, when divided according to subjectivist – objectivist extremes, form two basic social-research paradigms, the functional and the interpretive.⁵⁹ These paradigms could be understood to form two polarised perspectives, according to which researchers can broadly define their ontological and epistemological assumptions and position their own methodological choices.

The term paradigm could be understood as a belief system that guides the researcher – different paradigms underlie different methods (Tashakkori & Teddlie 1998, 3; Arbnor & Bjerke 1994, 42). The term *scientific approach* of the study is also widely used and described as a broad philosophical concept (or orientation) affecting methodological choices (see e.g., Arbnor & Bjerke 1994, 44).⁶⁰ Broadly scientific approaches can be divided between the two major epistemological orientations, i.e. positivist/empiricist and relativistic/constructionist (Tikkanen 1996, 36), with several shades of grey between the two black and white ends (on scientific approaches according to various authors, see Tikkanen 1996, 36).

Arbnor and Bjerke (1994, 44) present six scientific approaches (which they call paradigmatic categories) in the social sciences divided according to the extremes of the objective-rational view on reality (related to the positivist/empiricist epistemological orientation) and the subjective-relativist view (related to the relativist/constructionist epistemological orientation).

The scientific approach of the present study (in all the articles) resembles *pragmatist orientation* (on pragmatist orientation see: Tashakkori & Teddlie 1998, 5). This is demonstrated in the combination of articles with varied methodology into one dissertation. It could be said to represent the pragmatism paradigm or pragmatist orientation, which accepts both deductive and inductive reasoning (Tashakkori & Teddlie 1998, 23).

⁵⁹ For more on social-research paradigms see e.g., Olkkonen (2002, 94).

⁶⁰ Olkkonen (2002, 97) argues that the paradigm, the scientific approach, the research approach and the research strategy are closely related concepts. For a detailed presentation of these concepts and how they are connected, see Tikkanen 1996, 25–44.

Whereas the scientific approach could be thus seen as an underlying, broad philosophical concept, the research approach is more closely related to the methodological approach of a study (e.g., the formulation of the research questions and the choice of appropriate method) (Tikkanen 1996, 37). Neilimo and Näsi's (1980) classification of research approaches has been widely used in Finnish methodological discussion in the fields of marketing and business economics (Olkkonen 2002, 97). Neilimo and Näsi (1980) have classified research approaches as the nomothetical, the decision-oriented, the action-analytic and the conceptual approaches.⁶¹

The nomothetical research approach with its positivistic⁶² roots and scientific tradition is associated with empiricism (Neilimo & Näsi 1980, 28–29; on positivism, its roots and development see more e.g., von Wright 1998, 281–286). It aims to explain (often causal) relationships and relies strongly on empirical research, which is heavily regulated methodologically (in terms of the statistical methods used for the data collection and analysis) (Neilimo & Näsi 1980, 74). According to Neilimo and Näsi (1980, 34), the action-analytic research approach acts as a counterweight to the nomothetical approach, although empirical data plays the major role in both.

One of the key features of the action-analytic approach is subjectivity, and the fact that the empirical data is usually based on thorough research on only a few subjects (Neilimo & Näsi 1980, 67; Pihlanto 1994, 372). There may be a certain amount of conceptual argumentation, especially in the construction of the theoretical framework, which was the case in the present study. Philosophically, this approach is closely associated with the *hermeneutic tradition*, which stresses the aim of achieving a profound understanding of intentional human action (Alvesson & Sköldbberg 1994, 114–119; Pihlanto 1994, 369; on hermeneutics see e.g., Niiniluoto 1984, 56–57; Niiniluoto 1983, 168–171). Studies based on the action-analytic approach – implicitly if not explicitly – usually include some key elements of the hermeneutic tradition, such as “understanding”, “intentionality” and “teleological explaining” (see e.g., Anttila 1998, 25–26; Lukka & Kasanen 1993, 256).

Arbnor and Bjerke (1994) identified three – methodological – approaches to conducting empirical research in business economics: the analytical approach, the systems approach and the actors approach (on the philosophical roots and key concepts related to these approaches, see Arbnor & Bjerke 1994, 77).

⁶¹ Lukka and Kasanen (1993, 257) add the constructive approach as the fifth research approach.

⁶² The term positivism was first used by Comte, but as a philosophical concept it is more closely related to classical empiricism (e.g., Hume) (von Wright 1998, 281).

Tikkanen (1996, 40–42) has analysed these approaches in conjunction with those put forward by Neilimo and Näsi (1980), and according to Tikkanen's analysis, the nomothetical research approach closely resembles the analytical approach, whereas the action-analytic approach could be considered to resemble the actor approach.

The *research strategy* is closely related to the research questions and the means of acquiring data in order to address them (Yin 1994, 5). Yin (1994, 6) presents five research strategies - experiment, survey, archival analysis, history and case study. As the present study is based on articles, it is difficult to provide a clear-cut general methodological description of the whole dissertation. Each article has its own particular research strategy, and different data-collection and analysis methods were used. Both quantitative and qualitative research methods were employed: a combination of the two may be appropriate for particular research problems (Alvesson & Sköldbberg 2000, 4). The usage of a quantitative research method was a predominant feature in Articles 1 and 2.

The research questions are what mainly differentiate the research strategies (Yin 1994, 4). Addressing the research questions in the present study required a lot of empirical data. Given the scarcity of empirical studies from the adopted perspective in the chosen industrial context, this study has certain exploratory characteristics. It was decided that the appropriate data for the purposes of the articles was best obtained through in-depth analysis of a few research subjects (representatives of knowledge-intensive professional service firms in the field of the life sciences), as applied in Articles 3, 4, 5 and 6, supported by input based on the data gathered through the quantitative research method used in Articles 1 and 2. As mentioned earlier, it should be pointed that the main purpose of Articles 1 and 2 was to enhance understanding of the research by giving a good description of the complex and interactive nature of knowledge-intensive professional services in the life sciences, whereas Articles 3, 4, 5 and 6 provided input for meeting the specific objectives of the study.

The research process adopted in the present study was presented in Chapter 1.2. in the context of the services under scrutiny in the field of the life sciences. Figure 9 depicts how the scientific approach and methodological approaches are linked to this research process.

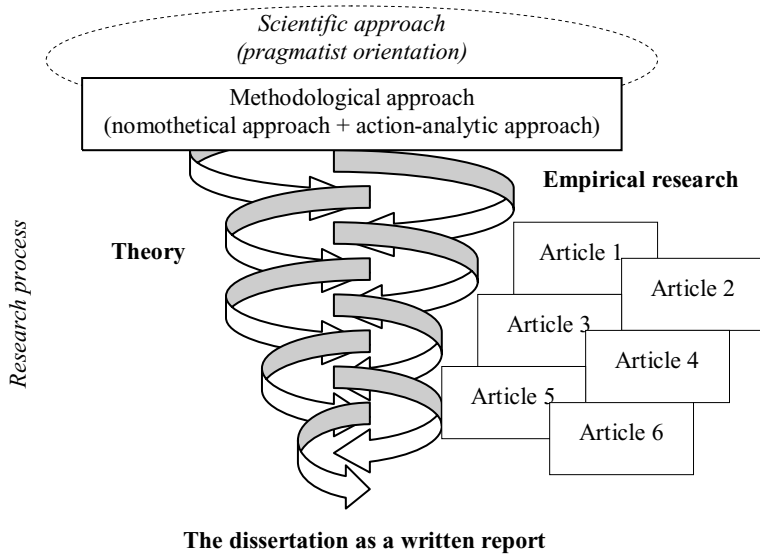


Figure 9 The scientific approach, the methodological approach, and the research process

It could be said that the present study advocates pragmatist orientation as a scientific approach. Objective reality was assumed. Such an approach meant that articles reporting different kinds of methodological approaches were accepted and used during the late phase of the research process to provide input to the dissertation – the articles together form the final dissertation and provide answers to the research questions. Empirical data was in a key role throughout as a large amount was required in addressing the specific research questions posed in the articles. The action-analytic approach as the methodological approach was advocated in Articles 3, 4, 5 and 6, whereas that adopted in Articles 1 and 2 resembled the nomothetical approach more.

Each article had its own particular research methods: quantitative research methods (in Articles 1 and 2), qualitative research methods (in Articles 3 and 6), and a combination of the two (in Articles 4 and 5). The research questions of the dissertation were formed so that the articles – involving both quantitative and qualitative research methods – provided answers and thereby input to the research questions of the dissertation. Empirical data was the mainstay of the present study, even though it relies on earlier theories, and interaction between theory and empirical research was evident during the research process: the articles were published over a period of time and the empirical results were constantly reviewed in the light of the theory – each new article being influenced by such revision. The final dissertation report is

based on the empirical – and conceptual – input from the articles combined with final reviewing in the light of theory with the conceptual argumentation.

Pragmatist orientation remained the scientific approach during the whole research process, which in turn affected the methodological approach - orientation of the researcher. There was a movement from the nomothetically oriented methodological approach towards the action-analytic methodological approach. Such movement was based, largely on pragmatic grounds: the action-analytic approach involving the use of qualitative research methods was considered necessary in order to study – and understand – the internationalisation strategies of knowledge-intensive professional service firms in the life sciences.

Especially the studies reported in Articles 3, 4, 5 and 6 in particular could be seen to represent abductive research, which is sometimes referred to when the research is clearly neither inductive nor deductive (Gummesson 2000a, 64; Grönroos 1998, 328; on abduction see Alvesson & Sköldbäck 2000, 17; Coffey & Atkinson 1996, 155–156). However, Gummesson (2000a, 64) argues that abduction is not a third type of approach, but rather describes the situation after the initial stages when the research becomes iteration between the deductive and the inductive. Abductive logic can be understood to contrast the polar opposites of inductive and deductive logic (Olkkonen 2002, 100).

The studies reported in the Articles were never intended to investigate causal relationships: the view on causality in the pragmatist orientation is that there may be causal relationships, but it is impossible to pin them down (Tashakkori & Teddlie 1998, 23). Causal ambiguity is an essential element in the resource-based approach. In short, causal ambiguity refers to imperfect understanding of relationships between a firm's resources and competitive advantage (Barney 1991, 108–109; see also Sanchez & Heene 1997, 308). The link between resources and competitive advantage is ambiguous, as despite seeming similarity between resources in different firms, there are apparent differences in performance. Especially when it is a question of investigating the role of intangible resources such as knowledge, the choice of qualitative research method seems more appropriate. It could thus be claimed that the ontological and epistemological assumptions of the present study are congenial with the theoretical starting points.

In the literature, the issue of generalisation in conjunction with case studies is usually disregarded or denied (see Lukka & Kasanen 1995, 71; Silverman 2000, 102–103). In the case of the present study, it would be more appropriate to talk about analytic generalisation, in which the empirical results are compared to the theory development (see Yin 1994, 31). Furthermore, the findings are likely to be appropriate and useful in the industrial context of the study, and they also produce managerial implications within these industries.

5.3 Research methods of the Articles

Appendix 1 provides detailed information of the methodology employed in the articles as a body. Specific information on the particular methodology, including the data collection and analysis, quality and validity, can be found in the respective articles. A summary of the methodology is provided in the Table 8.

Table 8 The methodology of the Articles

Article	Article 1	Article 2	Article 3	Article 4	Article 5	Article 6
Services	Medical service type 1	Medical service type 1	Medical service types 1 and 2	Pharmaceutical contract service type 2	Pharmaceutical contract service type 1	Food-testing service
Cases	(Case 1)	(Case 1)	Cases 1, 2 & 3	Case (group) 4	Case 5	Case 6
Methodological approach	Nomothetical	Nomothetical	Action-analytic	Action-analytic	Action-analytic (Action research)	Action-analytic
Main research strategy	Survey	Survey + conceptual analysis	Case study	Case study	Case study	Case study
Research methods	Quantitative	Quantitative	Qualitative	Qualitative + quantitative	Qualitative + quantitative	Qualitative

As mentioned previously, both quantitative and qualitative research methods were used. Article 1 reports a quantitative study (survey) in which factor and discriminant analyses were employed in the analysis of the data. Article 2 was largely a conceptual study, but it utilised the empirical data introduced in Article 1 in order to provide an illustrative example of the conceptual reasoning (for using the service-process model to investigate competences in medical services).

The main research strategy reported in Articles 3, 4 and 6 could be said to be the case study (on the case study see e.g., Yin 1994, 11–13; Gummesson 2000a, 84–88). The aim in Articles 3, 4, 5 and 6 was to gain empirical knowledge through several in-depth semi-structured interviews. The research method was therefore qualitative. A qualitative research method is often used in small samples, and when the aim is to obtain a large amount of information and to find in-depth motivations and feelings behind the issues concerned (McDaniel & Gates 1996, 174–175). This method has certain weaknesses too, most notably the fact that it requires a lot of interpretation and subjectivity (McDaniel & Gates 1996, 174; on evaluation and criticism of the qualitative

research method see e.g., Silverman 2000, 7–12). Qualitative research methods are often used in case studies, even though one case study may also incorporate quantitative methods (Gummesson 2000a, 3). In the case studies reported in Articles 4 and 5, employed qualitative research methods were supported by quantitative research methods in terms of using the results from the surveys.

The Article 5 could be considered a special case, as strong researcher involvement with the company was required during the six-month research period. This could be called action research, which in turn could be argued to be part of the action-analytic methodological approach (on action research see Gummesson 2000a, 3, 208–209). Again, for detailed information on the methodology used in the case, see Appendix 1 and Article 5. Article 6 involved considerable desk research to complement the interviews in the case company. The Articles thus varied in the respective methodological choices employed.

6 INTERNATIONALISATION STRATEGIES OF KNOWLEDGE-INTENSIVE PROFESSIONAL SERVICE FIRMS IN THE LIFE SCIENCES

6.1 Internationalisation strategies of knowledge-intensive professional service firms in the life sciences

6.1.1 The international service strategy dimensions of knowledge-intensive professional service firms in the life sciences

The internationalisation strategies of knowledge-intensive professional service firms comprise international service strategy, market strategy and operation strategy dimensions. The international service strategy determines the international service offering, the international market strategy determines the international market selection, and the international operation strategy determines the international operational mode. It was concluded that international service strategy, market strategy and operation strategy are closely linked. Figure 9 presents a combined picture of the international service, market and operation strategies applied in the internationalisation of knowledge-intensive professional service firms in the life sciences.



Figure 10 A combined picture of international service, market and operation strategies

The international service offering of a knowledge-intensive professional service firm in the life sciences is the core service of the firm wrapped up with other traits that, in combination, produce the final service-product for customers in a particular market. The offering may include several services, some of which are needed in order to produce the core service. Certain services are facilitating/supporting if indispensable in order to deliver other services (e.g., anaesthesiology and other services supporting surgery – the core service – as demonstrated in Article 1). Facilitating/supporting services cannot “as such” form the basis of the firm’s internationalisation. Service firms may, however, have several service offerings intended for different customer groups.

The descriptions of the international service offerings of the studied firms are given in Chapter 5 (more details are given in the articles). Table 9 summarises the international service offerings types and gives short descriptions of them.

Table 9 The international service offering types in the studied firms

Service offering type	Medical service type 1 (Focused service)	Medical service type 2 (Full service)	Pharmaceutical contract service type 1 (Focused service)	Pharmaceutical contract service type 2 (Full service)	Food-testing service (Full service)
Description	Orthopaedic surgery and ETS reversal surgery	Several special-care medical services	Pharmaceutical custom synthesis and process development	Several pharmaceutical preclinical services	Several micro-biological and chemical analyses

First, the medical-service offerings represented the focused type (medical service type 1): a private hospital in Turku offering orthopaedic surgery, and the private hospital in Tampere offering ETS (endoscopic transthoracic sympathectomy) reversal surgery. Second, they represented a broader (full-service type) offering (medical service type 2): the Helsinki-based larger private hospital⁶³ offering various consultations and medical treatments.

From the pharmaceutical industry, the pharmaceutical contract service firm in Oulu provided a focused service offering in custom synthesis and process development (contract service type 1), and the special case of a network of preclinical service providers had a full-service type of offering consisting of the services of different organisations (contract service type 2). In food-testing services, the case company in Tampere offered a broad range of microbiological and chemical analyses (full-service-type).

In delivering the service to international customers, the offering often has to be modified or limited. International service offerings in knowledge-intensive professional services appear to be more limited in number and focused in scope than domestic service offerings. This was apparent in the case of medical services (Article 3): a high degree of interaction, i.e. customer participation in the production and consumption of the service, is essential, and therefore international operational mode options are limited to those enabling the physical presence of the service provider in the service-interaction process (e.g., surgery operation). The international service offering of the private hospital providing orthopaedic surgery (Article 3) was almost entirely related to sports medicine. In other words, practically all the international customers were athletes with sports medicine-related problems,

⁶³ Note that the first-mentioned hospital (in Turku) and the last-mentioned hospital (in Helsinki) merged during the research period. However, the above-mentioned types of service remained as they were – thus in reality the merged large private hospital continued to provide different kinds of international service offerings simultaneously.

and the domestic customers represented a much more varied demographic sample with more varied types of injuries (and hence more varied treatments). Moreover, the large private hospital modified its international service offering. In the domestic market it offered a broad range of medical services (full-service type). In principle such full-service-type offering was available to its international customers, but in the final phase of the research period (in 2004) the company invested in a hospital in Russia specialising in gynaecological treatments. This illustrates the need to modify the international service offering.

The international service offering also differed from the domestic offering(s) in the other knowledge-intensive professional services studied (Articles 4, 5 and 6). For example, the company offering microbiological analytical tests is limited in its choice of international operational mode as such tests cannot be transported far without ruining the samples (as illustrated in Article 6).

There are at least two reasons for limiting the international service offering: first, as concluded above, the service delivery in international markets is usually more complex than in domestic markets. International service delivery involving various facilitating/supporting services may be severely restricted if the necessary resources cannot be deployed easily, for example. Second, certain service offerings are not at all feasible in terms of internationalisation based on an assessment of external industry competition against the company's own service offering – competition in international markets may be fiercer than in the domestic market. In such situations companies need to explicitly focus on service offerings that are the most competitive and most likely to succeed, and to refrain from delivering other, “secondary” services (which can still be competitive in the domestic markets).⁶⁴ The primary focus of a competitive strategy in services is to deliver a service that provides customers with superior value (Devlin 1997, 1093). In knowledge-intensive professional services this is linked to the quality and the service-interaction processes. The issue of quality is important in internationalisation of service firms and is linked to competitive advantage: O'Farrell et al. (1998, 25) argue that maintaining a high quality constitutes competitive advantage in the internationalisation of service firms.

⁶⁴ This is not necessarily an issue concerning only professional services. There is an analogy with a study of the internationalisation of Finnish software firms: concentrating on focused, selected products intended of defined targeted markets was considered an essential element of the internationalisation strategies of such firms (Tietoviikko 2003; Oksanen 2003).

Four dimensions of the international service strategies of knowledge-intensive professional services were identified earlier: level of interaction, level of customisation, number of service providers and the nature of the customer relationships. Table 10 presents these dimensions in the context of the firms under study.

Table 10 Dimensions of the international service strategies of the studied firms

Dimension	Medical service type 1 (Focused service) in Article 3	Medical service type 2 (Full service) in Article 3	Pharmaceutical contract service type 1 (Focused service) in Article 5	Pharmaceutical contract service type 2 (Full service) (in Article 4)	Food-testing service (Full service) (in Article 6)
Level of interaction	Very high	Very high	Moderate to high	Moderate to high	Moderate to high
Level of customisation	More customised	More customised	More standardised	More standardised	More standardised
Number of service-providing firms	One	One	One	Several	One
Length of customer relationships	Short-term	Short-term	Long-term	Long-term	Long-term

There were notable differences in dimensions. Medical services require a very high level of interaction between professionals and customers, i.e. the patient has to be physically present for medical operations to be performed. Such interaction is not as high in contract and food-testing services, but customer participation is at least partially required. Medical services appeared more customised than contract or food-testing services. Only in one case (Contract service type 2, i.e. the preclinical network) did the service strategy involve more than one firm – such a case could be referred to as a multi-provider. The length of the customer relationships also varied. The dimensions of the international service strategies of the case firms are described and analysed in detail below.

Medical services

The international service offerings of the small hospitals (medical service type 1, Article 3) were essentially based on the expertise of the renowned chief medical doctor of the corresponding clinic. The service offering was thus largely embodied in a particular medical doctor and the delivery was also person-dependent (there was no service delivery without the presence of this

doctor). The service strategies of these firms included a very high level of interaction between professionals and customers and also involved more customised service intended for international customers. This kind of international service strategy could be called a “single-service strategy.”

If the two smaller hospitals offered focused, niche-type service, in the large hospital (medical service type 2, Article 3) gave full service (comparable to full-service food-testing laboratories and pharmaceutical contract service firms). The level of interaction and customisation was high. The customer relationships tend to be short-term (or this is the goal, at least), but in some cases (e.g., chronic diseases) they may be long-term. The international service strategy of the large medical service firm could be called a “multi-service strategy.”

Pharmaceutical contract services

The international service strategies of the contract and food-testing service companies differed from those in medical services in that they did not require as high a level of professional-customer interaction, they appeared to be more standardised (quality standards were applied widely), and more technology was applied in the service delivery. The contract service firm under investigation (contract service type 1, Article 5) had a service offering that was quite focused, consisting of custom synthesis and project development. Relationships with customers are long-term due to the nature of many pharmaceutical R&D projects. This kind of international service strategy involving a focused service offering with a lot of applied technology, and with a predominantly long-term relationship-development orientation, is called the “integrated-service strategy” here.

The pharmaceutical preclinical R&D network studied (contract service type 2, Article 4) was an example of the type of service offering that is based on combining the services of a group of firms in order to have a full-service offering for international markets. From the perspective of a single firm it means that it has its own distinct service offering based on its core service (e.g., in-vitro metabolism studies), which is basically offered to any customer. Internationalisation requires additional resources, however, and competition in foreign markets is expected to be hard. By getting involved in a network of other service firms that are also internationalising, such firms may combine resources (e.g., financial and physical) if contracts are made between them to regulate this. If the firms agree on the terms, they may try to build up a new

service offering to international markets involving input from different organisations.⁶⁵ In essence, such an offering is just the group's core services bundled together in order to appeal to international customers. If one firm possesses more foreign-business knowledge than others, for example, it may play the central role and basically use the others as sub-contractors. This kind of international service strategy is called a "bundled-service strategy."

Food-testing services

The food-testing service (Article 6) represented the full-service type of offering (in contrast to more focused service offerings). Like pharmaceutical contract services, the food-testing services appeared to require a lower level of professional-customer interaction (compared with medical services), and it also appeared to be more standardised (quality standards and certifications are applied widely). The case firm aimed to develop long-term relationships with its customers (especially its industrial customers). This kind of international service strategy involving a full-service type of offering with relatively standardised service requiring less professional-customer interaction is called a "standardised-service strategy" here.

6.1.2 The international market strategy dimensions of knowledge-intensive professional service firms in life sciences

The international market strategy of professional service firms is understood to deal with the aspect of internationalisation strategy concerning the process according to which they select where and with whom the service delivery occurs. Here the customer was emphasised. Four dimensions of international market strategies in knowledge-intensive professional services were presented earlier: customer procurement, number of customers in the foreign markets, dispersion of customers in the foreign markets, and type of customers.

Market seeking and customer following are often identified as the two principal ways in which professional service firms procure customers. The number and dispersion of customers refers to whether the firms have few or several customers in the foreign markets, and where they are from, and type refers to the distinction between industrial customers and consumers.

⁶⁵ Note that the network was not realised as planned during the research period. However, another kinds of networks have been launched since precisely for internationalisation purposes.

The number of customers is classified as large or small/medium: large refers to hundreds of customers (more than 100), whereas small/medium refers to less than 100. Dispersion is categorised as regional (areas of close proximity, i.e. customers from the Nordic-Baltic area), European (customers from other European countries) or global (customers from outside Europe). Table 11 shows the dimensions of the international service strategies of the case firms:

Table 11 Dimensions of the international market strategies of knowledge-intensive professional service firms

Dimension	Medical service type 1 (Focused service), Article 3	Medical service type 2 (Full service), Article 3	Pharmaceutical contract service type 1 (Focused service), Article 5	Pharmaceutical contract service type 2 (Full service) (Article 4)	Food-testing service (Full service) (Article 6)
Customer procurement	Seeking new	Seeking new	Seeking new	Seeking new	Following existing
Numbers of customers in the foreign markets	Large	Large	Small/medium	Small/medium	Large
Dispersion of customers in the foreign markets	Global	Regional	Europe	Europe (intention)	Regional
Customer type	Consumer	Consumer/industrial	Industrial	Industrial	Consumer/industrial

Both new-customer seeking and existing-customer following were evident as types of customer procurement in the case firms. The number and dispersion of customers in foreign markets varied considerably: some firms served only a few customers, while others had hundreds. Similarly, the customers came from areas of close geographical proximity (regional markets in the Nordic-Baltic area), other European markets and global markets. Consumers and industrial customers alike were served by the medical and food-testing firms (except that medical service type 1 was essentially only a consumer service), whereas the pharmaceutical contract service firms offered services only to industrial customers. The international market strategies of the knowledge-intensive professional service firms under study are described and analysed in detail, case by case, in the following.

Medical services

The international market strategies of the medical service firms tended to involve seeking out new customers. In the two smaller hospitals (Article 3), the international customers were consumers in other words patients. The large hospital (Article 3) offered several different private special-care medical services to industrial customers (e.g., international firms) and to consumers (regular patients).

In the case of the smaller hospitals, the customers came from numerous countries – they essentially served global markets (the countries included the Nordic countries, the USA, the UK, Italy, France, Spain and Russia). In this context, customers often actively seek the best possible medical care. Active customers played a prominent role in the internationalisation – they often contacted the doctors and applied for treatment. Consequently, it seems that it is often the active customer who sometimes does the “market selection” rather than the service provider.

Pharmaceutical contract services

The studied contract service firms (both types, Articles 4 and 5) sought (or planned to seek) new customers in order to broaden their customer base with international clients. The new customers were a prerequisite for growth, as the domestic market was relatively small and restricted in terms of growth prospects.

The pharmaceutical contract service firms provided services only to industrial customers. These customers are either international firms or domestic companies (many of which were internationalising). The custom synthesis provider firm– contract service type 1 as presented in Article 5 – was seeking new customers in Nordic and European markets in order to broaden its customer base (consisting of domestic customers). The domestic customer base could not sustain growth due to the small number of firms involved, and such growth had to come from Nordic and European markets. A further reason for expanding the customer base was that dependence on a few domestic customers was seen as a risk.

Food-testing services

The international operation strategies of the food-testing firms (Article 6) involved customer following: the lucrative large (industrial) customers (i.e. major Nordic and international food producers) have been establishing a presence in Nordic/Baltic markets, and in order to keep them, the food-testing firms need to serve them in the new markets. The international market strategy involved the idea of being international but servicing customers locally.

Unlike pharmaceutical contract services, which constitute industrial business, food-testing services are also available to consumers: individual consumers may test drinking water in (at least some) food-testing laboratories, for example. The consumer business is not large-scale or generally lucrative, apparently (due to the small size of analysis orders).

6.1.3 International operation strategy dimensions of knowledge-intensive professional service firms in the life sciences

The main difference in the internationalisation of product⁶⁶ and professional-service firms in the life sciences concerns delivery: services comprise a different group in this respect. The customer's role in the service-interaction process with knowledge-intensive professional firms has been emphasised on several occasions in previous chapters: full or at least partial participation is required. It also requires the physical presence of the professional (the service provider), at least during some parts of the service-consumption process. The options of professional service firms with regard to international operational mode are therefore limited.

International operational modes refer to the methods of serving international foreign markets, through which the service delivery is accomplished. It was concluded earlier that international operational modes of professional service firms include: (i) *export operations* involving own/direct export of services (by using travelling service personnel with or without foreign intermediaries) and indirect export of services (inviting foreign customers to the domestic site) and (ii) the delivery through *foreign affiliates* involving foreign direct investment (FDI), which can be sales subsidiaries (without laboratory equipment and personnel, for example) or service

⁶⁶ For example, for most drug-development companies (especially smaller biotechnology-based biomedical), internationalisation is essentially licensing out – ultimately of drug molecules, but possibly also of technology (technology / hybrid companies) at various stages of the drug-development process. Only very few companies aim to manufacture the drugs themselves, and even then extensive use of external contract manufacturing is on the increase. Currently, marketing and distribution are also often handed over to specialist companies. Special emphasis is put on acquiring increased R&D resources. Most often molecules are licensed to large pharmaceutical companies, which can handle the manufacturing, distribution and marketing while gaining valuable additions to their own R&D pipelines. When it comes to internationalisation in other types of life science companies, such as biomaterial, diagnostics and functional-food-developing companies, more internationalisation options are available. Such companies are much more likely, to manufacture and market their own products than drug-development companies, even though the usage of external contract service firms is likely to increase (due to rising R&D costs as pharmaceutical-type regulative processes become tighter in these sectors as well).

subsidiaries (with the capacity for service delivery). If not wholly owned, these could be called joint ventures.

The dimensions of the international operation strategy – which determine the choice of appropriate international operational mode – comprise the service-delivery effort (through person/persons and involving single service events/processes of several service events), location of delivery, business site, type of movement and collaboration. Table 12 shows the dimensions of the international operation strategies of the studied knowledge-intensive professional service firms.

Table 12 The dimensions of the international operation strategies of the studied firms

Dimension	Medical service type 1 (Focused service)	Medical service type 2 (Full service)	Pharmaceutical contract service type 1 (Focused service)	Pharmaceutical contract service type 2 (Full service)	Food-testing service (Full service)
Service-delivery effort	“Person-based” delivery	“Process-based” delivery	“Process-based” delivery	“Process-based” delivery	“Process-based” delivery
Location of delivery	The firm’s premises and the customer’s location	The firm’s premises and the customer’s location	The firm’s premises	The firm’s premises and the customer’s location	The customer’s location
Business sites	Single site	(From single site to) multi-site	Single site	Multi-site	Multi-site
Type of movement	Customers and employees	Information, customers, capital	Information and customers	Information, customers and employees	Capital
Collaboration	Involved	Involved	Not involved	Involved	Not involved

With regard to service delivery effort (individual or organisational), two kinds of basic modus operandi were detected (see Article 3): “*person-based*” and “*process-based*” service delivery. The terms “person” and “process” in conjunction with the operation strategy underline the service-delivery effort (by individual professional’s effort as compared to organisational effort involving several professionals in a – typically – long or complex service process). In person-based service delivery, service operations are centred on one individual professional. Process-based service delivery emphasises the nature of the delivery as an organisational effort. Process-based service delivery (management of the treatment process, conducting a long R&D

research process and instituting test-sample transfer and analysis procedures) was evident in all services types other than medical service type 1. Delivery locations included the firm's premises and the customer's location, as well as those of foreign affiliates. The number of business sites also varied. Given the variations between the firms, the movement of information, service providers, customers and investment capital were evident in the empirical research. In terms of collaboration, various agreements with other companies (i.e. foreign partner firms) were in evidence. The dimensions of the international operation strategies of the studied firms are described and analysed in detail below.

Medical services

Person-based service delivery was identified in the two smaller hospitals with a focused, specialised medical service (medical service type 1, Article 3). The international operational mode in such services either required inviting foreign customers to the domestic site, or the medical doctor went to the foreign market to consult and operate. It was noted earlier that customers of these kinds of medical services often actively seek the best possible medical care. Information technology was used in such information exchange (e.g., e-mails). Active customers also often come to the premises of the service provider for treatment. Both firms also had collaborative arrangements with foreign clinics, in which case the operations were conducted abroad.

Process-based service delivery was evident in the large private hospital (medical service type 2, Article 3). Whether in a small or large hospital, successful service operations derive from service-interaction processes (i.e. service events) with customers, in which medical doctors (professionals) are in the key position. The individual doctors are the backbone of the service delivery in private medical services. Nevertheless, there were differences in international operation strategies between medical service types 1 and 2 in that type-2 service centred on treatment through process-type service delivery requiring several professionals' interaction with the customer. Other differences in operation strategy were also evident: the main initial method for serving foreign markets in the research period consisted of bringing patients to the premises of the hospital (in Finland) for various treatments. This was facilitated through third parties (such as ambulance operators) in transferring the patients to hospital. These kinds of arrangements were made with business customers (e.g., firms operating in Russia, but willing to bring their staff to Finland for treatment). However, during the late phase of the research, in spring 2004, foreign direct investment was applied by the hospital: the studied firm became a minority shareholder in a private hospital (specialising in gynaecological treatments), which was opened in St. Petersburg. It can be concluded that this process-based international service delivery was

accomplished mainly through a foreign affiliate (in this case meaning foreign direct investment in a service subsidiary).⁶⁷

Contact-based services are services that require the movement of people (employees or customers) into or out of a country to engage in service production and consumption process (Clark et al. 1995, 12). Medical service types 1 and 2 were exactly this kind of service. Article 3 also dealt with virtual medical services. The international operational mode involves only information transfer across borders as export operations.⁶⁸ Technology is emphasised in virtual medical services, and technological expertise in this context was linked to organisational – especially to conceptualised/systemised, but also routinised – knowledge rather than to individual knowledge. In that sense, virtual-based service delivery bears more resemblance to process-based service delivery, the most notable difference being that virtual delivery does not involve the physical presence of professionals, and only information is transferred.

Integrating technological expertise with existing medical services could be seen enabling service delivery in markets in which such delivery has been impractical or impossible, if technological applications facilitate communication, for example. Despite the advantages of virtual-based⁶⁹ service delivery, it appeared to be relatively restricted and suitable only for certain purposes (e.g., initial consultations or consultations regarding chronic diseases). It was considered complimentary to other medical services, and seen primarily as integrated service delivery complementing person- and process-based service delivery (of medical service types 1 and 2). Especially in the case of the large private hospital, this type of integration was seen as an important functional feature in the future. If well integrated into existing medical services (e.g., the booking system), technology can reduce travelling and office costs. At the moment at least, it appears, that new technological applications in medical services are better suited to facilitating communication between service sites or external organisations (e.g., imaging transfer) and to enhancing firms' internal communication processes, whereas their role as part of the internationalisation strategy is secondary.

⁶⁷ The agreement also included strong co-operation between the Helsinki hospital and the St. Petersburg hospital, and patient transfers to Helsinki will continue.

⁶⁸ Grönroos (1999, 292) identified the electronic marketing mode as one general entry mode for service firms going into foreign markets. The notion of virtual-based service delivery through information transfer is related to Grönroos' presentation.

⁶⁹ Such eHealth applications facilitate wholly new ways of offering services, and make the patient even more involved in the service-production and -consumption process, i.e. increasingly empowering the patient (Laing et al. 2002, 127).

Pharmaceutical contract services

Contract service firm under investigation (type 1, Article 5) featured process-based service delivery with an international operational mode that included the, to some extent, physical movement of the service provider to the location of the customer, as well as inviting customers to the domestic site of the firm. In addition, information was transferred across borders during the long R&D projects. Professional's and customer's presence in the service-interaction process was not as extensive as in the medical-services case in that the R&D projects tended to be long and to involve periods of less frequent service-provider/customer interactions.

An international operation strategy involving only one service site was applied, largely by necessity (major investment in equipment and facilities). The company aimed to deliver the service initially through international operational modes that included the transfer of information, and the movement of the service provider as well as the customer, while intending to possibly set up its own sales subsidiaries in the future when additional resources could be acquired to sustain such delivery. It had no collaborative agreements during the study period, but such agreements were considered important for the future and were under active consideration⁷⁰.

Contract service type 2 (Article 4) was the full-service preclinical service offering. The special feature of this type was that it was (supposed to) comprise a network of service providers. In reality, the service providers had their own, particular focused services, but the aim was to provide a full-service type of international service offering by combining them. The method it intended to adopt for serving foreign markets incorporated export operations (involving, to some extent, moving professionals to the customer's location or bringing the customers to the firm's premises). Pure information transfer would also be applied – when possible.

The international operational mode here could be labelled a “co-exporting alliance”⁷¹ (see e.g., Baird, Lyles & Orris 1994, 50, Samli & Donaldson 1997, 128–129 for more on co-operative export alliances), in which network partners are involved in co-marketing in internationalisation in order to compensate their paucity of resources (see Gabrielsson & Kirpalani 2004, 562–563; Baird et al. 1994; 57). Networking is an effective way of overcoming the paucity of resources, and simultaneously of learning from each other (Gabrielsson &

⁷⁰ Such agreements were realised after the research period.

⁷¹ Co-exporting alliance here refers to a strategic alliance in exporting as defined by Samli and Donaldson (1997, 122): it implies a very flexible and informal network that connects prospective exporters in terms of achieving their export goals.

Kirpalani 2004, 562). Operating in a network consisting of several organisations offering complementary services appears tempting for small firms lacking the resources required for internationalisation. As found out in the study of a network of preclinical pharmaceutical contract service providers (Article 4), building such a network is exceptionally demanding and requires similarity in terms of organisational structures (e.g., firms vs. public-sector organisations) and commitment towards common strategic goals (e.g., in terms of growth). The international operation strategy of a network is complicated if organisations have different growth prospects: if some are willing to expand strongly in international markets, and others want to fill occasional under-capacity, the prospects for any collaboration are restricted. As mentioned earlier, the preclinical network in question never took off as envisioned due to above-mentioned problems, even though similar kinds of (but smaller, focused) networks have since been planned and launched in Finland precisely for internationalisation purposes. Some companies involved in the case study continued to develop internationalisation strategies on their own, and to cooperate occasionally on the basis of need.

Food-testing services

The food-testing firm was a special case in the sense that it represented a foreign firm that had established itself in the Finnish market by acquiring the municipal food-testing laboratory of Tampere. It could be said to have a process-based service delivery resembling the case of the larger medical-service firm (medical service type 2). It had several service sites that could assist each other and provide additional resources if needed – consequently collaborative agreements were not seen to be of primary importance. The firm established presence in the new foreign market (Finland) by acquiring an existing food-testing laboratory through foreign direct investment, and the service delivery was thus accomplished through a foreign affiliate (service subsidiary) in the customer's location: this was also the case with medical service type 2 in the Russian market.

6.1.4 Industry competition, market characteristics and internationalisation strategy

The internationalisation strategies of knowledge-intensive professional service firms are affected by industry competition and market characteristics (in domestic and international markets). Actions of single firms may influence industry competition as well. For example, a new professional service firm establishing a foreign affiliate in a new foreign market changes the industry

competition in that market if international competition has previously been scarce. A new international competitor thus promotes change in that domestic companies have to adapt and respond to the new situation. This kind of overseas competitive pressure is also mentioned as a major influencing factor by Morgan and Katsikeas (1997, 685), for example. This was the case in food-testing services, as the expansion of a Nordic food-testing firm into the Finnish market through foreign direct investment changed the competitive environment in Finland from being purely domestic (as presented in Article 6). The industry competition and market characteristics are described and analysed below according to the services studied.

International competition in medical services is lower than in the pharmaceutical industry. The health-care sector is largely domestic in most countries, although private health care is beginning to emerge as an international business even if international competition is still at a relatively low level (compared with the pharmaceutical industry). As there is not much international competition in the domestic market, medical service firms are happy to operate mainly in the domestic market (domestic competition is quite hard, however). Increasing international competition in the domestic market in the future may force these companies to internationalise. The Finnish (consumer) market for private medical services is growing due to problems in the public sector. There is growth in the domestic market, contrary to the situation with pharmaceutical contract services, but the market potential in nearby markets (especially Russia) is huge and makes expansion tempting.

The internationalisation of other firms (competitors) in an industry influences that of professional service firms. In the case of pharmaceutical contract services, competition is global, given the global nature of the industry. For contract service firms, too, internationalisation could be seen as a necessity due to global competition and the small domestic customer base (and growth rate), whether by following current customers or seeking new, potential customers in international markets.

The food-testing service business is again slightly different in terms of industry competition and market characteristics. The competition is partly international, but still mostly regional rather than global. As indicated earlier, the food-testing firms could be seen to follow their customers, who are also undergoing a similar kind of internationalisation process. The food-testing firm studied (Article 6) considered regional markets (the Nordic-Baltic area) its natural market and it was prepared to expand accordingly. There was some evidence of wider international competition (the word “global” cannot be used here), but the level is far from that of the global competition in the pharmaceutical industry.

There are some over-lapping areas of competition between the services studied due to convergence in the life-science industries. Most notably, the area of functional foods is a “grey zone” between food and pharmaceuticals. Some contract service and food-testing firms are occasional competitors in the area as efficacy evaluation of functional food products as non-clinical and clinical testing become increasingly important for regulatory and marketing purposes. For example, the studied food-testing firm already provides analytical services for pharmaceutical firms. This is a development that may change industry competition in food testing and shape the firms’ strategies to involve expansion to new foreign markets (further a-field than nearby regional markets) in order to find new customers.

6.1.5 The identified internationalisation strategies

The internationalisation strategies of the studied firms were identified and labelled on the basis of the analysis of their international service, market and operation strategies, and given the features of industry competition and market characteristics. Table 13 presents these internationalisation strategies:

Table 13 The identified internationalisation strategies

	Medical service type 1 (Focused service)	Medical service type 2 (Full service)	Pharmaceutical contract service type 1 (Focused service)	Pharmaceutical contract service type 2 (Full service)	Food-testing service (Full service)
Main features of the international service strategy	Highly interactive, highly customised focused service, i.e. “single-service strategy”	Highly interactive, highly customised full service, i.e. “multi-service strategy”	Less interactive, long-term relationship-building-oriented focused service, i.e. “integrated-service strategy”	Less interactive, several firms’ joint full service, i.e. “bundled-service strategy”	Less interactive, long-term relationship-building-oriented full service, i.e. “standardised-service strategy”
Main features of the international market strategy	New-customer seeking, consumer-service global-market strategy	New-customer seeking consumer & industrial service regional-market strategy	New-customer seeking industrial-service European-market strategy	New-customer seeking industrial-service European-market strategy (intended)	Customer following, consumer & industrial service regional-market strategy,
Main features of the international operation strategy	Person-based own export of services / indirect export of services provided at foreign/ domestic site	Process-based (from indirect export of services provided at domestic site to) FDI (service subsidiary)	Process-based indirect export of services provided at the domestic site	Process-based indirect export of services (as a co-exporting alliance) provided at foreign/domestic sites	Process-based FDI (service subsidiary)
Main industry competition and market characteristics features influencing the internationalisation strategy	Less international and domestic competition in the domestic market. More competition in the international markets.	Less international, but hard domestic competition in the domestic market. Expansion to close, large markets with hard competition.	Small domestic market with little competition, but fierce competition in the international markets	Small domestic market with little competition, but fierce competition in the international markets	Hard regional competition around the Nordic-Baltic area, which was also the area of expansion
Internationalisation strategy labelled as	“Own/indirect export of person-based services provided at foreign/domestic site”, characterised by a single-service strategy involving new-customer seeking.	“FDI (service subsidiary) of process-based services”, characterised by a multi-service strategy involving new-customer seeking.	“Indirect export of process-based services provided at the domestic site”, characterised by an integrated-service strategy involving new-customer seeking.	“Indirect export of process-based services (as a co-exporting alliance) provided at the foreign/domestic sites”, characterised by a bundled-service strategy involving new-customer seeking.	“FDI (service subsidiary) of process-based services”, characterised by a standardised-service strategy involving existing-customer following.

The following internationalisation strategies were identified in the life sciences knowledge-intensive professional service firms under study (Articles 3, 4, 5 and 6):

- 1 Own/indirect export of person-based services provided at the foreign/domestic site, characterised by a single-service strategy involving new- customer seeking
- 2 FDI (service subsidiary) of process-based services, characterised by a multi-service strategy involving new-customer seeking
- 3 Indirect export of process-based services provided at the domestic site, characterised by an integrated-service strategy involving new-customer seeking
- 4 Indirect export of process-based services (as a co-exporting alliance) provided at the foreign/domestic sites, characterised by a bundled-service strategy involving, new-customer seeking
- 5 FDI (service subsidiary) of process-based services, characterised by a standardised-service strategy involving existing-customer following.

The internationalisation strategies are labelled with a view to emphasising the dimensions of the international service, market and operation strategies that are considered the most prominent in the given firms. The prominent features of industry competition and market characteristics influencing them in the case of each service are also presented. The internationalisation strategies of the firms are described and analysed below, according to service type.

The internationalisation strategies of the medical service firms

As described in the previous section, the international operational modes of focused, specialised medical services (type 1) included two principal methods of service delivery: moving customers to the service firm's premises and moving the service provider to the customer's location. The customer's role was important: the customer can indeed be a very active participant in the process when movement to the service firm's premises is required. As was revealed in the empirical study of the two focused (medical service type 1) medical service providers (Article 3), customers often actively seek information about services, contact the service provider and move to their premises for treatment. Given the fact that the customer-procurement of medical service firms is defined as "seeking new customers", it could be said that it was sometimes the customer who sought the service provider.

Medical service providers (medical service type 1) strengthened their links with foreign markets by making collaboration arrangements (e.g., the right to use the clinic's rooms and equipment against fees) with the foreign clinics to facilitate the movement of the service provider (the professional) to the customer's location (the foreign country). Such collaboration was evident in the internationalisation strategies of the two specialised medical service firms (medical service type 1). Internationalisation strategy in both cases could be

described as own/indirect export of person-based services provided at the foreign/domestic site, characterised by a single service-strategy involving new-customer seeking.

Single service here refers to the importance of the focused service provided by one individual professional. Own exporting refers to exporting (moving) the service provider to the customer's location (in the foreign market), and indirect exporting to inviting (moving) customers to the firm's premises (at the domestic site) – the two simultaneously applied service-delivery methods. The term “new” (or “existing” in the case of food-testing services) in conjunction with customers refers to whether new-customer seeking (or existing-customer following) prevailed as the main type of the customer-procurement.

Indirect exporting by inviting customers to the service provider's domestic site was the principal service delivery method employed by the large private hospital providing medical services (medical service type 2, Article 3) during most of the research period. In contrast to the situation with focused medical services, there were several professionals involved in the international service offerings in this hospital: it was a full-service-type of service offering. Given the business site – one central site in which several types of services are provided – such a strategy could be called the indirect export of process-based services provided at the domestic site, characterised by a multi-service strategy involving new-customer seeking. After merging⁷² with another case company (the private hospital in Turku), the company started a major expansion in the domestic market during the latter phase of the study period and acquired several smaller clinics in Finland. Following the merger with the two private hospitals under study, two different service strategies were thus evident in one firm: focused medical service provided by one professional (for orthopaedic surgery) and full-service-type private special-care medical services offered by several service providers. The international operational mode involved movement of the service provider to the customer's location and the movement of the customer to the firm's premises. The company invested in a hospital in St. Petersburg in spring 2004. The services provided through the Russian affiliate were more focused (gynaecological treatments) than the previous one involving a full-service-type of offering. The other service type involving orthopaedic surgery was unchanged. Thus, after these developments, the company's internationalisation strategy evolved into what

⁷² There has been a wave of mergers and acquisitions in the field of Finnish private health care, the case-company being the main force behind it.

could be called FDI (service subsidiary) of process-based services, characterized by a multi-service strategy involving new-customer seeking.

The internationalisation strategies of the pharmaceutical contract firms

The pharmaceutical contract service firm studied (Type 1, Article 5) had an international service offering with a lot of product characteristics (compared to medical services) involving a high amount of technology in the service delivery. Strong emphasis was put on the careful development of customer relationships in domestic and foreign markets. Long-term interaction with customers in pharmaceutical R&D projects required a lot from the relationships, e.g., transparency and communication. This kind of service strategy was considered particularly long-term-relationship-development-oriented. There were fewer customers than with the medical and food-testing services, but the projects were longer and more expensive. Customer procurement involved new-customer seeking.⁷³ An international operational mode involving inviting customers to the domestic site was adopted. It should be noted that, compared with medical services, for example, the level of interaction between the service provider and the customer was not as high. Projects last from weeks to months, and at times only information is exchanged. This kind of technology-laden service offering requires a combination of information exchange and customer movement to the firm's domestic site as a method of service delivery. The firm's internationalisation strategy could be said to be the indirect export of process-based services provided at the domestic site, characterised by an integrated-service strategy involving new-customer seeking. This kind of strategy puts special emphasis on establishing and developing long-term relationships with customers in the new foreign markets.

The other internationalisation strategy identified in pharmaceutical contract services involved a network of service providers (Type 2, Article 4). Not necessarily all services (if several services are provided) offered by knowledge-intensive professional service firms in the life sciences can be considered eligible for internationalisation, or internationally competitive. The problem is that the international service offering may not be attractive enough to arouse the interest of the large international customers. The empirical case study (Article 4) concerned a situation in which a group of smaller firms tried

⁷³ Even though not part of the published empirical research, the other research conducted by the author (and specified in the references) on the CRO firms revealed an internationalisation approach very much alike the case presented here.

to provide a broader (full-service type) of offering by forming a network of service providers and thus combining services of several firms.

As far as pharmaceutical R&D projects are concerned, customers often prefer to acquire their services from providers that could be considered long-term partners throughout the R&D process (e.g., through two or more phases of clinical trials, or even all the way from preclinical to late-phase clinical trials). This kind of offering thus comprises several distinct services that form an integrated chain to cover a part of the R&D process (preclinical studies): in essence this means bundling services and contrasts with the earlier-mentioned focused-service types. The internationalisation strategy resembling this kind of activity relates to the earlier-mentioned service-unbundling⁷⁴ strategy described by McLaughlin and Fitzsimmons (1996): the essence of such an internationalisation strategy can be seen in the way that firms separate out pieces of the value-chain and focus on those parts. It often requires introducing new service concepts, thereby putting special emphasis on international service strategy. The international operation strategy was nevertheless undeveloped and demanding, given the various firms involved. The planned operational mode of service delivery for the network is termed a co-exporting alliance.

An internationalisation strategy involving a network requires the development of a new service concept based on combining the services of several firms: it involves several service sites and several firms. Each one of the firms concentrates on a piece of the value chain, but together they produce a broader (full-service-type) of offering. In other words, they bundle services to produce a more comprehensive service offering. Such a strategy could be termed the indirect export of process-based services (as a co-exporting alliance) provided at the foreign/domestic sites, characterised by a bundled-service strategy involving new-customer seeking.

The internationalisation strategies of the food-testing firms

The food-testing service firm (see Article 6) seemed to pursue an international operation strategy involving several service sites. These had been established in the foreign markets by purchasing laboratories in those countries. The services were thus delivered through foreign affiliates in several countries. The firms appeared to regard the Scandinavian–Baltic area as their natural

⁷⁴ Virtual consultations in medical services could also be labelled *unbundling services*, even though this service type later became integrated into a multi-service multi-site strategy and was not considered a stand-alone service.

market, which could be labelled their “extended domestic market”. They attempted to establish a presence (affiliates) in all or almost all of the Nordic countries, and also in the Baltic countries, partly – but not solely – in order to follow their customers, who were also establishing a presence in the same markets.

The internationalisation strategy of the food-testing firm under study could be labelled a FDI (service subsidiary) of process-based services, characterised by a standardised-service strategy involving existing-customer following. This strategy seemed viable, as food-testing services are relatively standardised (compared to medical services), and the regulative environment in different countries is not dissimilar. The service offering was similar in all of the sites (full-service-type). Another factor making the adopted strategy viable was the fact that microbiological test samples in particular are extremely difficult to transfer physically over long distances: they cannot easily be transferred far, even though the analysis results can. This means that an analytical laboratory infrastructure is required in the served markets.

Based on the results of the empirical research reported in the present study, the following observation can be made with regard to the customer/market – element. In sum, the strategic alternatives in conjunction with the international market strategies of knowledge-intensive professional service firms in the life sciences are as follows: (i) new foreign customers can be sought abroad; (ii) new foreign customers can be sought by inviting them to domestic markets; and (iii) existing domestic/foreign customers can be followed abroad. The first alternative refers to situations in which new foreign customers are sought abroad with own exporting or FDI, whereas the second alternative refers to seeking new customers but relying solely on indirect export as methods for serving them, and the third refers to following existing customers abroad – as in the case of food testing (this requires FDI as a methods of serving such customers).

If service firms follow their customers to certain markets (as was the case with food testing), a credible presence must be established in the foreign market. Evidence from the food-testing firm supports this argument. The Swedish food-testing firm established itself on the Finnish market by acquiring a major Finnish food laboratory in Tampere, thereby being able to gain a foothold in a central geographical position in Finland, and to use the existing infrastructure and customer base. Being an international service provider, but servicing customers locally (as noted also by Cicic et al. 1999, 86), seems a viable internationalisation strategy for food-testing firms.

6.2 Knowledge resources in international service, market and operation strategies

6.2.1 Core and foreign-business knowledge as internal resources

6.2.1.1 Knowledge resources

Resources have a dual role in internationalisation. Certain resources are needed in the delivery of a service to international customers, the major one in life-sciences professional services being knowledge. Others resources are required for the international service offering for instance physical resources in terms of an infrastructure (rooms, facilities and equipment). Arguably, knowledge comprises the most important resource of professional service companies – professional service companies are based on its application (through intellectual inputs) for solving customers' problems. This is *core knowledge*, some of which resides in individuals, and some of it is organisational.

According to authors such as Eisenhardt and Santos, knowledge consists of tacit and explicit parts (Eisenhardt & Santos 2002, 140). Determining knowledge intensity and distinguishing clearly between the two aspects in empirical research can be complicated. An attempt is made here to distinguish between tacit and explicit knowledge in the internationalisation of knowledge-intensive professional service firms in the life sciences. Nonaka et al. (2000, 15) argue that explicit knowledge is related to more objective, tangible forms (e.g., design, documents, databases and patents), and is thus easier to grasp than tacit knowledge. Basically the more subjective and intangible (experiential and routinised) the knowledge inherent in the firm's activities is, the more tacit-knowledge-intensive it is, and the more objective, tangible (i.e. conceptualised and systemised) the knowledge inherent in its activities is, the more explicit-knowledge-intensive the firm is. However, according to the empirical evidence offered in Articles 3, 4, 5 and 6, both tacit and explicit knowledge are required in conjunction with the international service strategy and the international market and operation strategies of professional service firms in the life sciences. Table 14 illustrates the role of knowledge in conjunction with the international service (core knowledge) and the international market and operation (foreign-business knowledge) strategies of the studied firms. The role of the other resources is also included.

Table 14 The role of knowledge and other resources

	Medical service type 1	Medical service type 2	Pharmaceutical contract service type 1	Pharmaceutical contract service type 2	Food-testing service
Size of the company	SME (1-250 employees)	Over 250 employees	SME (1-250 employees)	SME(s) (1-250 employees)	Over 250 employees
Operational years (at the time of the study)	10+ and 20+	90+	2	From 1 to 10	10+
Core knowledge: tacit	<i>Experiential:</i> individual special expertise in surgical operations; <i>Routinised:</i> daily patient flow	<i>Experiential:</i> personnel's experience in managing complex treatment processes; <i>Routinised:</i> customer flow between service points / sites	<i>Experiential:</i> personnel's experience in pharmaceutical custom synthesis and process development; <i>Routinised:</i> long-term R&D project management	<i>Experiential:</i> personnel's experience in combining own expertise with that of other service providers; <i>Routinised:</i> managing projects between the many service providers and sites	<i>Experiential:</i> personnel's microbiological and chemical analysis skills; <i>Routinised:</i> customer-to-site transfer of microbiological samples
Core knowledge: explicit		<i>Conceptualised/systemised:</i> designs, standard operational procedures (SOPs)	<i>Conceptualised/systemised:</i> GMP system, process-development technologies	<i>Conceptualised/systemised:</i> GLP system, combining varied technologies	<i>Conceptualised/systemised:</i> analysis methods, quality standards
Foreign business knowledge: tacit	<i>Experiential:</i> knowledge of operating regulations, knowledge of locations and access to top-tier hospitals; <i>Routinised:</i> international business routines in e.g., invoicing.	<i>Experiential:</i> knowledge of cultural and management differences in Russia, key contact person's acquaintances in government and agencies; <i>Routinised:</i> international business routines in e.g., invoicing and managing the Finnish-Russian corporate culture.	<i>Experiential:</i> sales and marketing skills; <i>Routinised:</i> coping with large orders, invoicing	Did not materialise as planned during the study period	<i>Experiential:</i> knowledge of local operating environment, customer base and structure; <i>Routinised:</i> operating as part of an international firm in terms of e.g., reporting and communicating.

Foreign business knowledge: explicit	<i>Conceptualised/systemised:</i> legal advice, local partner advice	<i>Conceptualised/systemised:</i> market intelligence reports, legal, partnering and management consultancy	<i>Conceptualised/systemised:</i> market intelligence reports, partnering and management consultancy, training/courses for international business	Did not materialise as planned during the study period	<i>Conceptualised/systemised:</i> market intelligence reports, legal, partnering and management
Other resources	Personal reputation, personal relationships (with foreign colleagues)	Reputation, physical (sites), financial (investment loans)	Physical (facilities, equipment), relationships (long-term development with customers), financial (investment loans)	Relationships (between the network members)	Reputation, physical (site, facilities, equipment)
Bold = external resources					

The manifestations of core knowledge, foreign-business knowledge and other resources are listed as they became evident in the empirical investigation. The sizes of the studied companies as well as their operational years (at the time of the study) are included in the Table. Next, the role of knowledge and other resources in conjunction with the service strategies and operation strategies of the studied knowledge-intensive professional firms are described and analysed according to the classification used in the present study.

6.2.1.2 The service strategy: core knowledge

The main knowledge resources referred to in the present study, in the focused medical-service firms (medical service type 1, Article 3) in particular were clearly the individual's expertise in conducting the surgical operations – this applied to one renowned medical doctor in each of the two studied firms. Routinised knowledge (e.g., managing the daily patient-flow) was also necessary in order to sustain operations. Thus tacit-knowledge intensity prevailed, and resided in these individual professionals. The knowledge was so clearly associated with them that there was a clear aim in one of the clinics to leverage the expertise – tacit knowledge – to benefit the organisation (i.e. other doctors) by means of joint scientific research and practice. This kind of development of the knowledge base would benefit the organisation. The

process is long, however, and the tacit knowledge is extremely difficult, if not impossible, to fully leverage.

The key knowledge resources in the larger hospital (medical service type 2, Article 3) with its full service offering were much less person-dependent. Explicit knowledge (conceptualised/systemised) was more emphasised, as knowledge was more leveraged and better documented: standard operational procedures (SOPs) in treatment processes were considered important, for example. The tacit knowledge required in conjunction with the service strategy of the large hospital was more on the organisational than the individual level,⁷⁵ proving to consist of the personnel's experience in the *management of the treatment processes*. It was in stark contrast to the high person-dependency in medical service type 1.

The knowledge resources in the pharmaceutical contract service firm (contract service type 1, Article 5) and in the food-testing firm (Article 6) were also much less person-dependent than in the type-1 medical services. Explicit knowledge was emphasised in these firms, and the core knowledge was seen to be more associated with knowledge residing in the organisation than in individuals. This was demonstrated especially through the use of the GMP system in the contract service firm, and quality standards in the food-testing laboratory. Conceptualised/systemised knowledge (in the form of the requirements of the GMP system) played an important role in the type-1 pharmaceutical contract service delivery, and was manifested through standard analysis methods and quality certificates / regulatory approvals in the food-testing firm. Compared with medical service type 1, these firms could be considered more explicit knowledge-intensive.

Routinised tacit knowledge also assumed an important role in type-2 medical services, type-1 contract services and food-testing services – they all aimed to employ effective organisational processes in their service delivery (e.g., customer-to-site transfer of microbiological samples and patient flow between service points in the hospital). Both tacit and explicit knowledge were needed.

⁷⁵ Levels of competence in the corporate setting are dealt with in Article 2.

6.2.1.3 International market and operation strategies: foreign-business knowledge

The role of knowledge is different in conjunction with international market and operation strategies, and is expressed as *foreign-business knowledge*. As indicated earlier, the term foreign-business knowledge is used in the present study to describe the tacit and explicit knowledge possessed by the firm about its international operating environment (country-based markets and operations) and about how to conduct operations (firm-level operations) within this environment, and based on learning, also from resembling environments. It thus encompasses the knowledge of both country-based markets and operations, and also generic company-level knowledge of international operational modes. Again, it could be classified as either tacit or explicit, the distinction here being that tacit knowledge is mainly experiential and explicit knowledge is mainly non-experiential. Tacit knowledge thus refers to individual persons' skills in terms of languages, cultures and communications, as well as to organisational knowledge of international business routines (e.g., invoicing), the emphasis being on first-hand, experience-based knowledge. Explicit knowledge, on the other hand, is knowledge gained through formal training, development courses and market intelligence (in the form of research reports and other data), and the emphasis is on non-experiential (compared with first-hand, experience-based foreign-business) knowledge.

Experiential knowledge was considered important in focused, specialised medical services (type 1, Article 3), whereas in the contract firm (contract service type 1, Article 5), for example, the emphasis was on extra training and courses aimed at developing foreign-business knowledge (more non-experiential). Knowledge of the local operating environment, as well as of the customer base and structure, was important in the food-testing firm, and therefore local professionals were preferred as employees following the purchase of the laboratory. Foreign-business knowledge in particular was often enhanced through external resources (external resources are dealt with in more detail in Chapter 6.2.3). This aspect of knowledge could be seen as a continuum along which the two types (tacit, more experiential and explicit, more non-experiential knowledge) support each other.

According to the empirical research reported in the Articles, several knowledge-intensive professional service firms in the life sciences internationalised by delivering internationally competitive services to international customers. Of the companies in question, the smaller medical service firms offering focused, specialised service (orthopaedic surgery and ETS (endoscopic transthoracic sympathectomy) reversal surgery Article 3) in

particular were able to become very competitive internationally. The services were delivered to several international customer groups and the operations were profitable. These specialised, focused private medical services became top-tier services in their respective market niches. It was presumed that valuable, rare, inimitable and non-substitutable resources – especially knowledge – constitute sources of competitive advantage for knowledge-intensive professional service firms. This suggests that there should be a link – although ambiguous⁷⁶ – between competitive advantage and performance. The empirical cases comprising the present study seem to indicate that competitiveness and tacit-knowledge intensity are linked in the internationalisation of knowledge-intensive professional service firms. It would also emphasise the importance of having a clearly targeted, unique service offering.

An important dividing line between the operation strategies here is whether the knowledge resides in the *individual* or *in the organisation*. The former refers to knowledge residing in individual professionals (one person), whereas the latter emphasises knowledge possessed by the organisation as a whole. The personnel's experience is a key factor in all knowledge-intensive professional services – such personal qualities underline *credence* (Devlin 1997, 1091). These credence qualities appeared much less personified in the large hospital, the contract service firm and the food-testing laboratory. Whereas several professionals made their contributions in these firms, in the two smaller medical service firms the credence *was* one medical doctor. Reputation – a key resource in internationalisation – is formed from such credence qualities (for more on reputation, see the following section).

6.2.2 Other internal resources

Knowledge resources were in a key position in the internationalisation strategies of the studied firms in the form of core and foreign-business knowledge. There are, however, other resources required in conjunction with international service, market and operation strategies. These have an enabling role in terms of delivering the service offering to international customers, and include financial (e.g., investment loans) and physical resources (e.g., facilities), reputation, and relationships.

⁷⁶ The notion of causal ambiguity is acknowledged in the resource-based approach (Barney 1991, 108–109; see also Sanchez & Heene 1997, 308).

The role of financial resources is of primary importance: firms have a certain amount of their own, but very often also need external financial resources. Physical resources are also important: they support the core knowledge resources in knowledge-intensive professional services. The customer also interacts with the physical resources (e.g., physical surroundings, facilities) in the service-production and -consumption process. They are directly associated with competitive advantage in pharmaceutical contract services (type 1, Article 5), as well as in food-testing services (Article 6), as they refer to the extent which the firm is able to serve its customers in terms of state-of-the-art facilities, machinery and equipment. These resources are also connected to technology (and thus to explicit systemized knowledge), but underline physical features of technology.

One of the key resources of knowledge-intensive professional services in terms of competition is arguably their reputation – which is sometimes considered an important source of competitive advantage (Kotha et al. 2001, 772). The average customer's understanding of the features and benefits of the provided service may be extremely limited, and this highlights the importance of reputation (i.e. credence qualities) in purchasing it (Devlin 1997, 1091). Reputation is a resource that cannot be acquired easily: it is formed – possibly enhanced but not created by the company. In professional services it could be seen as linked to the service offering – it refers to the extent to which the firm seems to be able to solve the customer's problem. When formed, reputation becomes a resource suited to other purposes (e.g., in the introduction of new service offerings).

It should also be noted that reputation may be person-dependent, especially in knowledge-intensive professional services (as argued in the previous section). If the service offering is embodied in a person (e.g., the medical doctor in the specialised medical services discussed in Article 3), the reputation is associated with that person, and not necessarily with the firm.

Relationships comprise a major resource in the internationalisation strategies of knowledge-intensive professional service firms: they were utilised in medical services (especially type 1, Article 3) in order to invite the patients and access treatment facilities in the foreign clinics. The extensive personal relationships between the individual doctors and foreign doctors also helped to sustain the international patient flow (doctors can recommend their esteemed colleagues and even “send” them). These relationships had been formed through years of international scientific and professional activity (e.g., publishing/conferencing and memberships in professional associations). In certain situations, reputation is also linked to relationships (see e.g., Bharadwaj et al. 1993, 91). In the case of specialised, focused medical

services, the described relationships could be seen as strengthening the reputation, and vice versa.

Strong emphasis was placed on the careful development of relationships in pharmaceutical contract services (type 1, Article 5), given the long-term nature of the R&D projects. There was a notable difference in terms of the employment of relationship resources between the domestic and international service deliveries. The relationships of the senior managers were paramount in the domestic market and the company operated based on personal acquaintances. Furthermore, it appeared that experiential individual expertise was highlighted in the domestic operations: the senior managers knew many customers professionally, and the customers valued their expertise. This person-dependency did not apply to internationalisation, as the relationships did not embrace the global pharmaceutical business. As far as international delivery was concerned, relationships with export agencies and other government- or municipally-sponsored export-promotion bodies (including clusters) were more useful. The development of relationships with international customers was considered crucial, but the process is long (at the time of the study it had just started with initial contacts and projects).

The resources of the knowledge-intensive professional service firm need to be under constant change and development. New ones can be added by hiring new people with specific knowledge for example (Nonaka et al. 2000, 5), and existing ones can be further developed by leveraging the knowledge possessed by individuals. According to Grant (1991, 126), some resources may be firm-specific and are extremely difficult to transfer. On the other hand, some resources (especially the tacit knowledge of individual professionals) are extremely difficult to maintain without the individuals. The leveraging of tacit knowledge is a crucial feature in knowledge-intensive professional service firms. Certain resources are difficult or altogether impossible to develop internally, however. External resources are becoming increasingly important, especially in the life sciences, as individual firms cannot develop and maintain internally the resources required in international business. The issue of external resources (i.e. firm-addressable resources) is dealt in the next section.

6.2.3 External knowledge resources

Companies acquire external resources to supplement their own resource base (Chetty & Wilson 2003, 63–64; Thomke & Kuemmerle 2002, 629), an example being R&D collaboration, in which parts of projects are conducted with other parties due to insufficient or lack of appropriate resources in one company. The pharmaceutical preclinical R&D network described in Article 4

provides an illustrative example of this kind of activity. External resources are extensively used in conjunction with the internationalisation strategies of knowledge-intensive professional service firms. According to the empirical cases (Articles 3, 4, 5 and 6), external resources in conjunction with internationalisation strategies consist mainly of foreign-business knowledge and financial resources.⁷⁷ A knowledge-intensive professional service firm may acquire external resources from one or more sources.

External foreign-business knowledge involves addressing external expert resources such as market research firms (people with special market intelligence), management consultants (e.g., to train sales people) and law and partnering firms (i.e. people helping in the handling of deals and negotiations). For the addressing company, such activity could be linked to explicit knowledge: it provides foreign-business knowledge in the form of market research reports, courses, documents and contracts. The studied contract service firm (contract service type 1, Article 5) exemplifies the importance of non-experiential foreign-business knowledge: external market intelligence and consultant advice were acquired from several organisations.

Financial resources for internationalisation are very often externally acquired to complement the company's own resources, and include external funding through government and regional funds, soft loans and other financial instruments, development capital, venture leasing, business angels and venture firms. They were used (or were intended to be used) by most of the studied firms (Articles 3, 4 and 5). A notable exception was the focused medical service (Article 3), which did not require major financial resources in internationalisation strategy. Naturally, the need for financial resources was highlighted in the case of investments (medical service type 2 and food testing service).

External resources are often acquired through the utilisation of networks⁷⁸ – which may form the basis for increased internationalisation (Welch & Luostarinen 1999, 94; Buckley & Chapman 1997, 47). With pharmaceutical R&D, even the large pharmaceutical companies need to acquire various resources from other parties (e.g., systemised knowledge such as patents from smaller biotechnology-based companies). Smaller companies are even more dependent on external resources (Holmlund & Kock 1998, 48). Many of them

⁷⁷ Ahokangas (1998, 124–126) distinguished between two main categories of external resources in the internationalisation of firms: information and networking.

⁷⁸ When networks are discussed they are often understood in terms of the *network approach*. Here, the aim is not to refer specifically to this approach, but merely to argue that, in this case, every firm is part of one or more network(s), from which they may try to acquire external resources.

are becoming increasingly involved in networks intended to facilitate internationalisation through co-operation in the form of so-called export circles or export promotion. From the knowledge-based approach such facilitation means that the firm is addressing external foreign-business knowledge or financial resources to enable and sustain its international operation strategy.

The above-mentioned external resources are needed in conjunction with the operation strategy dimension of internationalisation strategy. However, they do not directly affect the company's service strategy dimension, and they cannot be considered *core* in terms of knowledge resources. Yet, there are service offerings for which external resources are needed: specific external knowledge resources may be needed for the service delivery in knowledge-intensive professional services in the life sciences. Carrying out a demanding medical operation, for instance, often requires a complex chain (or network) of services (see Orava & Tuominen 2002, 282). This kind of chain/network is usually formed in a hospital by utilising internal resources (i.e. within firm boundaries). In many other professional services, such as pharmaceutical contract services, less knowledge is sustainable in-house by a single firm. Knowledge-intensive professional service companies in the life sciences – with variations between sectors – are increasingly utilising external⁷⁹ sources, even when it comes to core knowledge.

The pharmaceutical industry is one of the most fragmented in terms of its value chain,⁸⁰ and outsourced services are needed in all phases of the long and complex drug development process. The preclinical R&D network (pharmaceutical contract service type 2, Article 4) provides an example of the type of international service offering that is based on combining the services of a group of firms to produce a full-service offering (pharmaceutical preclinical service offering) for international markets. In resource terms this means that the core knowledge involves combining the expertise and technology of various service providers and managing projects between the many service sites.

⁷⁹ Consequently, it is likely, that the number of firms specialising purely in mediating knowledge between other firms will be rising in knowledge-intensive services.

⁸⁰ The value chain is used here to describe the general drug-development process from the discovery to later clinical phases (on the phases of the drug-development process, see e.g. Brännback et al. 2001, 19–20).

6.2.4 On the interplay between knowledge resources and internationalisation strategy

It was proposed earlier that the internationalisation of knowledge-intensive professional service firms incorporates interplay between resources and the internationalisation strategy. Knowledge resources were in a key position in the internationalisation strategies of the studied firms as core and foreign-business knowledge. There are also other resources with an enabling role in terms of delivering the service offering to international customers. Medical services provided empirical examples of such interplay: the internationalisation strategies in the two smaller medical service-provider firms (medical service type 1, Article 3) were based on making the core knowledge embodied in one medical doctor accessible to foreign customers. These doctors travelled to the foreign country (to operate in clinics under collaborative agreements), or patients were moved to the service provider's home-country premises. This kind of movement enabled the transfer of tacit knowledge, thus providing input in the interactive service-production and -consumption process. It was a relatively uncomplicated method of serving foreign markets compared to investment in new facilities in one or more foreign countries for which there are no available resources (e.g., financial resources, and limited foreign-business knowledge).

The internationalisation strategy of the larger private hospital (medical service type 2, Article 3) was based on the knowledge residing in the organisation rather than in individuals. The transfer of tacit and explicit knowledge was required. Major investment in the foreign market was made in order to deliver the services through a foreign affiliate. New resources were acquired as the affiliate was mainly in the hands of local personnel. The internationalisation strategy thus involved more than one service site, and information exchange between the sites was facilitated by virtual operations (the transfer of explicit knowledge). This kind of internationalisation strategy required major financial resources, which are often unavailable to smaller firms.

The internationalisation strategy is evidently related to the company's strategic goals. Strategic logic as the rationale for achieving goals through the co-ordinated allocation and deployment of resources directs actions releasing existing resources or seeking new complementary resources for internationalisation. Resource allocation and deployment for internationalisation is restrained if not supported by a strategy. A purposeful internationalisation strategy helps in creating management processes for such allocation and deployment. Empirical evidence from pharmaceutical contract services seems to support this: as growth through international expansion

became the top priority in the studied firm (type 1, Article 5), existing resources were immediately re-allocated (e.g., the international marketing manager from inside the firm was commissioned and trained), and external resources (e.g., market intelligence and management consultancy) were brought in to supplement the existing ones. Explicit knowledge transfer was emphasised in the provision of inputs into the interactive service-production and -consumption process with customers, (given the technology-laden service offering requiring a lot of information exchange).

Another example comes from medical services. The majority of medical doctors in private hospitals are employed full-time in the public sector and use private hospitals mainly to gain extra earnings by giving consultations perhaps a few times a week or a month (i.e. on a part-time basis). The problem here was that they were not committed to a long-term and often demanding internationalisation strategy. Even if the management were committed to internationalisation strategy, it would be extremely difficult to get the medical doctors – the key people with the core knowledge – involved. Internationalisation strategy involving moving professionals to the new foreign affiliate to deliver the service could not be applied as resource allocation and co-ordination would be restrained. A viable internationalisation strategy for the large medical service firm (type 2, Article 3) was FDI (service subsidiary) of process-based services characterised by multi-service strategy involving new-customer-seeking that required relatively little or no input from the medical doctors working part-time in the private hospital. It involved investment in the new hospital in the foreign market operated by the local medical doctors and personnel, and required the commitment of only a few full-time private medical doctors, supported by an equally committed management.

The food-testing firm case also suggests links between resources and internationalisation strategy. It pursued a standardised-service strategy aimed at establishing a credible presence in the chosen markets (the Nordic-Baltic area - the microbiological testing limited the geographical dispersion of laboratories). Through the purchase of the local laboratory (a service subsidiary), the company gained a good foothold in a central location in the new market, and was thus able to utilise its strong expertise in test-sample transfer and analysis procedures (derived from routinised tacit knowledge and conceptualised/systemised explicit knowledge). Service delivery through foreign affiliates would also seem to be a viable international operational mode in contract services, but investing requires considerable financial resources that are often unavailable to small service firms (as was the case in the firm studied in Article 5).

Perhaps the clearest example of the significance of the linkage between internationalisation strategy and knowledge resources was demonstrated in the network of pharmaceutical preclinical service providers (type 2, Article 4): common strategic goals could not be formulated, and the resource allocation and co-ordination between the participating service providers was severely restrained. As no common goals existed, the delivery of the rather complex service offering (involving tacit and explicit knowledge), consisting of the services of several firms, was considered extremely difficult in terms of the resources required in conjunction with the international service, market and operation strategy.

7 SUMMARY AND CONCLUSIONS

7.1 Summary of the major findings

The research purpose of this study was to describe and analyse the internationalisation strategies of knowledge-intensive professional service firms in the life sciences by examining their international service, market and operation strategies and the role of knowledge resources. The study was conducted by applying the knowledge-based approach. The industrial context was the life sciences, specifically private special-care medical services, pharmaceutical contract services and food-testing services.

It was concluded that the international service strategy determines the international service offering, the international market strategy determines the international market selection and the international operation strategy determines the international operational mode. The role of knowledge as the strategically most important resource in the internationalisation strategies of these firms was emphasised. Knowledge was further divided into the tacit and explicit knowledge residing in individuals and in the organisation.

A conceptual framework was created within which to study the internationalisation of knowledge-intensive professional service firms. Elements of internationalisation strategies were identified as forming inner and outer layers. The inner layer (firm-level) comprises the elements referring to resource availability and use, as well as to the strategy elements in internationalisation. The international service offering is formed through internal processes involving resource allocation and deployment. Second, the outer layer (industry-level) comprises the industry dynamics, i.e. the external competitive interactions and market characteristics that influence the internationalisation strategies. The inner (firm-level) and outer (industry-level) layers are connected - there are several levels of interaction between the elements of both.

Given the framework of the adopted knowledge-based approach, a revised and specified definition of the internationalisation strategies of knowledge-intensive professional service firms was created: *“Motivated by strategic goals and driven by strategic logic, a process of allocating and deploying resources and managing systemic interdependencies among the firm’s own internal and between the internal and external resources in order to deliver the*

international service offering through international operational modes to international customers”

The service offering was seen essentially as a problem-solving promise to the customer. The international service offering must be made accessible to international customers. The process of making the service accessible to customers was referred to as service delivery: it is an important feature in the internationalisation strategies of knowledge-intensive professional service firms and the main differentiating factor between domestic and international service operations. International service delivery is accomplished through international operational modes. The process by which professional service firms select where and with whom the service delivery occurs is called international market selection. Here the customer was emphasised.

The international service strategy of knowledge-intensive professional service firms comprised four dimensions: level of interaction, level of customisation, number of service providers, and the nature of the customer relationships, as did the international market strategy: customer procurement, the number of customers in the foreign market, their dispersion and the customer type. The international operation strategy comprised five dimensions: service delivery effort, location of delivery, business sites, type of movement and collaboration.

Knowledge and other resources associated with the international service, market and operation strategies were classified. A major distinction was made between the knowledge needed for the international service strategy and that required for the international market and operation strategies: in the first case it was called *core knowledge*, and in the second case it was called *foreign-business knowledge*. Core knowledge was further divided into tacit (experiential and routinised) and explicit (conceptualised/systemised) knowledge, and foreign-business knowledge was classified as tacit (emphasising experiential knowledge) or explicit (emphasising non-experiential knowledge). External knowledge may be needed in conjunction with the international service, market and operation strategy, while other necessary resources include physical and financial resources, reputation and relationships.

The present study comprises six articles, which vary in terms of methodological choice. The scientific approach adopted in the study resembles the *pragmatist orientation approach*, which is demonstrated through the acceptance of mixed methodology containing elements of both quantitative and qualitative research methods. As a scientific approach the pragmatist orientation could be positioned in the middle ground between the positivist/empiricist and relativist/constructivist epistemological orientations. Articles 1 and 2 relied on quantitative research methods, whereas Articles 3, 4

and 6 were case studies in which qualitative research methods were employed. Article 5 was essentially an action-research study employing both quantitative and qualitative research methods.

The empirical cases (reported in the articles) concerned medical services, pharmaceutical contract services and food-testing services. Article 3 reported research on three private hospitals providing service offerings for international customers: a Turku-based private hospital providing orthopaedic surgery, a Tampere-based private hospital providing ETS (endoscopic transthoracic sympathectomy) reversal surgery, and a Helsinki-based private hospital offering various medical treatments. Articles 4 and 5 dealt with two types of international service offerings in pharmaceutical contract services: the first concerned a custom synthesis and process-development company, and the other comprised the services provided by a total of sixteen organisations. Finally, Article 6 concerned a food-testing company, which had expanded into Finland through the purchase of the municipal food-testing laboratory of Tampere.

The internationalisation of knowledge-intensive professional service firms in the life sciences was found to be riddled with obstacles and challenges, but nevertheless possible according to the empirical investigation reported. The service offering often has to be modified or limited if it is to be delivered to international customers. As far as knowledge-intensive professional services are concerned, the offerings for international customers appear more limited in number and focused in scope than domestic offerings. International service delivery involving various facilitating/supporting services may be severely restricted if the necessary resources cannot be deployed easily. Companies need to explicitly focus on the offerings that are the most competitive and most likely to succeed, and to refrain from delivering other services.

The international service offerings of the small hospitals were largely embodied in a particular medical doctor and the service delivery was also person-dependent (no delivery would occur without the presence of that doctor). The large hospital involved full-service type (comparable to full-service food-testing laboratories and full-service pharmaceutical contract service firms). The service strategies in contract services and food-testing services differ from those in medical services in that they appear to be more standardised (quality standards are applied widely) and more technology-focused in delivery. The preclinical network of service providers put together an international service offering in which the various services were bundled together so as to appeal to international customers (co-exporting alliance).

With regard to international market strategies, customer procurement in the form of both new-customer seeking and existing-customer following prevailed in the studied firms. The amount and dispersion of customers in the foreign

markets varied considerably, some firms serving only a few and others with hundreds. Although there was variation between the firms, the customers came from areas of close geographical proximity (the Nordic-Baltic region), other European countries and global markets.

The international market strategies of the medical service firms tended to involve seeking new customers. In the case of medical service type 2 (the large hospital), the customers were mainly from regional markets, whereas in the smaller clinics (medical service type 1) they came from numerous countries – the clinics essentially served global markets. In these cases, active customers took a prominent role in the internationalisation – they often contacted the doctors and applied for treatment. It thus seems that it is often the active customer who does the “market selection” rather than the service provider.

The pharmaceutical contract service firms offered services only to industrial customers, and in both cases (contract research types 1 and 2) the firms needed new ones as the domestic customer base could not sustain growth due to the small number of firms. The growth had to come from the Nordic and European markets.

The international market strategy of the food-testing firm involved customer following: lucrative large customers (i.e. major Nordic and international food producers) have been establishing a presence in the Nordic/Baltic markets, and in order to keep them, the food-testing firms want to serve them in the new markets. The internationalisation strategy involved the idea of being international while servicing customers locally.

An important issue differentiating the international operation strategies here is whether the knowledge resides in the *individual* or *in the organisation*. The former applies to knowledge residing in individual professional (one person), whereas the latter emphasises the knowledge held by the organisation as a whole. With regard to operation strategies, two kinds of basic *modus operandi* were detected: *person-based* and *process-based* service delivery.

Medical service type 1 (the smaller clinics) involved an international operational mode requiring either inviting foreign customers to the clinic’s premises or sending the medical doctor to the foreign country to consult and operate. The main initial operational mode in the larger hospital (medical service type 2) during the research period was to invite patients into the hospital premises for various treatments. Later, in spring 2004, an investment-type method was applied to the Russian market. Hence, it can be concluded that the process-based international service delivery was accomplished mainly through a foreign affiliate. The virtual-based service delivery was considered complimentary to the other medical services.

The level of professional-customer interaction is not as high in pharmaceutical contract services as in the medical services studied. R&D projects tend to be long and to involve periods of less service provider/customer interaction.

Operating in a network consisting of several organisations offering complementary services appears tempting to small firms lacking the necessary resources for internationalisation. As the study of a network of preclinical pharmaceutical contract service providers showed, building such a network is exceptionally demanding and requires similarity in terms of organisational structure and commitment to common strategic goals. An internationalisation strategy involving such a network is complicated if organisations have different growth prospects.

The service provider's presence in the food-testing service interaction process is not as extensive as it is in the medical services under study (some analysis results can be delivered in electronic form, for example). The food-testing firm could be said to have a process-based service delivery resembling that of the larger medical service firm (type 2). The company had several business sites that could assist each other and provide additional resources if needed – due to such an arrangement collaborative agreements were not considered of primary importance. The food-testing firm established a presence in the new foreign market (Finland) by acquiring an existing food-testing laboratory through investment (capital movement), and the service delivery was thus accomplished through foreign affiliates in the customer's location, as was the case for medical service type 2 in the Russian market.

The internationalisation strategies of other firms (competitors) in an industry appear to influence why professional service firms are internationalised. The health-care sector is mostly inherently domestic in most countries. Private health care is beginning to emerge as an international business, even though international competition is still on a low level compared with the pharmaceutical industry. There were growth opportunities in the domestic market for private medical services, contrary to the situation with pharmaceutical contract services. The potential in the nearby markets (especially Russia) is huge, however, and makes expansion into this market tempting.

Competition in pharmaceutical contract services is global due to the global nature of the pharmaceutical industry. The domestic customer base could not sustain growth due to the small number of firms, and it had to come from international markets. Expanding the customer base was also considered necessary as dependence on a few domestic customers was seen as risky. Internationalisation could be considered a necessity for contract service firms due to the global competition and the small domestic customer base (and

growth rate), be it by following current customers or seeking new, potential customers in international markets.

Competition in food-testing services is partly international, but still mostly regional rather than global. The actions of single firms influence the competition. For example, a new professional service firm establishing a foreign affiliate in a new foreign market may upset the industry's competitive environment in that market if the international competition has previously been minimal. A new international competitor thus changes the industry's competitive environment, as domestic companies have to adapt to the new situation.

The following internationalisation strategies were identified in the life sciences knowledge-intensive professional service firms studied (Articles 3, 4, 5 and 6):

- 1 Own/indirect export of person-based services provided at the foreign/domestic site, characterised by a single-service strategy involving new- customer seeking
- 2 FDI (service subsidiary) of process-based services, characterised by a multi-service strategy involving new-customer seeking
- 3 Indirect export of process-based services provided at the domestic site, characterised by an integrated-service strategy involving new-customer seeking
- 4 Indirect export of process-based services (as a co-exporting alliance) provided at the foreign/domestic sites, characterised by a bundled-service strategy involving new-customer seeking
- 5 FDI (service subsidiary) of process-based services, characterised by a standardised-service strategy involving existing-customer following.

The role of knowledge in the internationalisation of knowledge-intensive professional service firms can be summed up as follows: knowledge residing in individuals is emphasised more in focused, specialised medical services, whereas organisational knowledge prevails in other service types.

The key knowledge resources in the firms offering focused medical services (type 1) were clearly in the expertise of the individuals conducting the surgical operations (tacit, experiential knowledge), whereas those in the larger hospital with a full-service-type of offering (type 2) were much less person-dependent. In the latter case, explicit knowledge (conceptualised/systemised) was emphasised more, as knowledge was more leveraged and documented.

The key knowledge resources were also much less person-dependent in the pharmaceutical contract service (type 1) and the food-testing firm than in the medical services (type 1) firm: explicit knowledge was emphasised. Conceptualised/systemised knowledge (in the form of the requirements of the

GMP system) had an important role in international pharmaceutical contract service delivery (type 1), and was manifested through standard analysis methods and quality certificates in the food-testing firm. These firms could be considered more explicit knowledge-intensive than the medical-service type-1 firm.

Routinised tacit knowledge was also seen to have an important role in medical services type 2, contract services type 1 and food-testing services – they all aimed to follow effective organisational processes in their service delivery (e.g., customer-to-site transfer of microbiological samples and patient flow between service points in the hospital). Both tacit and explicit knowledge were needed in the international service delivery.

In terms of foreign-business knowledge, tacit, experiential knowledge was emphasised in focused, specialised medical services (type 1), whereas the emphasis in the contract service firm (type 1, Article 5) was on extra training and courses designed to develop foreign-business knowledge. Knowledge of the local operating environment, as well as of the customer base and structure, was important in the food-testing firm, and therefore local professionals were preferred as employees following the purchase of the laboratory. Foreign-business knowledge in particular was often enhanced through external resources. It could be seen as a continuum along which two types of knowledge (tacit, experiential-emphasised and explicit, non-experiential-emphasised) support each other.

The importance and particular role of physical (e.g., facilities) and financial (e.g., investment loans) resources, reputation and relationships were also highlighted. These are directly associated with competitive advantage in pharmaceutical contract and food-testing services as they refer to the extent to which the firm is able to serve its customers in terms of state-of-the-art facilities, machinery and equipment. They are also connected to technology (and thus to explicit systemised knowledge), but focus on the physical features of technology. It should also be noted that reputation may be person-dependent, especially in knowledge-intensive professional services. The relationships used in the international service delivery would include those with export agencies and other government- or municipally-sponsored export-promotion bodies (including clusters), which could also facilitate the inviting of customers and provide access to treatment facilities in foreign clinics.

External foreign-business knowledge consists of addressing external expert resources such as market research firms (providing market intelligence), management consultants (e.g., to train sales people) and law firms and partnering firms (i.e. people helping in the handling of deals and negotiations). Financial resources for internationalisation strategy are very often acquired externally. Naturally, the need for such resources was highlighted in the case

of investments (medical service type 2 and the food-testing service). Knowledge-intensive professional service companies in the life sciences – with variations between sectors – are increasingly utilising external resources, even when it comes to core knowledge.

The empirical case analysis in the present study seems to indicate that competitiveness and tacit-knowledge intensity are linked in the internationalisation strategies of knowledge-intensive professional service firms. The knowledge of the professionals provides intellectual inputs into the service-interaction processes with customers. In the life sciences the source of competitive advantage cannot be considered clear-cut. In the services studied it was the numerous service-interaction processes with customers that determined whether the service company had competitive advantage in the particular foreign markets. Such advantage becomes a reality through service interaction with customers, as customers' perceptions of the service are formed in relation to competing services. Thus, the realisation of competitive advantage ultimately depends on the customers' more or less subjective perceptions of the service quality (seen as service excellence). Should the firm enjoy competitive advantage in the foreign market, it should lead to better performance.

However, competitive advantage derives from a multitude of sources, some of which are undetectable or beyond control (e.g., new competition). Experiential expertise, organisational routines and conceptualised/systemised knowledge may be there, as may the necessary international training and skills and adequate market intelligence – but ultimately everything depends on the service interactions with customers in a given markets.

The results of the empirical study also emphasised the importance of having a unique service offering. International service delivery is facilitated through explicit systemised knowledge (embodied as explicitly stated technologies). The more explicit knowledge-intensive the professional service type is, the easier it is to replicate the service in the foreign market (e.g., standardised processes manifesting systemised knowledge). Different internationalisation strategies are viable, but depending on other resources (e.g., physical resources), methods for serving foreign markets through export operations may be complicated. Delivering services through foreign affiliates is therefore more viable method for serving foreign markets, but it requires significantly more financial resources.

Depending on performance⁸¹ in internationalisation – resulting from interactions with customers – reconfigurations of resource deployments and of the internationalisation strategy may be required. This would involve re-deployment of resources and the management of systemic interdependencies between the existing resources and newly-acquired resources in order to re-adjust them to tie in with the new strategic goals. Re-configuration may thus also involve a change in internationalisation strategy. The re-configuration of strategic goals may be an explicit process (strategic planning), and includes setting out specific actions to be undertaken. It may also be an implicit process of renewing goals and effecting change in the strategic logic. Re-configurations influence delivery in the form of a modified service offering and the re-deployments of resources for modified international operational modes. De-internationalisation (from market exit(s) to an entirely domestic-market focus) is also possible.

7.2 Theoretical contributions

Earlier studies have treated professional services as a separate group within the service sector, and knowledge is often seen as the essential element and common denominator for professional services. A new definition for knowledge-intensive professional services has been formulated in the present study (based on earlier research by, most notably, Aharoni 1993a; Halinen 1994; Kyrö 1995; Verma 2000, 13; Ojasalo 2000): “*Services that are provided by qualified persons with a substantial fund of knowledge applied through the service production and consumption process in order to solve customers’ problems.*”

The main theoretical avenues of research into the internationalisation of firms were presented, most notably the market-power approach, internalisation theory and eclectic theory and were found to be mainly preoccupied with FDI issues in manufacturing industries. Internationalisation as process acknowledges a *development process* from export towards direct investment. The studies by Nordic researchers (Johanson & Wiedersheim-Paul 1975;

⁸¹ Performance can be understood in many ways. Elango (2000, 17), for example, used Return on Sales (Net income/Sales) as a measurement of performance in internationalisation. Here, a broader view is adopted: performance is understood as financial as well as service performance (e.g., profitability and service quality perceptions). From the strategy perspective, every firm aims towards superior financial performance (Bharadwaj et al. 1993, 83; Mäkinen 2000, 183). Competitive advantage should lead to this goal. The present study sees the quality crucial in the formation of competitive advantage, and thus is ultimately linked to superior financial performance.

Johanson & Vahlne 1977; Luostarinen 1979) have revealed a gradual process of evolutionary development in the internationalisation of the firm. Their work coincided with other internationalisation models developed in the late 1970s and early 1980s in North America by Bilkey and Tesar 1977 and Reid 1981 (as well as Cavusgil 1980 and Czinkota 1982 as cited in Gankema et al. 2000).

The strategy perspective on internationalisation emphasises the importance of internationalisation as part of the strategy process (Melin 1992, 110; Andersen & Buvik 2002). This was the view adopted in this dissertation, i.e. internationalisation is seen and dealt with as a strategic issue consisting of goals and actions related to a firm's resources. The knowledge-based approach was adopted as the theoretical basis of the study as knowledge was considered the strategically most important resource and the source of competitive advantage in knowledge-intensive professional service firms. Derived from the resource-based view (originally developed by Penrose 1959, for more on the resource-based view see e.g., Wernerfelt 1984; Dierickx & Cool 1989, 1504; Amit & Schoemaker 1993, 33; Eisenhardt & Martin 2000, 1105), the knowledge perspective has been increasingly used in several areas related to strategy (Eisenhardt & Santos 2002, 139; Autio et al. 2000, 909).

The view of knowledge as either tacit or explicit put forward by Nonaka et al. (2000) was accepted in the present study, and the concept of knowledge-intensity in professional services was critically examined. It was seen, that the measurement of knowledge-intensity commonly used for manufacturing firms (R&D) does not reflect the knowledge-intensity of professional service firms – many of which do not have separate R&D costs. Knowledge-intensity in these firms was found to be dependent on the knowledge inherent in its activities. More firm- and industry-specific investigation of knowledge-intensity is needed rather than statistical analysis, and this can be accomplished only by taking a more idiosyncratic approach, through in-depth analysis of the knowledge inherent in the activities of particular professional firms.

The knowledge-based approach was relied on, when the key conceptualisations of the study were constructed (Chapter 4). The terminology developed by Sanchez and Heene (1997) was used as a basis for describing the key conceptualisations. A revised and specified definition of the internationalisation strategy of knowledge-intensive professional service firms was created deriving from the adopted knowledge-based approach: *“Motivated by strategic goals and driven by strategic logic, a process of allocating and deploying resources and managing systemic interdependencies among the firm's own internal and between the internal and external resources in order to deliver the international service offering through international operational modes to international customers.”*

A model for the internationalisation strategy of knowledge-intensive professional service firms was presented in this study. The internationalisation strategies of professional service firms have been the subject of earlier research (e.g., Vandermerwe & Chadwick 1989, McLaughlin & Fitzsimmons 1996, Reardon et al. 1996, Hellman 1996, Majkgård and Sharma 1998, Grönroos 1999, Baark 1999 and Gummesson 2000b). The model presented in this study comprised the international service strategy (determines the international service offering), the international market strategy (determines the international market selection) and the international operation strategy (determines the international operational mode). It was based on earlier research on the internationalisation of firms, most notably Luostarinen's (1979) POM combination of the product (or service), operation and market dimensions. Nevertheless, it is a new kind of model of the internationalisation strategy of knowledge-intensive professional service firms into which the issue of knowledge is integrated according to the knowledge-based approach (KBV).

The defined characteristics of the international service strategy reflect those described in earlier research. Vandermerwe and Chadwick suggested in 1989 that modes of service internationalisation are influenced by a combination of the nature of the service and the way in which it is delivered (Vandermerwe & Chadwick 1989, 89). McLaughlin and Fitzsimmons (1996, 44) also raised the question of how service characteristics translate into strategies for internationalising services. There are some studies that have highlighted the importance of the service type and service characteristics – thus emphasising the international service strategy – with regard to the internationalisation mode, and separate professional services from other types of services (O'Farrel et al. 1998; Vandermerwe & Chadwick 1989; Erramilli 1992; Aharoni 1993a). Clark, Rajaratnam and Smith (1995, 12) classified services in internationalisation based on what crosses borders. In particular, they identified *contact-based services* as a special group, as such services require the movement of people into and out of the country to engage in the service production and consumption process. The role of relationships should also be acknowledged as relationships with customers are known to be important in knowledge-intensive professional services (Sharma 1994, 16; Lovelock et al. 1996, 173; Wang & Mowen 1997, 56–57; Laing et al. 2002, 111; Aung & Heeler 2001, 622).

This study contributed to the discussion on the characteristics of services in conjunction with the international service strategy in identifying a number of dimensions: the level of interaction (between professionals and customers), referring to the extent to which the customer participates in the service production and consumption process; the level of customisation, referring to

whether the services require tailoring (customisation) to the customer, or whether they are more standardised; the number of service providers, in other words whether the service is offered by a single firm or together with other service providers; and the length of customer relationships, whether they are longer- or shorter.

The characteristics of the international market strategy should also be seen in the light of previous research. As concluded earlier, the internationalisation strategy of knowledge-intensive professional service firms – as presented in this study relate to Luostarinen's presentation (POM combination): the service and the operation dimensions largely correspond to his two first strategies. His notion of the market-strategy dimension comprising the physical, cultural, and economic distances to the target country (Luostarinen 1979, 124) was not under explicit investigation in the present study, however, as it was not seen as a necessarily fruitful line of investigation. Whereas traditional studies on international market selection focus on which country to select, the relationship approach uses the foreign customer as the unit of analysis (Andersen & Buvik 2002, 248; a similar approach is taken by Coviello & Martin 1997, 53 and Bell et al. 2004, 39). The view adopted in the present study is that the market strategy is about customers – and firms target markets in which customers are located. The international market strategy of a knowledge-intensive professional service firm was seen to involve the customer-procurement dimension (new customers are sought in foreign markets or existing customers are followed to foreign markets), and also dimensions referring to the number of customers in the foreign markets, where they are from and what kind of customers they are. The international market selection of a knowledge-intensive professional service firm, i.e. where and with whom the service delivery occurs, is based on these dimensions of the international market strategy.

In sum, the strategic alternatives in conjunction with the international market strategies of knowledge-intensive professional service firms in the life sciences are as follows: (i) new foreign customers can be sought abroad; (ii) new foreign customers can be sought by inviting them to domestic markets; and (iii) existing domestic/foreign customers can be followed abroad. The first alternative refers to situations in which new foreign customers are sought abroad with own exporting or FDI, whereas the second alternative refers to seeking new customers but relying solely on indirect export as methods for serving them, and the third refers to following existing customers abroad – as in the case of food testing (this requires FDI as a methods of serving such customers).

The characteristics of the international operation strategy should also be seen in the light of earlier research: delivery is the main differentiating

element between domestic and international operations. International service delivery is accomplished through international operational modes. Internationalisation mode choices have been widely studied (Erramilli 1990, 1992; Erramilli et al. 2002; Majkgård & Sharma 1998; Masurel 2001; Aharoni 1993a; Ekeledo & Sivakumar 1998; Weinstein 1977). International operational modes in the present study were classified according to Luostarinen's (1979, 109–111) system (however, only the ones that were relevant were included in this investigation), and compared with the professional services-oriented classifications of Aharoni (1993a) and Léo and Philippe (2001). From a synthesis of the three, it appears that the international operational modes of knowledge-intensive professional services comprise: (i) *export operations* involving own/direct export of services (by using travelling service personnel with or without foreign intermediaries) and indirect export of services (inviting foreign customers to the domestic site) and (ii) the delivery through *foreign affiliates* involving foreign direct investment (FDI), which can be in the form of sales subsidiaries (without laboratory equipment and personnel, for example) or service subsidiaries (with the capacity for service delivery). If not wholly owned, these could be called joint ventures.

Also the international operation strategy was seen involving a number of dimensions. In the context of knowledge-intensive professional services, first dimension regarding service delivery effort was included. This dimension was seen to directly influence the international operational mode as operations are centred on (i) one individual professional or a group of individuals, and (ii) include an organisational service process involving single service event or a series of service events (e.g., a longer treatment process). Other dimensions were: location of delivery, business-site type, type of movement, and collaboration. The international operation strategy of a professional service firm thus involves several dimensions that jointly determine the appropriate international operational mode through which international service delivery is accomplished.

As concluded earlier, the internationalisation strategy of knowledge-intensive professional service firms – as presented in this study – involving international service, market and operation strategies are related to Luostarinen's presentation (POM combination). These three strategy types were examined here largely by relying on the POM combination, but also by integrating the knowledge-based view in the form of specific characteristics associated with professional service firms. It could thus be concluded that this study applies Luostarinen's presentation to knowledge-intensive professional services in conjunction with their international service, market and operation strategies. One of the key contributions is to include the knowledge-based approach to service-delivery effort in the international operational mode,

thereby extending knowledge of international operational modes that have mainly been applied to industrial goods and more rarely to professional services.

The emergence of born globals (see more Gabriellsson & Kirpalani 2004, 556) has become an important research issue. The born-global type of rapid internationalisation involving the use of networks and the Internet as described by Gabriellsson and Kirpalani (2004, 568), would also appear to be desirable in knowledge-intensive professional service firms operating in the life sciences, but there was no evidence of this so far in the Finnish firms studied. The Internet was integrated into the service offering of most firms, and collaborative arrangements ranging from agreements with local partners (e.g., medical service type 1) to co-exporting alliance (contract research service type 2) were also evident. This did not provide a basis for rapid internationalisation, however. It appears that service offering standardisation – for which the explicit knowledge-intensive firms were better equipped – provided the best route to faster internationalisation (the best example being the food-testing service firm). This is, far from the born-global type of rapid internationalisation, however. Furthermore, the knowledge-intensive professional service firms studied seemed initially to target Regional (Nordic-Baltic) and European rather than global markets. Despite the seemingly global nature of the business in the pharmaceutical industry, for example, it appeared that the knowledge-intensive professional service firms did internationalise to some extent as presented in the stages model at the company level of the stages model (as presented by Luostarinen 1979; 1994): they appeared to start with their own or indirect export operations and thereafter seemed to go to FDI operations (most notably service subsidiaries).

It was furthermore concluded that the international service, market and operation strategies were interlinked and influenced each other. Andersen and Buvik (2002, 358) argue that international market selection – based on the customer-centred view – may influence as well as be influenced by the international operational mode. Depending on where and with whom the service delivery occurs, also the service offerings may have to be modified (e.g., different kinds of traits can be added to the core service in different markets). The view is adopted in the present study that the international market strategy influences both the international service offering and the international operational mode. An important feature of the internationalisation strategies of knowledge-intensive professional service firms in the life sciences should be noted: the international operational modes are dynamic rather than static. One mode may be applied first, but switches may be made to other modes, which may even be applied simultaneously. Its application does not necessarily mean a steady, unchanged service delivery –

it may also include possible de-internationalisation or re-internationalisation with a modified service offering and / or international operational mode (resulting from changes in industry competition, for example). It could be argued that, while the international service strategy influences the adoption of the international operational mode, the international operation strategy also has an effect on the international service offering especially if performance is poor and strategic re-configuration is needed.

Knowledge has a dual role in internationalisation: a clear distinction was made between the knowledge needed for the international service strategy (*core knowledge*) and that required for the international market and operation strategies (*foreign-business knowledge*). A similar kind of approach was used in Yli-Renko et al. (2002). Core knowledge refers to the knowledge inherent in a professional service firm's production and consumption activities – in an interactive problem-solving process with the customer. Yli-Renko et al. (2002) use the term foreign market knowledge to refer to the information and experiential knowledge possessed by a firm about its international operating environment (Yli-Renko et al. 2002, 283). Eriksson, et al. (2000, 29–30) specify three different types of knowledge in internationalising firms: internationalisation knowledge, business knowledge and institutional knowledge. The term foreign-business knowledge was used in the present study to describe the tacit and explicit knowledge possessed by the firm about its international operating environment (country-based markets and operations), and about how to conduct operations (firm-level operations) within this environment. The term also incorporates learning from similar environments – thus encompassing knowledge of country-based markets and operations, and of generic company-level knowledge of international operational modes. This approach incorporates the definitions of both Yli-Renko et al. (1998) and Eriksson et al. (2000).

The classification developed by Nonaka et al. (2000), was applied to further divide core knowledge into tacit (experiential and routinised) and explicit (conceptualised/systemised) knowledge. Foreign-business knowledge was also classified as tacit (emphasising experiential knowledge) and explicit (emphasising non-experiential knowledge). Both core and foreign-business knowledge appear to be internal (firm-specific), but may also be external (firm-addressable). Other resources needed for international service and operation strategies included physical and financial resources, reputation and relationships.

According to the research results of the present study, the following tentative conclusions concerning the importance of knowledge in internationalisation can be made⁸²: As far as tacit and explicit knowledge are concerned, the more tacit knowledge-intensive the professional service type is, the more difficult is the replication of the service in the foreign market and the leveraging of the knowledge to the organisation. Therefore, methods for serving foreign markets are restricted, but relatively uncomplicated if the method is inviting customers to the provider's domestic location, or the exporting service provider to the customer's location. As international operations are centred upon one individual, the market strategy is not confined by geographical limits (customers are essentially served globally), but such companies are restricted in terms of growth. Reputation is an extremely important resource in that it provides credence.

The more explicit knowledge-intensive the professional service type is, the easier it is to replicate the service in the foreign market (e.g., standardised processes manifesting systemised knowledge). As noted by Buzzel (1979, 113), product standardisation – as much as possible – in international business is often desirable and can lead to substantial cost savings. In the professional services context, explicit knowledge-intensity and service standardisation could be considered linked. Explicit knowledge-intensive professional service firms have better chances of standardising their service offerings, and this facilitates their internationalisation compared with tacit knowledge-intensive service offerings requiring a high level of tailoring. Gabrielsson and Gabrielsson (2004, 668) note that leveraging the knowledge on foreign markets becomes important when new product lines are introduced, for example (or, in the context of the present study, service offerings). This also reinforces the conclusion that explicit knowledge-intensive professional service firms are better positioned for international service delivery in several markets.

International service delivery is facilitated through explicit systemised knowledge (embodied as explicitly stated technologies): the companies that are able to utilise technology intensively to support their service delivery are in a good position to internationalise more quickly and more widely than those unable to integrate technology effectively. However, the characteristics of knowledge-intensive professional services hinder the strong employment of

⁸² Note that this is not based on any quantitative research and is by no means intended to describe causality. The statements are subjective conclusions based on conceptual considerations and qualitative empirical evidence.

technology in internationalisation – intensive interaction with customers is needed in most part of the service process (more in person-based services, but also in process-based services): surgery obviously requires the medical doctor's presence. Interaction between the service provider and the customer is also necessary in long and costly pharmaceutical R&D processes, and cannot be totally replaced by electronic service. This, together with other resource constraints (most notably financial) and fierce competition seemed to hinder fast internationalisation to wider (global) markets in the pharmaceutical contract services studied.

An important issue for further research concerns the extent to which foreign-business knowledge is foreign-target-country -dependent versus company generic, and what impact this has on the internationalisation of firms in the professional service field. Foreign-business knowledge in a particular firm certainly includes both aspects, but the emphasis is likely to vary according to the people embodying such knowledge. It is likely that both tacit (emphasising the experiential) and explicit (emphasising the non-experiential) knowledge can be target-country-dependent as well as company generic. It is equally likely that target-country-dependent knowledge is useful in penetrating particular foreign-target countries (e.g., communicating, negotiating), whereas company-generic knowledge is useful in less country-specific contexts (e.g., routinised, internally-oriented tasks such as invoicing and coping with orders). This would certainly deserve additional research and would benefit from further studies in the field of professional services.

7.3 Managerial implications

From the perspective of a knowledge-intensive professional service firm's manager, one of the most important questions raised in internationalisation concerns how to employ and utilise the knowledge residing in individual professionals and in the organisation. Another concerns the kind of international service offering that can and should be built for foreign markets, and how to make it accessible – deliver the service – to customers in those markets. In addition, the firm should consider what kind of external resources can be acquired and employed for this kind of process.

Knowledge-intensive professional service firms in the life sciences should build and deliver their international service offerings internationally (Holopainen 2004, 16). Resources – and especially internal and external knowledge – should be identified, evaluated and developed for internationalisation purposes. The core knowledge resources of the firm should be evaluated and focused on competition. The international service

offering should be based on this core knowledge and delivered to foreign markets using methods that reflect the firm's strategy and are viable in terms of availability and usage of resources. It should preferably be distinguished, unique and clear in its value promise to the customer. It appeared that, as competition generally was fiercer in foreign markets than in domestic markets, it was better to concentrate on one offering (or a few) built around the company's core competence in internationalisation (see Article 3, for example).

In terms of internationalisation strategies, it was found that several different kinds of internationalisation strategies were viable and there was no indication that a particular strategy was superior to another. Nevertheless, it can be concluded that a clear and purposeful internationalisation strategy based on the strategic goals of the company facilitates resource deployment and allocation (see Article 6).

Knowledge-intensive professional service firms in the life sciences can internationalise, even though the process is demanding and faces several obstacles. Internationalisation need not be a fixed, deterministic process towards increasingly high involvement in international operations, however, and may include changes in the international service offering and international operational mode – due to changes in industry competition, for example. Re-configuration and exit plans may be useful if things do not turn out as expected.

The following comments relate to competitive advantage in international markets: quality is industry-dependent and there are variations in standardisation and in how quality is understood. In the present study, it was seen as the attitude reflecting the customer's perception of the service firm's excellence in performance: managers knew the importance of the quality deriving from interactive service processes with their customers. A high level of quality must be ensured in all service operations. As was demonstrated in Article 1, service processes can be analysed in detail and decisively important parts of them can and should be identified. Resources allocated to those parts should be managed and developed accordingly. Obtaining information on service quality should be seen as an integral part of the internationalisation – such information provides insights into international service delivery. Specific information on the sources of professional service firms' competitiveness in a given industry (*vis-à-vis* those of their competitors) should be analysed in detail constantly during the internationalisation process. External foreign-business knowledge, such as market intelligence and legal advice, facilitates such a quest. This means that both experiential and non-experiential knowledge are needed. This knowledge should also be reflected in the company's own international service offering and international operational

modes. It is extremely difficult to establish links between knowledge and competitive advantage. Although excellence in service performance may form a basis for competitive advantage, such advantage cannot be considered permanent. The constant development of resources, and especially of knowledge, remains a key requirement for sustained internationalisation strategies by knowledge-intensive professional service firms in the life sciences.

7.4 Policy implications

The present study is based on firm-level investigation, but some policy implications can be suggested. The internationalisation activities of service firms are often overshadowed by internationalisation in manufacturing industries. Service sector is a significant sector, especially in terms of employment. The importance of services in international trade has grown considerably during the last few years. The role of the private service sector is becoming more and more prevalent as the public sector is under increasing pressure of cost-containment and is being gradually forced to cut down on services and prioritise them. Service companies are becoming increasingly prominent in our society. Privatisation has brought forth new challenges, most notably in the emerging international competition in many areas that have been previously in the domain of the public sector and of domestic players. The increasing liberalisation of international trade in services has also opened up new opportunities for companies – expansion through internationalisation.

The knowledge-intensive professional services studied here form an important sector within the field of the life sciences. Private medical services are becoming increasingly prevalent as a supplementary sector providing medical services for consumers and business customers. The pharmaceutical industry is characterised by truly global competition, and contract service firms constitute an integral and crucially important factor in the drug development process (and in the development of various other medical applications). The companies in the field have opportunities to enter lucrative international markets that are, however, characterised by fierce global competition. The field of food-testing services is undergoing structural changes due to demands for profitability and privatisation and the emergence of international competition. Private companies are likely to assume a greater role.

It should be noted that it is typical of knowledge-intensive professional service businesses to generate cash flow quickly: compared with many R&D-heavy biotechnology firms, for example, positive cash flow is generated fast.

They are often profitable business from very early on. However, growth expectations and expected future profits are generally more modest than in many firms dealing with products. There are not necessarily astronomical profit expectations for investors, but the risks involved are also smaller. This is an implication that should be borne in mind, especially in the public funding of start-up professional service companies.

The internationalisation of knowledge-intensive professional service firms has major potential that has not been fully realised yet (Mankinen et al. 2001, 35). The observed tendency of the movement of labour-intensive functions and firms (as well as many technology-based manufacturing functions) to countries with significantly lower labour costs is likely to continue and even increase. The likelihood of retaining knowledge-intensive professional service businesses – which require an advanced infrastructure and highly educated personnel – is nevertheless higher, and more should be done to enhance the competitiveness of such firms. There is a large amount of knowledge residing in individuals and organisations in knowledge-intensive professional service firms in the life sciences. If this knowledge can be utilised to deliver an increasing amount of services internationally, the economy is likely to benefit considerably.

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Article 2

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Article 3

Markus Orava (2002) Globalising Medical Services: Operational Modes in the Internationalisation of Medical Service Firms. *International Journal of Medical Marketing*, Vol. 2, No. 3, 232–240.

Article 4

Markus Orava and Maija Renko (2002) Globalisation in the Field of Pharmaceutical Contract Research Services – Creating Value Through Networks In: *Viewpoints on the Economic Dimension of Globalisation*, ed. Nummela, Niina, Publications of the Turku School of Economics and Business Administration, Series A–8:2002, 99–114.

Article 5

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Article 6

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