

SYSTEM COMPETENCE AS PREREQUISITE OF SMES' ABILITY TO BENEFIT FROM POLICY INSTRUMENTS ¹

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*"It's an illusion that public money is easy money."
[interviewee]*

Abstract: There are numerous public policies and instruments that seek to promote innovation and growth in SMEs. Typical SME supports include public funding, subsidies and supports for the use of various types of R&D related services. Up to date the evaluations have tended to focus on the added value of public funding, and there is only limited research on how policies are able to facilitate the utilisation of knowledge-intensive services within SMEs. As such knowledge-intensive service activities (KISA) are seen as important facilitators of innovation and economic growth. For instance, external KISA may act as facilitators of business growth by providing small enterprises with much needed complementary resources. SMEs in particular represent a significant potential as the users of KISA, since they are a segment of the economy with limited internal resources in terms of finance, staff and skills. At the same time their limited resources can effectively prevent them from using available KISA. Here the public sector intervention may well have a role as an initiator of a positive cycle of innovation and growth. This paper analyses how external KISA providers and public sector actors in real life situation manage to promote innovation and growth in SMEs. The results confirm the complex nature of public business support system and its negative consequences. In order to benefit from the public sector support SMEs need to: a) be willing to use of public sector supports, b) have sufficient level of internal expertise in the subject area, and c) have specific knowledge and skills in making use of the business supports system. Those SME's that are lacking such 'system competence' are unlikely to benefit from policy measures, unless they find third parties - e.g., KISA providers - who actively mediate and interpret the complex system for them. Typically such system competence and trust can only accumulate over time as SMEs are working together with the public sector actors. This implies that a number of growth oriented SME's fail to make use of public support system due to its complex nature. The results have implications for policy design, delivery and marketing of SME supports seeking to enhance their innovation capacity.

¹ The authors would like to acknowledge Ministry of Industry and Trade (MTI), and the National Agency for Technology Development (TEKES) who provided the funding for this research within ProAct II research program. This article builds on parts of Chapter Eight of the final report for the project JOINT (Kuusisto and Viljamaa, 2006).

1 Introduction

The important role of knowledge-intensive service activities (KISA) as facilitators of innovation and economic growth has become increasingly recognised (e.g. Miles et al., 1995; Ark et al., 2003), and their significance for innovation has been reported e.g. in the recent OECD KISA project (see Kuusisto, 2005). Knowledge-intensive services, such as management and technical consulting, software related services and R&D services, are rapidly growing and dynamic sectors in their own right (e.g. Lith et al., 2005; Mankinen et al., 2003). There is also growing evidence indicating that external expertise provided by knowledge-intensive business services (KIBS) can have a positive impact on their clients' innovation capacity, and therefore they can foster growth in other sectors as well (Ark et al., 2003; Antonelli, 2000).²

SME's represent a significant segment of the economy, and they have potential to become the growth engine of the economy. However, SMEs' limited resources, both financial, staff and skills related, may become a bottle-neck that prevents the full realisation of their economic potential. Hence, it is plausible to argue that KISA may have an important role in facilitating the growth of SME's by providing them complementary resources and help for tackling the growth-inhibiting bottlenecks. Yet, the services of KIBS are not in practice accessible to all firms: the cost of consultants may be prohibitive (e.g. FEACO, 2002; Erola, 2005) for smaller firms. As a result, the use of external expertise among SMEs is low (e.g. Curran et al., 1999).

Market failure is common rationale for public sector policies targeting SMEs (e.g. Storey, 1994; or Väänänen, 2003). Public sector itself can provide knowledge-intensive services, or it can subsidise private sector service provision, or it can provide directly funding for SMEs' R&D activities. In most developed nations the public sector is also quite active in maintaining and developing the nation's knowledge infrastructure, including research and training organisations (RTOs³). The rationale for supporting the use of external KISA is to promote innovation-through-services, i.e. co-production of innovation by SMEs and suppliers of KISA (Ark et al., 2003). This paper reveals what types of obstacles SMEs may face when they seek to make use of public support. Particular attention is given to 'system competence' concept, which describes SMEs' ability to acquire and make use of public sector supports in development processes.

2 External expertise, knowledge and innovation

When an SME makes use of services provided by KIBS or other KISA providers, they are accessing external expertise. To be useful, the provider of external expertise needs to understand the client firm situation, i.e. the context in which the

² The acronym "KIBS" refers to private services provided by firms, whereas "KISA" is used to refer to all kinds of knowledge-intensive services, including those provided by public sector – hence the preference for "KISA" in this paper.

³ NB: E.g. Hales (2001) uses the acronym RTO to refer to research and *technology* organisations, and Howells' (1999) CRTO refers to contract research and technology organisations.

expertise is to be applied. Thus, in order to organize a solution that fits the client's situation, the provider must not only offer specific knowledge that fits the client's needs, but also combine it successfully with the client's knowledge base. Essentially, the utilisation of knowledge-intensive services requires joint efforts by the service provider and client. In such *co-production* situation the quality of service depends largely on the nature of interaction between client and service provider. SME clients as well as the KISA providers bring different sets of capabilities and competencies into the co-production. Without sufficient internal expertise even the best external expertise may fail, because the joint effort is dependent on the client's inputs as well. External KISA provision is a process, not an instant purchase, but a process of knowledge transfer that requires reciprocal learning (Hertog, 2002; Cadrey and Gallouj, 1998). Such learning is cumulative in nature and typically changes take place incrementally rather than in the form of a sudden transformation. In effect, what is known has implications for what can be learned (Cohen and Levinthal, 1990). This research indicates that learning in particular plays an important role when SMEs develop the system competence that allows them to make use of the public supports.

The ability to innovate relates to the level of knowledge and competence (e.g. Selstad and Sjøholt, 2002), involving both problem-solving and learning skills (e.g. Cohen and Levinthal, 1990). Formal knowledge institutions such as universities or R&D institutions are not the sole source knowledge. Innovation in business can be achieved in many ways, with much attention typically given to formal research and development for "breakthrough innovations." But innovations may be developed by less formal on-the-job modifications of practice, through exchange and combination of professional experience and by many other routes (see Selstad and Sjøholt, 2002). A manufacturing business can be expected to have considerable practical knowledge (e.g. Schienstock, 1999) of the product it makes and how it is produced, whereas a specialized R&D institution or an engineering firm might have a more widely applicable understanding in the field while lacking the highly specific expertise possessed by the manufacturer. According to Larsen (2000), expertise provided by the public sector may be preferable from clients' viewpoint when the co-production relates to the firm's core knowledge. In Hertog's terms, the service providers provide "a point of fusion" between more general scientific and technological information, and the more local requirements and problems of client firms. Providers of knowledge-intensive services can function as catalysts promoting fusion of generic knowledge and the more immediate and tacit knowledge embedded in the client firm. (Hertog, 2002). According to Müller and Zenker (2001), KIBS play a crucial part in terms of knowledge re-engineering, and enhance the innovation capacities of their clients

To summarize, as KISA providers and client firms engage in co-production, both parties bring to certain knowledge resources and competencies to the process. The KISA provider is assumed to have specific expertise relevant for the problem at hand, and the client is assumed to provide local, firm-specific knowledge. Combination of these two types of knowledge can produce new knowledge, i.e. solutions and innovations.

Knowledge-intensive services are thus interesting because they have potential to facilitate innovation. Classically innovation has been understood in terms of

technologically new solutions that are successfully commercialized (e.g. Miettinen et al., 1999). More recently, innovation is not seen as a down-the-line result deriving from some earlier process of discovery. Rather, innovation processes are seen as non-linear, complex and multi-dimensional process involving interaction between firms and their external environments (see e.g. Sundbo, 1998).⁴ From policy perspective an innovation is an instrumental objective that can improve competitiveness, stimulate growth and job creation. Therefore, all types of innovations, new or significantly improved ideas, goods, services, processes or organisational practices are relevant. This research adopts the wide innovation concept and the novelty and benefits are considered from the client firm's perspective.

3 Innovation policy and its implementation in Finland

Besides knowledge the realisation of innovation required also resources (e.g. Andersen et al., 2000). In Finland innovation policy has long been a central component of economic policy. Innovation policies are designed and delivered mainly by the MTI and a number of agencies that are working under its auspices. Since the national knowledge infrastructure is clearly a wider domain also the need for horizontal policies has been recognised. In their evaluation of the Finnish Innovation Support system Georghiou et al. (2003) bring up six organisations: Tekes, Finnvera plc, Finnish Industry Investment, TE-Centres, the Foundation for Finnish Inventions (FFI), and Finpro. While all the organisations have different histories and missions, there is also a growing need to coordinate activities and define clear roles for these agencies within the support system. A great variety of public services (around 70) are available, and they appear to cover all stages of a firm's life-cycle. TE-Centres are the main organisation delivering services for general business needs, whereas Tekes and the FFI are more focused on the innovation-related services. (ibid.)

By and large, public sector service provision is very comprehensive⁵. A recent study indicates that one out of three SMEs had applied for and received at least some type of government funding (Hyytinen and Väänänen, 2002). In line with the system competence argument, Väänänen (2003) found out that the use of public funding in the past increases the likelihood of using public services, but not the likelihood of using private services. Further support for the system competence argument can be found from the report by Brunila and Vihriälä (2004). It summarises the key weakness of the Finnish business support system as follows:

⁴ "Modern innovation research sees innovation as an uncertain, complex, collective and cumulative process. ... a core focus is on how firms produce or access competence". (Georghiou et al., 2003:27). Also incremental improvements can add up to a degree of novelty that qualifies as innovation (Larsen 2001). Gallouj (2002) has considered innovation particularly in connection with use of knowledge-intensive services and suggests that identifying innovation (as something distinct from other outcomes of service use) is almost a matter of social construction, i.e. recognition that an innovation has occurred. (2002: 279)

⁵ No extensive description of public sector services and funding provision is attempted here, as numerous recent descriptions exists covering a variety of viewpoints. See e.g. Saapunki et al. (2004) or KTM (2005) for an overview in Finnish, and Georghiou et al. (2003) for a description of main actors from innovation system perspective (in English).

Public funding is available from a variety of sources, and there are large numbers of public actors, financing instruments and programmes. The problem is the disparity of the innovation and bridging organizations channelling public corporate financing and business competence on the one hand and of funding sources on the other. The lack of a clear national vision means that the field is a confused mix of the different principles and goals of various organizations promoting business environment and innovation activities, and as such not efficient enough. The key is to forge a common national vision.

4 Research context and methodology

The current research took place within a two-year research project (JOINT)⁶ under the National Research Programme for Advanced Technology Policy (ProACT). The project sought to understand how external KISA are actually used in small industrial firms, and particularly how public sector involvement influences the co-production process and its outcomes. The lack of a single established theoretical framework makes the subject well suited for explorative qualitative methods, which are oriented toward exploration, discovery and inductive reasoning (Patton 1990). After a number of pilot interviews were conducted, the KISA client firm sample was designed to ensure that interviews would bring in data on the utilization of both private and public sector provided KISA. About half of the interviewed manufacturing firms had been listed as Tekes or TE-Centre funding recipients, the other half of the sample firms were non-recipients of public support. The line of business (four-digit level in NACE classification) and location of recipient and non-recipient firms were matched. The client firm interviews were semi-structured personal interviews. Almost all of the interviewees were managing directors⁷. The average turnover of the interviewed 51 SMEs was 2,6M€. The largest sample firm employed 70 staff, whereas the two smallest firms had each a staff of five. Sample firms were engaged a variety of different lines of businesses but about half of the businesses is specialized in metal product and machinery manufacturing.⁸ The interviews produced many accounts on the use of knowledge-intensive services. In a typical case commonly used services in connection with innovation and development processes include technical and R&D services, IT services, management consulting.

The analysis is based on thorough utilisation of the interview transcripts and interview notes. Observations were examined, categorized and re-organized in the analysis. The method gives rise to numerous emerging themes, which are then reflected back on the data. System competence as a concept emerged in the inductive process from the interview material. Typically the managing directors made statements that suggested the presence or absence of specific skills or competences required in their dealings with public sector organisations.

⁶ Reported in Kuusisto and Viljamaa (2006).

⁷ In addition, a number of KISA provider representatives were interviewed, including both private (KIBS) providers and RTOs.

⁸ The funding-recipient set was used to direct the sampling of non-recipient firms, and Southern Ostrobothnia is a metal industry region.

5 Co-production competence

Ritter and Gemünden (2003) include in their concept of competence both task execution and its antecedents (skills, knowledge and qualifications).⁹ Here, the latter component is focussed upon, and an attitudinal dimension included. Co-production competence and 'system competence' are considered separately since their role in innovation processes is different:

- *Co-production competence* consists of the necessary knowledge, skills and willingness to work in co-operation with an external KISA provider
- *System competence* consists of necessary knowledge, skills and willingness to work in co-operation with policy implementation agencies

Figure 1 illustrates that client's co-production competence consists of expertise, ability and willingness to participate in the joint effort¹⁰. The main interest in this paper is in the specific expertise related to the development project itself. For example, a firm specialized in the construction of metal containers, topical expertise includes a level of expertise in metallurgy that plays an important role in the firm's products and production process. This sort of knowledge is often local, and 'sticky' in nature (Hippel, 1998). External experts, contributing the product development in such a firm, need to possess expertise that exceeds client firms' level in some respect, or provide expertise that is complementary to the client firms' capabilities.

Several earlier studies (e.g. Kuusisto, 2000), as well as the project JOINT, show that previous experience of working with a provider of services is often an element in provider selection; mutual familiarity makes co-production easier and less risky. Co-production competence is thus a relative issue. Both the client's and the provider's co-production competence can vary pending on their ability to communicate effectively: knowledge re-combinations cannot take place if knowledge is not shared. Recognizing and articulating the existing development needs can also be a problem, especially in the case of small client firms (cf. e.g. Bessant and Rush, 2000).

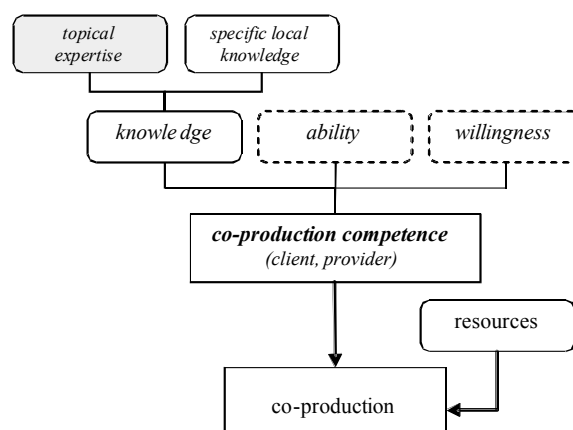


Figure 1: prerequisites to co-production

⁹ Cf. e.g. Sivadas and Dwyer (2000) on cooperative competence.

¹⁰ Willingness to share knowledge can also depend on who the KISA provider is (Larsen, 2000).

Competence is not a sufficient condition for co-production as such, sufficient resources for tasks at hand are also necessary. The above presented framework should not be considered inclusive, but rather an illustration of the key aspects under examination. The next section will discuss the role of system competence in getting access to co-production resources provided by the business support services.

6 System competence

System competence refers to the ability to recognize, seek out and successfully access public support opportunities, and the willingness to do so (Figure 2). When public support has some role in the co-production process (e.g. direct funding or subsidized expertise), either the KISA provider or the client has the system competence which allows utilisation of the public sector support. Know-how or knowledge of public KISA provision system as well as willingness to seek out possible public provision, are all needed in using e.g. Tekes R&D funding or TE-Centre training support.

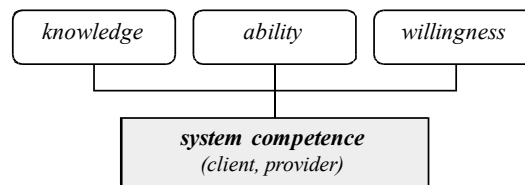


Figure 2: system competence

The *knowledge* component includes information about policy instruments and their administration, familiarity with administrative language, and often also familiar contact persons inside the executive agencies. *Ability* means that the firm is able to apply its knowledge usefully in accessing public support opportunities. The *willingness* component includes recipients (positive) attitude to use public interventions and, on more practical level, recipients tolerance for the formalities and rules that public funds recipient needs to comply with. Some of the interviewed firms clearly lacked this type of willingness:

It seems silly, that firms get money. I don't want it. [--] Firms don't need any support. Just opportunities. I think it's all wrong.

[--] I've had the impression that the reporting is such a hassle, that I just don't see myself using [Tekes-funding]. It simply involves too much external control. So far we've done everything with cash-flow financing. We lend money to the bank instead of the other way around. [--] And we try to avoid these types of projects. Then you're not tied down to anything. You got to make your own mistakes. And you don't need that paperwork, the bureaucracy.

Like co-production competence, system competence is largely based on the previous experience. Although information is available e.g. directly from public sector staff and from the internet, the ability to *apply* the information seems to be closely connected with experience. Thus a client firm that has no system competence will have to gain it as collaborates with public sector actors. However, a knowledgeable KISA provider can supply needed system competence for the client. Thus, system competence can be seen as a specific type of KISA and it can

have a significant influence on the R&D projects. If neither party has the needed system competence, either the client or the provider will need to gain it, or the co-production will need to take place without public sector support. If both the client and the provider have such experience, public actor involvement will probably be relatively easy.

What happened was, the researcher from [the RTO] called, seeing as how we'd cooperated before, he called us and asked whether there was anything on, and then they sort of suggested something. Then we figured, yeah, this is an idea we can run with. [--] And we had the human resources to take on one future oriented project. Anyway the contact came from their side and we took it up immediately. They were looking for ideas, and we found some together and that's how it went. [--] Tekes gave money. We went over there, Tekes offices in Pasila [--] and presented the project plan, and after that we could make the application. In a way the [R&D] idea was refined with these talks.

This Russian business, this is with the TE-Centre [--]. What happened was, I got the idea in October 2003 [--] and we got the application put in, let's see, in February. Before that we'd asked [N.N.] from the TE-Centre over to talk about it. He'd said it was no good applying, you won't get funding for this, but we decided to be stubborn about it [--] The application, yours truly wrote it, and I personally took it over to the TE-Centre. [--] [N.N.] originally was very negative about it, but we know each other well. He's worked with us since the 80's, and he knows how wacky I am. and I know how over-cautious he is. [--]

First of the above excerpts concerns a co-production case where both the client and the RTO provider possessed system competence. In the second case, the client firm's high level of system competence is highlighted as a key trigger for positive funding decision.

7 System competence in client firms' development processes

From the policy perspective, the importance of the system competence is highly interesting and the implications for the development projects are significant. In this paper the focus is on cases where client firm and KISA provider jointly seek business development solutions and public sector support for the co-production is considered. Purely privately funded co-production cases are excluded from the analysis. Firm-specific local knowledge is either possessed by both client and provider at the onset (if there is previous experience of working together), or gained by the provider during the co-production process. Two dimensions are examined more closely: topical expertise and system competence (grey background in Figures 1 and 2).

In development projects where the client firm is working on something close to its core competencies, it holds high-level of subject specific expertise. For example, the metal container manufacturer has specific expertise in the development of hinge mechanisms for containers. However, the same manufacturer may have less expertise in production management development. System competence is gained mainly through experience of working with public sector support such as Tekes in the case of R&D funding. Some SMEs have wealth of experience in using such supports, whereas others have little or none. Clearly, these two businesses are not in equal position to claim public support for their development projects. The frequent users of public services have developed high levels of system

competence, whereas inexperienced users are likely to possess little, if any system related competences¹¹. These two dimensions can be used in developing matrix that includes four basic groups (Figure 3).

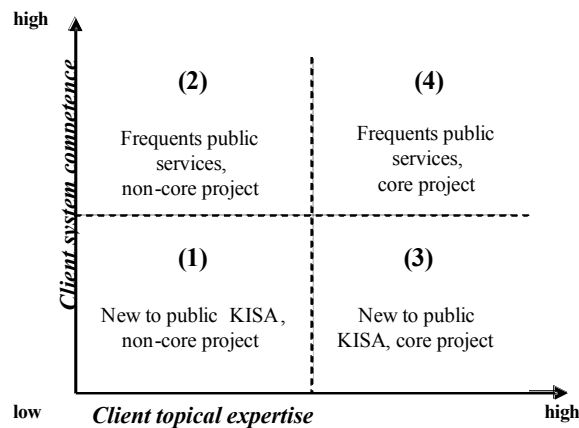


Figure 3: Public provision know-how and topical expertise in client firms

One has to be careful in using the above-described typologies such as, “high” and “low” groups based on the firms’ system competence and topical expertise. Nevertheless, the extreme cases are illustrative examples of each group, based on the data used in the study.¹²

In **group 1** the firm has little topical expertise and little experience of public sector support. One of the example cases is a machine shop that used a private business consultant to assess potential benefits of business restructuring. Another case involved a circuit plate manufacturer developing its financial decision-making systems in co-production with a private consultant. No public subsidy is used in the process. The consultant, however, has brought up the possibility of R&D funding, and the firm is likely to apply in the future:

We’ve never applied for [public sector R&D support], we’ve always paid out of our own pockets, we’ve just done it. [-- The consultant] figured, there’s clearly help to be had for this, we can apply for that, a firm our size. [--]

In both cases the client firms themselves recognized the need for external services, and sought out a private service provider. Another machine shop participated in regional development project, but left the project very soon. In that case the impulse to take part came from outside the firm, and the co-production was terminated without an innovation outcome.

In co-production cases of the first group the client firm is unlikely to look for public KISA provision on its own. The client firm may also have difficulty in recognizing and defining the need for external KISA. If the firm has internally identified a need for external expertise, it will rely on information from personal or business network

¹¹ An exception to the “rule” is an inexperienced user firm that recruits a new staff member with personal system competence.

¹² Each firm’s reported experience of public KISA provision was used to gauge system competence, and case descriptions considered in assessing how close to the firm’s core knowledge the co-production lay.

to look for a provider, or take up an offer from a provider that offers the service at the right time. If the provider initiating the co-production is a RTO, or has sufficient system competence to look for funding, the co-production may come to involve a public actor despite the client's lack of system competence.

Group 2 combines high system competence with low topical expertise. Here the firms have experience of public KISA provision and see it as a natural option. Examples include using public sector subsidies for export market research by a hoisting manufacturer, and financial consulting for a sheet metal tooling shop. *In the second group the client firms are likely to actively find out whether public provision could be used in the case.* Having experience of public KISA provision, they are probably (although not necessarily) also experienced users of external KISA in general. They are less likely to have an issue with need recognition. This does not signify that the firms in the second group rely solely on public provision, but rather that they will tend to consider it an alternative that should be investigated. They are also likely to have developed personal contacts within the public provision system that can be easily approached for information. A managing director of a machine tool manufacturer describes using TE-Centre support in quality system development thus:

The starting point was that we had problems, lack of order and some problems with quality and our warranties. I thought we must find a solution before our factory expansion is completed, or the same problems come up in the new shop as well. [-- We took an external consultant to help] because home-made solutions just don't work, that's how it is. [--] I knew [the consultant] was considered good in this particular field, and when I called the TE-Centre, seeing as they commonly finance quality development in firms, I asked them for confirmation [about the consultant]. He has worked quite a lot with TE-Centre projects on quality. [--] We also got funding. [--] For the subsidy one fills out a form. I signed it of course, but together [with the consultant] we looked it over to see what we need [to do].

In **group 3**, however, the client has high topical expertise in the substance being dealt with, but is not a versatile user of public KISA provision. One of the examples in this group was a product development project by a plastic product manufacturer, in which an RTO was used minimally for testing only. The firm financed the R&D out of its own funds, and gave the KISA provider only a limited role:

Giving [the RTO] assignment, we just said 'you do these measurements'. [--] We knew from experience to go to [this RTO] because through them we can get the whole thing, fire safety check et cetera, the CE-approvals we need. [--] We'd worked on earlier versions with [a less expensive RTO], checking out what works, but for this the other is better, because they are known, and can give the certificates.

In another case in group 3, a furniture manufacturer worked on a new product in private co-production with a designer. The initial impulse for the new product and designer came from the firm's customer. Direct public sector support was not used in either case. In third case, however, an external expert supplied the needed system competence to the client, a plastic pipe manufacturer.

This guy, that we later hired to manage the R&D project, he's been in the industry in different positions for a long time. [--] I knew him already from the previous post, and we had a chat about [the product issue], and he got very excited and was prepared to get into a project like that. He suggested it was possible to even get money for it, so

that we wouldn't have to pay for everything ourselves. That's actually how this Tekes came into it.

In this third group the client firm has only little knowledge of the public funding system, but it is dealing with an issue on which it has considerable internal expertise. The firm is likely to be familiar with most domestic sources of external expertise. The decision to enter co-production is less likely to be influenced by the possible availability of public KISA provision for SMEs in this group. However, KISA providers with system competence may introduce the possibility. In some of the group 3 cases, there is a very small pool of external expertise for the client firm to draw upon. The possibility of KISA providers competing for the work (and some therefore benefiting from their system competence) is smaller. For example in R&D projects the client firms can benefit from assistance with the public provision system, but they mainly have to rely on a KISA provider, or another mediating organisation, for it.

The **fourth group** consists of cases where the client firm has both good knowledge of public provision system and high topical expertise in substance area of the co-production. All such example cases in the present study involved public sector participation. For example, two firms described Tekes-funded R&D projects that utilize considerable external expertise. One of the firms had already finished the project and utilized the outcome, i.e. the innovative product was launched successfully. In the other firm the product development is still underway, but expectations are high. A third example, the only one among the analysed cases without direct public funding, involved a product development project carried out in close co-operation with an RTO, a university. The firm reports working regularly with the same university on student projects, and was able to glean practical benefits from this project as well.

What happens is, we map out internally what is the most urgent need we have, in terms of knowledge. Then we get in touch with [the university], have a talk with the professor to see whether there are suitable students, and when can we begin, and what it will cost. [--] The needs arise from our daily work, something chafes that we want to solve. [--] This [university] has I think the only academic chair in the field. It's not that we don't have this expertise ourselves, but we don't have the resources. And also, technology goes forward, and instruments improve, and we typically try to internalize new theoretical developments too, so as to improve our own performance. [--] The university has a central role. What we do relies on basic research and there simply aren't many experts [--].

In the fourth group the client firm is at its most independent in its choices. Knowing both the topical substance and the public provision system, *firms are best positioned to use the system to their best advantage*. In categories 1 and 3 a KISA provider can gain positional advantage, but the fourth group will be able to guard their interests and use public KISA provision intelligently in most situations.

8 Summary and implications

Firms differ in their ability to engage in co-production, and also in their system competence. The latter is important for innovation in situations where public sector inputs e.g. into R&D processes can make the difference between success and failure. System competence is clearly not a necessary condition of innovation, since

it relates to accessing public resources rather than directly to the ability to innovate (Figure 4) On the other hand innovation is clearly possible without system competence. System competence becomes relevant only when businesses are considering the use of public funding for the development project. The effects of previous familiarity with public organisations have been referred to e.g. in Väänänen (2003), but the phenomenon of system competence has not been previously described, nor its implications for SME and innovation policy considered. The present study, albeit not large scale, offers some insight into possible implications.

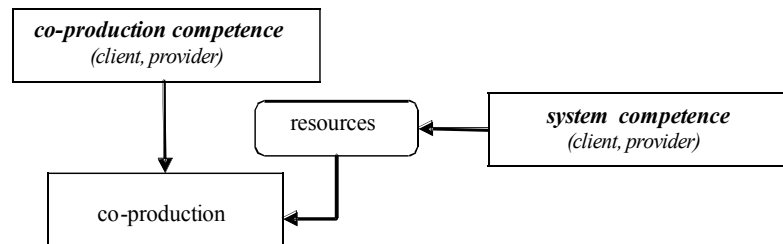


Figure 4: System competence contributes indirectly.

In terms of access to funding and external expertise, those SMEs that have system competence have an advantage over those businesses that do not know the public funding system. In other words, less capable innovators may compensate their competitive disadvantage by being more skilful acquiring public sector supports. Their more innovative competitor may not be even aware of available public supports. Further, an SME that possesses system competence will find it easier to utilize public funding, i.e. will expend less effort in the process, than a firm without system competence. Further, a system competent firm is less likely to expend resources in vain, e.g. seeking funding that cannot be granted. Such a firm is more likely to have a good understanding of when public funding can or should be used. For example, a firm with system competence will have a realistic picture of the level of effort required to administer a publicly funded R&D project.

For KISA providers seeking out SME clients, system competence has clear implications. A provider with system competence can ease the client's decision to use services by pointing out public funding possibilities, thus lowering the net cost of service to client. Such a provider can thus in effect offer his services at a cheaper rate than a similar provider without such competence could.¹³ Thus, providers with system competence would have a comparative advantage over the competitors that are less skilled in using the public supports system.

A more important point is perhaps the role which KISA providers often seem to have in assisting their clients in the applications and administrative tasks associated with the public funding. *KISA providers act as mediators and can thus compensate for a client's lack of system competence.* Providers with system competence thus can make a two-fold contribution to their clients' innovation processes: direct contribution (knowledge-inputs into co-production) and indirect contribution (support in access to public funding resources).

¹³ It is not clear, however, whether there in fact are KISA providers without system competence operating in areas where public funding is available. As a KISA provider stated: "One cannot compete with public sector supply".

Case evidence suggests that sometimes the KISA providers mediate so effectively, that a client does not fully appreciate the level of effort the provider must make. As one provider expressed it: “[i]t’s an illusion that public money is easy money.” Clients may take it for granted that KISA providers deal with the administrative requirements. When they do, the client’s burden is reduced, but only because the provider picks up the slack. It is thus possible that publicly funded projects are more laborious for KISA providers, which may reduce their incentives to promote public services. Hyytinen and Väänänen (2002) point out that small firms are less likely to apply for and receive government funding, and suggest that this may be indicative of too high application costs. The role of system competence in co-production cases examined in this research offers some support to the suggestion. Even assuming that KISA providers can provide the requisite competence to SMEs, the providers’ costs must be covered. It is logical to assume that either the client or the funding body must ultimately finance the provider’s system competence.

System competence may also be seen as a potential influence on the content of development activities undertaken by SMEs. An entrepreneur or KISA provider knowledgeable about funding preferences of the public sector may end up favouring activities that are likely to receive funding. For example Henrikson and Puhakka (1999) suggest that the innovation system indirectly affects the firms’ focus, albeit Väänänen’s (2003) results seem to contradict some suggested effects. A potentially more important effect connected with system competence relates perhaps to acquiring it in the first place, i.e. the first use of public sector services or funding. System competent providers may have an important function in lowering the threshold for small firms, and the first experience of using external KISA can have far-reaching effects on the firm’s future service use (e.g. Lith et al., 2005)

From the policy perspective the system competence as a prerequisite of public sector funding is not purely a negative phenomenon. It clearly gives a certain level of control for the executive agencies that deliver innovation policy. In the best scenario such control can lead into a more effective innovation system and enhanced business sector performance. More realistic situation is that system competence may direct some of the public supports to businesses that are not the most capable ones to succeed on the markets, leaving some very good candidates without much needed public support.

The present study, while suggesting that possessing system competence may be a distinct competitiveness factor for private businesses, offers no evidence that this is in fact the case. In other words, system competence is at least in part acting as a proxy for innovation/growth potential in public funding systems. Currently there is no proof that it is a bad proxy. From the funding agencies’ perspective it is probably simpler to work with SMEs and providers that do possess system competence. Also, a comprehensive evaluation study (Georghiou et al., 2003) suggests that use of services is highest in technology-oriented innovative small firms. At the same time, one has to bear in mind that R&D supports typically are biased towards technology, leaving many other aspects of innovation relatively untouched.

Further research on the systems competence and its impacts are clearly needed, including robust statistical analysis. Two policy implications can cautiously be put

forward, however. First, the role of system competent KISA providers should be openly considered and recognized. The availability of their services will tend to decrease the importance of client firms system competence as a competitiveness factor. This might involve e.g. acknowledging costs of using external expertise in application and administration more explicitly. Second, any further changes in the business and innovation support systems (e.g. KTM, 2005) should clearly recognise the system competence issues and customer perspective. Changes in the support system are inevitable and they almost automatically introduce new knowledge requirements. This constant accumulation cycle needs to be stop, otherwise system competence may become too decisive factor in obtaining public supports. Hence, there is an urgent need for cutting down red tape and comprehensive streamlining of the public support system.

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