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**Externalizing the Core:
Explaining Firms' Use of Employment
Intermediaries in the Information-
and Communication Technology Industries**

by

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ABSTRACT

Recent research on non-standard employment relations indicates that these arrangements may be a source of innovation and competitive advantage for the firm. In this paper, we analyze firms' motives for using two types of employment intermediaries (consultancy firms and temporary help agencies) in their core activities. We hypothesize that consultancy firms are used mainly by firms that pursue an innovation strategy or demand special competence, while temporary help agencies are used by firms that compete on low cost or require numerical flexibility. We find empirical support for these hypotheses in a sample of 501 firms in six information and communication industries in Norway. Our results suggest that consultancy firms, rather than temporary help agencies, are the main providers of knowledge and innovation capability from outside organizations' boundaries.

Externalizing the Core: Explaining Firms' Use of Employment Intermediaries in the Information- and Communication Technology Industries

Organizations' use of "external" work arrangements such as contractors and temporary help agencies has become an increasingly important topic of research in recent years. The use of these kinds of employment intermediaries creates "triadic" employment relations among the client firm, the contracting company or temporary help agency, and the employees of the contractors or temporary help agencies. A variety of general reasons have been suggested to account for why client organizations are likely to use contract companies and temporary help agencies. These motives include: reducing costs; achieving numerical flexibility or the capacity to adjust labor supply to changes in demand; and obtaining skills that are in short supply (e.g., Abraham and Taylor 1996; Houseman 2001). Several conceptual frameworks have been suggested for the use of contract companies and temporary help agencies; many of these frameworks underscore the importance of distinguishing between an organization's "core" value creation area and those that are more peripheral to this core activity (e.g., Lepak and Snell 1999, Matusik and Hill 1998).

Despite the growing prevalence and importance of such external work arrangements, research on this topic is limited in several ways. Most organizational studies of differences in externalization have tended to be "monolithic" in the sense that they have sought to explain why organizations externalize, but have not generally differentiated the positions that are externalized (e.g., Houseman 2001; Mangum et al. 1985). This is unfortunate, since the "human resource architecture" of an organization may differ internally, and a particular organization may simultaneously internalize and externalize different kinds of functions and occupational activities (Lepak and Snell 1999). Moreover, those studies that have looked at intra-organizational differences in the

use of employment intermediaries (Masters and Miles 2002; Harrison and Kelley 1993; Abraham and Taylor 1996) have generally not examined how the motives for externalization differ for contractors and temporary help agencies.

In this paper, we seek to overcome some of these limitations of past research by focusing on why organizations use external work arrangements in their primary or “core” activities. We first provide an overview of research on organizations’ use of these employment intermediaries. We differentiate contract companies and temporary help agencies with regard to their employment relations with client companies, and suggest that a firm’s motives for externalization will differ depending on which of the alternatives is used. We then test several hypotheses regarding these motives using data from a sample of 501 firms in six information and communication technology (ICT) industries in Norway.

USING EXTERNAL WORK ARRANGEMENTS: PREVIOUS RESEARCH

“Monolithic” studies

Most organizational studies of externalization analyze work arrangements at the organizational level, and do not differentiate among the various positions within the firm. For example, Houseman (2001), Kalleberg, Reynolds and Marsden (2003), Mangum, Mayall, and Nelson (1985), and Harrison and Kelley (1993) examine the extent to which different types of organizations as a whole use various types of nonstandard work arrangements. We refer to these studies as “monolithic” because they do not distinguish within-organizational differences in the use of these nonstandard work arrangements, thus assuming (at least implicitly) that organizations either “use” or “do not use” them.

This literature has produced useful information on the extent to which organizations use employment intermediaries and on the reasons why they do so. Since

these studies do not distinguish between types of organizational activities, however, they have not been able to test very precisely theoretical explanations of the motives for why organizations use the various types of external work arrangements. We argue that these motives are likely to vary by organizational functions and activities.

Distinguishing Organizational Functions: Core vs. Non-Core

Some studies assume explicitly that organizations are divided into groups of positions that differ in the extent to which they externalize their activities (e.g., Kalleberg and Marsden 2004). There are a variety of ways of differentiating organizations: at a general level a firm may be conceptualized as consisting of different parts or elements that may be termed activities, functions, departments, resources, competences and so on. Different theories emphasize different dimensions. Some theories of strategic management, for example, focus on “primary” versus “support” activities in order to capture a firm’s value configuration (Porter 1985); Fjeldstad and Stabell 1998). In addition, the resource-based view of the firm emphasizes critical resources or assets—the strategic core (Reve 1990)—of which competencies are often a vital part.

A basic distinction between organizational activities that is central to many of these theories is that between the “core” value creation activities or resources, which are vital for an organization’s competitive advantage, on the one hand, and those activities and resources that are more peripheral to the organization, on the other. All organizations have a “core” element, which may refer to the main product or service that it produces. The nature of the core activity or function differs from one organization to another: for an automobile manufacturing plant, the core activity might be assembling a car; for a school, it is educating students; and for a bank, it might be handling financial transactions.

The distinction between core and peripheral activities within organizations was popularized and applied to the issue of externalization by John Atkinson (1984) during the 1980s in Britain. The essence of his “flexible firm” model is that the organization’s core consists of those employees who are most vital for the firm and provide the basis of its key competence. Firms seek to develop “functional flexibility” in its core activities “... so that employees can be redeployed quickly and smoothly between activities and tasks” (Atkinson 1984: 4). The firm thus seeks to establish long-term relations with these highly committed, skilled employees. By contrast, in the periphery, firms seek “numerical flexibility” “... so that headcount can be quickly and easily increased or decreased in line with even short changes in the level of demand for labor” (Atkinson 1984: 4). The peripheral work force consists of variable elements, which is made possible in part due to externalization and the use of non-standard work arrangements such as temporary employment and contractors.

The “conventional wisdom” is that employment intermediaries and other non-standard work arrangements should be used only in the non-core or peripheral areas of the organization, not in the core activities. The assumption that organizations should internalize, not externalize, their core activities is shared by a number of influential theories in addition to the core-periphery model. One of James Thompson’s main theses, for example, is that firms should buffer those capabilities that are most vital to their competitiveness (Thompson 1967). Moreover, according to Transaction Cost theory, asset specificity is the most important factor driving boundary choice. In order to deter against opportunism, internalization is the preferred solution when asset specificity is high, while different contractual arrangements are applied to activities with a lower level of asset specificity (Williamson 1985, Poppo and Zenger 1998). Furthermore, the Resource-based view of the firm states that firms that are able to build rare, valuable,

non-substituable and difficult to imitate resources will achieve an advantage over their competitors. These critical resources should be governed internally, while other resources should be governed by market mechanisms (Kogut and Zander 1996, Moran and Ghoshal 1996). In line with this view, Pfeffer (1994: 22) argues that "... the recent trend toward using temporary help, part-time employees and contract workers, *particularly when such people are used in core activities*, flies in the face of the changing basis of competitive success" (emphasis in original). The Resource-based thus assumes organizations should "stick to their knitting" and seek to secure a competitive advantage by investing in their "core" workers who are involved in the main value-creating activity of the organization (Lepak and Snell 1999).

Why Firms May Use Employees Contract Companies and Temporary Help Agencies in their Core Activities

Each of the theories above, along with conventional wisdom, generally assumes that organizations should internalize their core value-creation activities. Externalization should occur, if at all, in non-core functions of the firm. Recent research has challenged this view, however, and has provided a more varied picture of the role that employment intermediaries may play for a client organization.

Theoretically, several mechanisms serve to undermine the conventional wisdom on the use of employment intermediaries in core activities. Poppo and Zenger (1998) argue that when technological change is rapid "internal routines, languages and embedded forms of knowledge may easily become rigidities that hamper performance" (Poppo and Zenger 1998: 872). There are potential learning costs associated with an emphasis on stability of employees and the homogeneous nature of culture and knowledge (Grandori 2001). Firms should be able to expose themselves to ideas from the outside in order to

stimulate creativity and prevent rigidity (Leonard-Barton 1995). This is consistent with the empirical finding that contract companies and temporary help agencies provide employees that are highly skilled professionals as well as low skilled workers (Kalleberg et al. 2003), and the most rapid growth in nonstandard work arrangements can be found in professional and technical functions (Matusik and Hill 1998).

Matusik and Hill (1999) argue that external staffing arrangements will be used in core value-creation areas of firms that compete in dynamic environments. A strategy based on the appropriation of quasi-rents often will not work in dynamic environments due to obsolescence and because internal resources that are slow and costly to accumulate may also be slow and costly to dispose of (Ghoshal et al 2001). In dynamic environments—where there is rapid technological change, short product cycles and ‘creative destruction—the firm should emphasize its ability to upgrade its stock of private and public knowledge. By contrast, in relatively stable environments, knowledge preservation is central while the development of new knowledge is less important and so the use of competence not employed by the firm should be avoided due to the dangers associated with knowledge leakage.

Obtaining competence from people not employed by the firm enables it to access knowledge, bring in new ideas and create an innovation-stimulating competence mix with the firm’s employees. Competitive advantage may thus reside in the network of relationships outside the firm as well as those resources governed internally (Dyer and Singh 1998). When the locus of innovation is to be found in interorganizational networks, the ability to access external knowledge and develop mechanisms to absorb these resources are critical for competitive advantage (Powell et al 1996, Liebeskind et al 1996). Using external work arrangements in combination with the employees of the firm therefore has a value-creation potential. If properly managed, the gains from knowledge

creation should outweigh the dangers of knowledge leakages.

Support for the proposition that external work arrangements are used in the core value-creating activities of firms operating in dynamic environments was found in a recent study of firms in computer services (Nesheim 2003). He showed that firms that had a strategy based on innovation and product development used such arrangements to a larger extent than other firms.

HYPOTHESES

We have argued that the “conventional wisdom” that firms should not externalize their core activities may be wrong in certain situations, especially for firms operating in dynamic environments and experiencing rapid technological change. Research emphasizing learning costs, core rigidities and the potential of knowledge residing outside organizational boundaries suggest that in dynamic environments, human capital not connected to the firm through employment provide a potential source of industry “best practices,” competence and new ideas, which combined with the employees of the firm should enhance the competitiveness of the firm.

Firms may also have different motives for using employment intermediaries in their core activities, depending on the nature of their environments and other competitive issues. Some might be concerned mainly with developing *qualitative* flexibility, which refers to the ability to assess and create new knowledge and to change tasks and activities according to changes in the market, the strategy of the firm and relevant technology. Other organizations may emphasize more *numerical* flexibility, or the ability to change the number of personnel working on certain tasks according to changes.

Moreover, organizations are likely to use different kinds of employment intermediaries depending on which of these forms of flexibility they are most concerned

about. A basic distinction between types of employment intermediary is who supervises the work of the intermediary's employees: client organizations that use contract companies cede supervisory control of the activity to the contract company, while the client organization supervises workers from temporary help agencies (Pfeffer and Baron, 1988; Kalleberg and Marsden 2004). We expect that organizations will use consultancy firms when they need a specific skill or competence, since the client organization does not have the capacity to supervise employees with these skills. Personnel from temporary help firms, on the other hand, provide more standardized and substitutable competence to the firm. Although temporary help agencies have increasingly entered into market niches where professional competencies are required, clerical workers in a lower skill category constitute a large share of the personnel in such firms. We elaborate on these arguments below.

Demand for Special Competence

In the core activities of the firm, the use of consultants is mainly to provide qualitative flexibility or the ability to make vital changes in substantive elements of the firms' value configuration, rather than to change the amount of such inputs over time. Given the difference in the services and competencies offered by consulting firms compared to temporary help agencies, customer firms will tend to turn to the first mentioned group when they require special competence. Note that this pattern should prevail, regardless of whether or not the firm competes with regard to innovation and product development. A firm that demands special competence or expertise only available from external sources will tend to use personnel from consultancy firms. As we suggested above, if a client does not have the special competency required to perform the

task, then it is not in a good position to supervise the work of employees hired from the outside to perform these activities. We thus hypothesize that:

Hypothesis 1. Organizations are more likely to use personnel from consultancy firms in the core activities when they demand special competence.

The Impact of Strategy: Innovation vs. Low-cost

Firms that operate in similar environments may choose different responses and strategies. Hill and Jones (2001) argue that competitive advantages are based on four factors: efficiency, quality, innovation and customer responsiveness. We believe that the building and creation of knowledge is especially vital for firms that compete on innovation and product development rather than imitation, costs or economies of scale. Innovation requires a continuous development of ideas. One vital source of ideas is found in experts who are connected to the firm through other types of contracts than employment contracts. A firm that competes on the basis of their ability to innovate should have more external employees involved in their core-value creation functions, compared to other firms. This hypothesis was supported in a study of 26 firms in ICT-services (Nesheim 2003).

The potential of external competence to contribute to innovation and product development will in most instances be larger when personnel from consultancy firms are involved, compared to personnel from temporary help agencies. As we hypothesized in H1, the first group is more likely to possess competencies that are useful to in assessing industry best practices and bringing in personnel that create an innovation-stimulating competence mix with the employees of the focal firm. Therefore, we expect there to be a positive relation between innovation strategy and the use of consultants.

Hypothesis 2. Organizations that pursue an innovation strategy are more likely to use personnel from consulting firms in their core activities compared to organizations that do not.

Organizations' use of personnel from temporary help agencies, on the other hand, is likely to be related to price and cost leadership strategies. There are several mechanisms by which the use of this staffing practice may reduce costs for the client firm: it does not incur training costs, recruitment costs are less than ordinary employment, and the client firm is able to manage capacity more efficiently.

Hypothesis 3. Organizations that pursue a low-cost strategy are more likely to use personnel from temporary help agencies in the core activity, compared to organizations that do not.

Extra capacity

Organizations are apt to use temporary help agencies in their core activities when they are seeking to obtain *numerical* flexibility. Thus, we expect such personnel to be used when extra capacity is needed. Due to the nature of the employment contracts in question, they may easily be discarded when demand for workers lessens. Using personnel from temporary help agencies entail lower exit costs—monetarily as well as reputation costs—than using internal employees who have open-ended contracts. We thus expect that:

Hypothesis 4. Organizations that need extra capacity are more likely to use temporary help agencies in the core activity.

Table 1 summarizes our hypotheses. We argue that the motives of organizations for using consulting companies and temporary help agencies differ. While we expect the

former to be related to innovation, qualitative flexibility and the demand for special competence, the latter should be more strongly related to cost leadership, numerical flexibility, and demand for extra capacity.

Table 1: Hypotheses: A dual model of the use of employment intermediaries in the core activities

Dimension	Personnel employed by consultancy firms	Temporary help firms
Strategy	Innovation (H2)	Cost leadership (H3)
Type of flexibility	Qualitative	Numerical
Motive	Special competence (H1)	Extra capacity (H4)

DATA

To test our hypotheses, we chose a business sector that is generally characterized by a high degree of dynamism and rapid market and technological change: firms in the information and communication technology (ICT) sectors. Given these dynamic and competitive environmental features, we expect this sector to be characterized by the conditions that make use of contract companies and temporary help agencies in core activities particularly high. Due to the evolving nature of this business arena, the pervasiveness of ICT-technology among business firms as well as the existing structure of industry categories, we felt it was futile to try to establish objective boundaries between ICT-firms and other firms. Rather, we adopted a working definition of ICT-firms as those firms that produce ICT-products, sell those products or provide services based on

ICT-technology. We conducted the empirical study with 501 Norwegian ICT firms that had five employees and more, including media. The latter category was included to capture the tendency towards converging technology and blurred boundary between telecommunications, data and mass media.

We identified six sectors: 1) Production firms, 2) wholesale and retail sales of ICT-products, 3) telecommunications, 4) ICT-services, 5) media, and 6) other ICT-firms. We included the latter category because the rapid innovation and product development, combined with changes in boundaries between industries and the evolving e-commerce, have led to several ICT-firms being classified outside the NACE-categories employed in the creation of the five categories above. We identified “other ICT-firms” in two steps. First, we compiled a list from “the 500 largest Norwegian ICT-firms,” membership lists of two industry/employer associations, a list of consultancy firms that we judged to provide ICT- services, and two lists of firms providing e-commerce. Secondly, we checked for “doubles” and excluded those firms that already were included in subgroup 1-5. In this manner, we identified a sampling frame of 326 “other ICT-firms.”

OPERATIONALIZATION OF VARIABLES

Table 2 presents descriptive statistics on our dependent and independent variables.

Table 2: Descriptive Statistics

	N	Min	Max	Mean	Std. Dev.
<i>Dependent variables</i>					
Use Consultants in core	501	0	1	0,33	0,47
Use THA in core	501	0	1	0,21	0,41
<i>Explanatory variables</i>					
Insize	501	0	8,34	2,90	1,32
Organization age	501	0	232	22,93	29,69
Uncertainty	498	1	5	3,23	1,20
Seasonality	499	1	5	3,14	1,47
Price	498	1	5	3,15	1,18
Innovate	494	1	5	3,54	1,10
External labor provide competence	324	3	15	10,58	3,10
Capacity	327	1	5	3,91	1,38
Valid N	317				

Note:

Coding of dummy-variables:

1=yes, 0=no

Coding of ordinal variables:

5= agree completely, ..1= disagree completely

Our dependent variables are whether (=1) or not (=0) the firms used each of two types of employment intermediaries (personnel from consultancy firms and temporary help agencies) in their *core or primary activities*. We identified the core activity by means of the following question:

“We are interested in the kind of work that is being done in the firm. Examples are “sales and marketing of hardware,” “development and sales of software,” etc

What are the most vital activities and tasks in the firm?” (open ended response).

We measured our independent variables by the respondents’ answer to various statements, using a 1-5 scale from “completely disagree” to “completely agree”:

* Price strategy: “In the markets where we operate, price is the most important source of competitive advantage.”

* Innovation strategy: “In the markets where we operate the ability to innovate and develop new products are the most important source of competitive advantage”.

To capture the various motives for using employment intermediaries we asked a series of questions to managers in firms that used at least one of the work arrangements in question in their core activities. These questions were asked specifically with regard to this activity. While the total sample is 501, we obtained 335 answers from firms that used external work arrangements in the core activity.

* Special competence: We constructed an additive index based on the following items: “Externals’ contribute with special competence in key areas for the firm,” “some of the ‘externals’ have competence that is difficult to replace,” and “‘externals’ primarily work on tasks that require a relatively low degree of competence” (Chronbach’s alpha is 0.66).

* Extra capacity: “Externals give us extra capacity when the work load increases.”

RESULTS

The results presented in Table 3 indicate the extent to which firms in the ICT industries use external work arrangements in their core activities. Among the 501 firms that responded, 33% used personnel from consultancy firms and 21% used temporary help agencies in their core activities. The share of firms that did not use any of these two arrangements was 56% (not reported in Table 3). Thus, 218 out of 501 firms (44%) actually used one or more of the external work arrangements in their core activities.

Table 3: Percentage of firms that use external work arrangements

Industry Sector	Consultancy firms	Temporary help agencies
Total sample (N=501)	33	21
ICT-industry (N=50)	30	24
ICT-retail/wholesale (N=50)	24	16
Telecom (N=23)	38	29
ICT-consultancy (N=150)	48	22
Media (N=150)	24	19
Other (N=78)	28	23

Comparing use in the various economic sectors, we see that ICT-consultants most often used (other) consultancy firms, while there are small differences for temporary help firms. In general, retail and wholesale sales seem to have the lowest incidence of external work arrangements, although the results for some of the sectors should be interpreted cautiously due to low sample size.

Correlates of the Use of Employment Intermediaries

Table 4 presents the correlation coefficients, means and standard deviations among the independent variables.

Table 4: Means, standard deviations and correlations among the independent variables

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Org. size (ln) ^{a)}						
(2) Org. Age ^{a)}	0,313**					
(3) Price strategy	0,079	0,047				
(4) Innovation strategy	0,015	-0,124**	-0,118**			
(5) Special competence	-0,161**	-0,133*	-0,041	0,118*		
(6) Extra capacity	0,081	-0,115	0,014	0,02	-0,027	
Mean	2,9	22,93	3,15	3,54	3,53	3,91
Standard deviation	1,32	29,69	1,18	1,1	1,03	1,38

* p<0.05, ** p<0.01

a) control variables

Table 5 present the results for our logistic regression analyses. In addition to the independent variables discussed above, we included organizational size (number of employees) and organizational age as control variables. For each of the two dependent variables, we present the results for two models—model 2 includes the variables on motives, while model 1 does not.

Table 5: Determinants of firms' use of personnel from consultancy firms and temporary help agencies in core activities

Explanatory Variable	Consultancy Firms				Temporary Help Agencies			
	Model 1		Model 2		Model 1		Model 2	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Org.size	0,366**	0,088	0,351**	0,109	0,672**	0,105	0,700**	0,135
Org.age	0,000	0,004	0,001	0,005	0,009*	0,004	0,019**	0,006
Price strategy	-0,151	0,089	-0,039	0,113	0,294**	0,110	0,488**	0,132
Innovation strategy	0,237*	0,100	0,242*	0,122	0,128	0,117	0,226	0,138
Special competence			0,193**	0,044			-0,149**	0,048
Extra capacity			0,031	0,095			0,078	0,111
ICT-industry	0,233	0,419	-0,301	0,513	0,665	0,480	0,493	0,578
ICT-wh/detail	0,472	0,452	0,305	0,604	0,842	0,548	1,203	0,680
Telecom	0,724	0,564	0,072	0,665	1,172	0,648	0,746	0,739
ICT-services	1,214**	0,340	1,016*	0,434	0,973*	0,420	1,016*	0,513
Media	0,141	0,344	-0,699	0,419	0,758	0,410	0,112	0,504
Constant	-2,712**	0,631	-4,047**	0,998	-5,810**	0,827	-5,102**	1,162
N	483		319		493		319	
Nagelkerke R2	0,144		0,282		0,232		0,384	

* p<0.05, ** p<0.01

The left panel in Table 5 presents the results for use of personnel from consultancy firms. The effect of special competence is significant at the .01 level, which supports our first hypothesis. Consistent with our second hypothesis, there is also a positive effect of innovation strategy in both models. When motives are introduced in model 2, the effect of innovation is reducedⁱ, but is still significant at the .05 level. There is also a positive effect of organizational size and ICT service firms tend to use this work arrangement more than “other” ICT industries (the omitted category).

The right panel in Table 5 shows the results for temporary help firms. There is a positive effect of price strategy, which supports our third hypothesis. However, there is no significant relation between demand for extra capacity and the use of temporary help agencies, which is unexpected given our fourth hypothesis. Moreover, the effect of special competence on use of temporary help agencies is significant and negative. While we did not hypothesize this negative effect, it is not inconsistent with our assumptions that temporary help agencies are not likely to be used to provide special competence.

These findings confirm the general proposition that organizations use personnel from consultancy firms and temporary help agencies in their core activities for different reasons. Firms use personnel from consultancy firms in order to enhance innovation and to bring special competence into the organization. These work arrangements may be said to be at least *related* to the critical competence resources for the firm if not constituting such resources in themselves, and should be vital in terms of competitiveness for the firm. While acknowledging that there is a magnitude of skills and competencies represented as well as types of relations with the customer firm, this general picture is compatible with Matusik and Hill’s (1998) model of external work arrangements in the core value-creation areas of the firm. On the other hand, the use of temporary help agencies appears to be

driven by price strategy, and not by demand for extra capacity or other variables related to numerical flexibility.

CONCLUSIONS AND IMPLICATIONS

The point of departure of this paper was 1) the *observation* that external work arrangements often involve technical and professional expertise, which may contribute the critical resources for the client firms, and 2) *theoretical arguments* predicting that client firms will tend to use such arrangements in their core activities when they operate in highly dynamic environments.

We argued for a “dual” model of external work arrangements in the core activities, where consultancy companies are used to promote an innovation strategy and to contribute to the acquisition of special competence, while temporary help agencies are used in relation to a price strategy. The primary contribution of the paper is our finding that there are different motives for the use of different types of employment intermediaries in the core activities of client firms. We found that different mechanisms explain the use of these two employment intermediaries. Client firms’ uses of consultancy firms were related to both innovation strategy and demand for special competence. Thus, this specific work arrangement is vital towards bringing external competence across organizational boundaries, and may have an important role for the focal firm’s competitiveness. Referring to Matusik and Hill (1998), it is firms’ use of personnel from consultancy firms—doing work for, but not employed by the client firm—that is relevant for the core value creation areas of the firm, and not external work arrangements in general. The use of temporary help agencies was related to price strategy, but we found no relation to the variables connected to numerical flexibility, such as the need for extra capacity.

Further research is needed to overcome several limitations of our study. In particular, while we focused on the organization's core activities in order to test hypotheses about the motives for using employment intermediaries in these activities relatively precisely, we did not examine their use in non-core activities. Thus, we do not know if motives and strategies attributable to the core activities are distinct to these activities. Studies should include both the core activities (studied here) and support activities. This would enable the analysis of how the use of external work arrangements differs between core and non-core activities and of the extent to which the use of a *similar* work arrangement (e.g., temporary help agencies) is explained by different mechanisms in different parts (core vs. non-core) of the firm.

Moreover, further research should investigate the extent to which these findings can be generalized to other dynamic business sectors and to different countries. Are there similar or different mechanisms in other (customer) sectors or organizational fields? To what extent do differentiation and specialization of the external suppliers of competence matter? Should the firm-centred explanatory model employed here be supplemented by perspectives that emphasize power and dependency relations between external competence providers and client firms, as well as the preferences of the personnel in question?

We have established that a specific work arrangement is extensively used in core activities, which suggests that such external competencies are vital for development of the firm's competitiveness. From a management perspective, it is important to analyze the mechanisms, challenges and pitfalls across permeable organizational boundaries. What are the mechanisms that stimulate inter-organizational learning and knowledge dissemination and creation inside the client firm? What kind of relations and governance mechanisms are instrumental, with respect to both the external personnel as well as the

consultancy firm involved? Here, we have emphasized an instrumental perspective and strategic considerations on part of the focal firm. Additional insights are likely to be obtained from the use of a more processual approach may be used, which may help to capture incremental emergent patterns of action over time. As organizational environments become more dynamic and technological change accelerates, the study of how and why organizations externalize their activities is likely to increase in importance.

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Appendix

Table A-1 gives an overview of the sampling frames, sample size and response rates in the six sectors. The data were collected by the use of a standardized questionnaire, administered through telephone interviews by an external professional bureau.

Table A-1. Sampling frame, sample and response.

<i>Sector</i>	<i>NACE categories</i>	<i>Sampling frame</i>	<i>Sample size</i>	<i>Response rate</i>
1. ICT products	Manufacturing of computers and other information processing equipment (30.020), manufacture of insulated wire and cable (31.3), manufacture of electronic valves and tubes and other electronic components (32.1), manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy (32.2), manufacture of television receivers, sound or video recording or reproducing apparatus and associated goods, (32.3), manufacture of instruments and appliances for measuring, checking, testing, etc (33.2), and manufacture of industrial process control equipment (33.3)	116	97	50 (52 %)
2. ICT wholesale and retail	Wholesale of office machinery and equipment (51.64), retail sale of electrical household appliances, radio and television goods (52.451), and retail sale of computers, office equipment and telecommunication equipment (52.485)	569	351	50 (13 %)
3. Telecommunications	Telecommunications (64.2)	73	51	21 (41 %)
4. ICT services	Hardware consultancy (72.1), software consultancy and supply (72.2), data processing (72.30), and data base activity (72.4)	650	466	150 (32 %)
5. Media	Publishing of newspapers (22.12), publishing of journals or periodicals (22.13), publishing of sound recordings (22.14), printing of newspapers (22.21), reproduction of video recording (22.32), reproduction of computer media (22.33), advertising (74.4), motion picture and video activities (92.1), and radio and television activities (92.2)	623	470	150 (32 %)
6. Other	See description in text	326	220	80 (26 %)
Total			1655	501 (30%)

ⁱ The probability of using consultancy firms when scoring very low on innovation strategy is 0.08, whereas the probability increases to 0.18 when scoring very high on innovation strategy. In model 2, innovation strategy also has a positive effect on the use of consultancy firms, although the size of the effect is smaller (change in probability from 0.02 to 0.06). Probabilities are computed based on the Logit-model:

$$P(y=1|L)=\exp(L)/1+\exp(L).$$