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Abstract

The aim of this paper is to determine the relevance of organizational factors on the means and intensity of knowledge transfer among Humanities and Social Science (HSS) research groups in the Spanish context. We conduct a descriptive and correlation analysis on a sample of HSS research groups from the Spanish Council for Scientific Research (CSIC). Results show that a focus on knowledge transfer is not related to how groups and institutes are organized. Nevertheless, this activity is correlated with economic incentives and a management adapted to the specific characteristics of the HSS area. We also show the influence of CSIC's policy and management on the informal nature of the relationships among research groups and external agents. Thus, knowledge transfer activities carried out by researchers regardless of institutional organization are related to a lack of awareness about the institutional and personal advantages to be gained from formalizing these activities.

Keywords

Knowledge transfer, Humanities and Social Sciences, Organizational factors.

1 Introduction

Research organizations traditionally have focused on research rather than Knowledge Transfer (KT) activities. Thus, KT has received lower academic recognition with respect to traditional research activities such as publication in peer-reviewed journals, presentation at academic conferences and winning research grants from public agencies. Nevertheless, the emergence of the so called *Knowledge-based Society* has highlighted the relevance of agents´ interactions based on their contribution to the generation, adaptation and application of knowledge to this new society, and its impact on society as a whole (David and Foray, 2002; Cloutier, 2003).

Since the mid 1980s, many studies have analysed technology transfer processes from various points of view, such as linkage activities between universities and firms and technology transfer offices (TTO) (Feller, 1987; Etzkowitz, 1994; Gilbert and Cordeyhayes, 1996; Siegel et al., 2004). Other studies have focused on aspects that influence knowledge transfer activities such as organizational factors (Lavis et al., 2003; Jacobson et al., 2004) or framework conditions (Fernández-de-Lucio et al., 2000; Polt et al., 2001). Also, due to the increasing relevance of knowledge in the economy and the important role given to knowledge generating entities, analysis of the KT process has intensified in recent years.

Many KT studies focus on the perspective of demand from industrial enterprises and supply of experimental sciences, and extend their findings to other productive sectors and knowledge areas. Studies related to HSS have recently received greater attention due to the growing weight of services in the economy and the importance of cultural factors in the development of innovation processes (CST, 2000; Cloutier, 2003 op. cit.; Ferlie and Wood, 2003). Thus, some authors have researched innovation processes in the service sectors (Amable and Palombarini, 1998; Djellal and Gallouj, 2005; Gallaher

and Petrusa, 2006), the use of knowledge in social studies (Landry et al., 2001), types of use ─symbolic, conceptual and instrumental─ (Beyer and Trice, 1982), and the differences between HSS and other areas of knowledge (Castro-Martínez et al., 2008). Other studies evaluate the impact of knowledge at the political level (Amara et al., 2004) or outside the academic sphere (Molas-Gallart et al., 2000). Although there is a greater focus on HSS, KT studies in this area are still scarce.

This paper is an attempt to fill the gap in HSS areas related to the scarcity of KT studies. It tries to contribute to the identification of organizational factors related to groups' engagement in KT activities in these areas.

The next section establishes the theoretical framework related to KT and the organizational factors influencing KT activities, along with some research questions. Section 3 presents the methodology and data and section 4 presents the results of the analysis. Section 5 offers some conclusions and section 6 outlines some directions for future research.

2   KT and organizational factors

As already mentioned, many studies have focused on KT activities from different perspectives. In addition to those mentioned above, some research proposes models to systemize and organize the factors identified in the literature reviews as relevant to KT (Bozeman, 2000; Agrawal, 2001; Lavis et al., 2003 op. cit.; Landry et al., 2007).

Bozeman´s KT model is considered most appropriate for the analysis of the factors related to KT activities because it establishes a framework that groups, categorizes, classifies and simplifies a significant number of KT determinants, into five dimensions:

- *The transfer agents:* institution or organization seeking to transfer knowledge. These agents are research groups and the broader organizations in which they are located.

Agents' characteristics are influenced by history, composition, culture, policy, as well as by organizational factors and institutional aspects.

- *The transfer object:* contents and form of what is being transferred (tacit or codified knowledge in the form of a product, a method, a process, a design, etc.).

- *The transfer media:* means through which KT occurs, that is, whether knowledge is transferred through formal or informal mechanisms or collaborations.

- *The transfer recipient:* organization or institution receiving the transfer object (private individuals, firms, public sector organizations, etc.).

- *The demand environment:* factors related to market, social, cultural and economic need for the transferred object.

In a framework in which KT has increasing relevance, this paper is an attempt to shed light on the factors that promote KT or reduce the obstacles to it. Among the barriers described in the literature many are related to the transfer agents, and more specifically their organizational features. Within this context, Jacobson et al. (2004 op. cit.) describe organizational factors that influence researchers´ commitment to KT activities and suggest five domains of organizational policy and practice (promotion and tenure, resources and funding, structures, KT orientation, and documentation) critical to promoting or impeding KT. The most frequent organizational barriers to KT in the literature are reward and incentive systems that value traditional academic output over the KT (Tornquist and Hoenack, 1996; Coburn, 1998; Polt et al., 2001 op. cit.; Jacobson et al., 2004 op. cit.), lack of management and administrative support (Polt et al., 2001 op. cit.; Jacobson et al., 2004 op. cit.), the institutional orientation and mission (Polt et al., 2001 op. cit.; SISE, 2006).

Barriers to KT can be categorized also according to different organizational levels. Thus, Heinze et al. (2009) classify the variables in their study in response to three levels of disaggregation: group, organizational and institutional characteristics. Similarly, the factors affecting KT can also be classified according to an organizational taxonomy for research organizations (Rey et al., 2008): research group, research institute, parent organization. Scientific activities, such as research, knowledge production and KT, are mostly conducted by group/team work. This justifies an analysis focused on the KT conducted by a research group rather than individual researchers.

Framed within studies related to KT in the HSS, the aim of this work is to determine which organizational factors are related to the degree of KT activity carried out by HSS research groups in the Spanish context.

The research questions for this study are:

- To what extent do factors related to the different organizational levels involving research groups (own research group, research institute and parent organization) are related to the intensity with which research groups conduct KT activities?

- What factors at the different organizational levels are relevant in the way (formal/informal) research groups conduct KT activities?

The empirical evidence supporting this research comes from a survey conducted for the HSS research groups of CSIC. . In 2005 CSIC launched its first planning by objectives (2006-2009) (CSIC, 2007) and has just produced the second one (2010-2013). In both cases, CSIC envisaged implementation of institutional initiatives to promote relationships with the socio-economic environment in all areas of knowledge. In this context, the results of the study constitute preliminary information that may be useful to CSIC's initiatives in the HSS area. It must be noted that the availability of information

on the activities of HSS research groups and their willingness to collaborate on projects (because of their predictable institutional impact) favoured this investigation.

Before turning our attention to the methodology section, some particular aspects related to the area are briefly introduced to a greater understanding of the context of this study. As noted by many authors, research carried out by HSS and its benefits are hard to enumerate and capitalize (Cassitiy and Ang, 2006). Thus, many authors coincide in the less tangible and measurable results generated in this "soft" sciences which difficult their evaluation (Molas-Gallart et al., 2000; Moed et al., 2002; Ibarra et al., 2006; Nederhof, 2006). Partners collaborating with HSS groups are mainly public sector (local, regional, national), international organizations (OCDE, UNESCO), cultural industry (audiovisual, museums, etc.), private firms of the bank and tourism sector, and non-governmental organizations such as trade unions (Cassity and Ang; Castro-Martínez et al., 2008).

3   Methodology and data

This study analyses the HSS collective of the CSIC, the most important public research organization in Spain. The area of HSS in the CSIC includes 280 researchers who are public servants, 225 contract researchers, and 43 research fellows, developing activities in 18 research institutes. The researchers belong to research groups, which are the unit of analysis in this study. The study sample includes 111 research groups[1] representing more than 90% of the research groups in HSS area in CSIC.

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[1] The main research lines of these groups include Landscape Archaeology; Edition and study of Greek and Latin Texts; Hebraic, Sephardic and Arab Studies; History of Hispanic Literature; Current Spanish and its linguistic variance; Theory of Literature, Theatre and Media; Literary Criticism; Musicology; Moral Philosophy; Science, Culture and Society; International Relations in the Modern World; Population Movements and Interethnic Relations; Social and Cultural Change; Cultural Heritage; Science, Technology and Society Studies; Environmental, Rural and Urban Economies; International and Development Studies; Demography; Globalization; Comparative Politics; Evaluation of Scientific

The theoretical KT model proposed by Bozeman (2000 op. cit.) constitutes the starting point of this analysis. Following his classification, the present study focuses on the characteristics of the transfer agent using an approach that analyses agents at different levels (Rey et al., 2008 op. cit.), and investigates the organizational factors related to KT activities (Polt et al., 2001 op. cit.; Jacobson et al., 2004 op. cit.).

The data were gathered in two phases. We conducted semi-structured, face-to-face interviews with a representative of each of the research groups identified, in May 2006 to March 2007. We used a questionnaire adapted from the one used by the Spanish OTRI[2] network (Castro-Martínez et al., 1997) to guide the face-to-face interviews to obtain the following information: composition and location of the research group, group's research activities, capabilities, and KT activities and experience. Following the interviews, interviewees were given written questionnaires based on the Bozeman categories of KT determinants. The questions were in the form of *checklists,* which used a four point Likert scale for the responses to most of the 48 questions. This constitutes the second phase of data collection. These checklist responses enabled us to systemize the information related to group characteristics and factors influencing attitudes to KT (Castro-Martínez et al., 2007).

The questionnaire included questions about activities carried out in the previous two years, and asked respondents to classify the influence of organizational factors with regard to three levels of analysis: research group, research institute and the parent organization (CSIC):

Activity; Economic Analysis; Innovation studies; Bibliometrics and Cybermetrics of Science and Technology.
[2] Research Result Transfer Office (RRTO)

1) Research group: shared goals, teamwork orientation, planning, existence of a leader and attitude towards the transfer processes (KT activities, their level of informality)

2) Research Institute: management team as the intermediary between the group and external agents, global strategic planning, support of non-scientific staff, and societal recognition of the institute as the facilitator of relationships with external agents.

3) Parent Organization: *CSIC policy characteristics*: promotion/marketing of KT, promotion of scientific career related to KT activities, consideration of the specificity of KT in the area of HSS, economic incentives associated with KT. *CSIC management characteristics:* support of CSIC´s management team, management procedures adapted to HSS area, structures and support services, adequacy of information about institutional channels of collaboration.

The values for the variables collected are integer ordinal numbers from 1 to 4. Thus, depending on the nature of the data, we use non-parametric techniques to analyse the relationships between organizational factors and level of KT, and degree of informality of KT activity. We have computed Spearman correlation coefficients (*rs*) (McCullagh, 1980), which measure the linear relationships between two variables. The coefficient is calculated as:

$$r_s = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

where $d_i = rx_i - ry_i$ is the difference between the ranges of X and Y, and n is the number of observations.

The interpretation of the Spearman coefficients *rs* is similar to the Pearson correlation. Values close to 1 indicate a strong positive correlation. Values close to -1 indicate a strong negative correlation. Values close to 0 indicate no linear correlation.

4   Results

In this section we present the results of the analysis of the relationships between KT activities and organizational factors in the HSS area of CSIC. We also examine to what extent research groups conduct KT activities through informal collaborations that do not exploit the transfer mechanisms put in place by the institution.

The results are presented in the three sections according to the relevant organizational level (research group, institute, parent organization - CSIC), with the parent organization further subdivided into policy and management.

Before presenting the results for the organizational levels, we discuss some descriptive variables related to KT activities and the degree of informality involved in the collaborations with external agents, which are the common denominators at all three levels (research group, research institute and parent organization). The results presented in Table 1 show that 41% of research groups stated their involvement in KT and collaboration as "fairly often / very often". 38% of research groups conducting KT activities stated that more than 40% of their relationships occurred through relationships that were not visible to the organization, that is, through personal relationships which cannot be measured or taken account of by the institute or the CSIC (16.5% "fairly often" and 21.5% "very often").

Table 1. Frequency of KT activities and informality

	Very seldom	A little	Fairly often	Very often
KT activities	26.7%	32.4%	26.7%	14.3%
Informality[3]	43.0%	19.0%	16.5%	21.5%

4.1 Organizational level: research group

At this level we distinguish factors that influence the organization of research groups: orientation to teamwork (OT), shared goals (SG), work plans (WP) and existence of a group leader (GL).

Table 2 presents the mean, standard deviations, and mode of the variables related to research groups. None of the variables analysed shows overdispersion[4] in the data. The most common value for all variables is 3 ("fairly often") therefore, most groups feel that they have a collaborative, planned and well organized working style.

Table 2.Definitions of group variables

Variable	Description	Scale	Mean	Mode	Standard Deviation
Organizational factors at group level					
OT	Orientation to Teamwork	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, there is very seldom an OT to conduct research. 4, there is very often an OT to conduct research	3.02	3	0.75
SG	Shared Goals	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, Goals and interests are very seldom shared by the group members. 4, Goals and interests are very often shared by the group members	3.15	3	0.73
WP	Work Plans	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, There is very seldom work plans. 4, There is very often work plans.	2.95	3	0.73
GL	Group Leader	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, There is very seldom a group leader. 4, There is very often a group leader.	2.85	3	0.96

[3] The question referring to degree of informality is: What percentage of the collaborations carried out by groups with non-scientific agents (companies, governments, associations, foundations, etc.) are informal (there is no formal contract between CSIC and the external entity)? Respondents were given the following answer options: less than 20%; between 20-40%; between 41-60%; more than 61%, which were translated into the four values on the Likert scale (from 1 = "very seldom" to 4 = "very often").

[4] Measure of dispersion: $\left(\frac{(sd\ (u_i))^2}{u_i} \right)$, where u_i is the average of the variable and $(sd(u_i))^2$ is the variance. If the coefficient of dispersion is greater than 1 there is possible overdispersion (Vives, 2002).

About 80% of research groups claimed to adopt a teamwork orientation and planned work, and have shared goals and common interests. Similarly, 67.8% (39.4% "fairly often", 28.4% "very often") considered that a member of their research group could be identified as the group leader (Table 2.a).

Table 2.a. Frequency at group level

	Very seldom	A little	Fairly often	Very often
OT	4.5%	13.6%	57.3%	24.5%
SG	1.8%	14.5%	50.9%	32.7%
WP	3.6%	18.2%	57.3%	20.9%
GL	11.0%	21.1%	39.4%	28.4%

Table 2.b presents the results of the correlation analysis for research group organizational factors and KT activities, and degree of informality of these activities. None of the group organizational factors is significantly related to KT activities or formal institutional means of cooperation. The results suggest that the implementation of KT activities and their informality are not dependent on the organizational characteristics of the particular research group.

Table 2.b. Correlations at group level

	GROUP ORGANIZATIONAL LEVEL			
	OT	SG	WP	GL
KT activities	0.11	-0.03	-0.04	0.07
Informality	-0.15	0.01	0.16	-0.11

**Significance at 0.01, *Significance at 0.05

4.2 *Organizational level: the institute*

At the organizational level we can distinguish several factors: support from the institute's management team (IMT) for KT activities; global strategic planning (GSP)

by the institute; public recognition (PR) of the institute; and support for non-scientific staff (SNS) in management activities.

Some descriptive statistic such as mean, standard deviation and mode of the variables related to the institute are presented in Table 3. Although statistically there is no overdispersion in the data analysed, institutional variables show greater dispersion than research group variables with the average value being about half the average value of the research group variables. With the exception of PR where the mode is 2, the most common value for most institutional variables is 1, which is clearly lower than the values for the research group variables.

Table 3. Definitions of institute variables

Variable	Description	Scale	Mean	Mode	Standard Deviation
Organizational factors at institute level					
IMT	Institute Management Team	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, IMT facilitates very seldom external contacts. 4, IMT facilitates very often external contacts.	1.62	1	0.82
GSP	Global Strategic Planning	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, There is very seldom a GSP 4, There is very often an GSP	1.65	1	0.86
PR	Public Recognition	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, PR very seldom facilitates relationships with external agents. 4, PR very often facilitates much relationships with external agents	2.19	2	0.87
SNS	Support of Non-scientific Staff	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, There is very seldom SNS in management activities. 4, There is very often SNS in management activities.	1.50	1	0.73

Research groups felt that institutes do not provide sufficient formal structures to support KT activity. The research groups do not consider that within their institute there is a management team dedicated to identifying good external contacts (56.1% "very seldom", 29.9% "a little"). Research groups consider that there is no overall strategic plan for the development of KT activities (55.8 % "very seldom ", 26.9% " a little ") and perceive the support received from their institute on managing those that occur as insufficient (62.7% "very seldom", 25.5% " a little "). Most respondents stated also that

public recognition of their institute did not facilitate relations with external agents (21.3% "very seldom", 46.3% "a little") (Table 3.a).

Table 3.a. Frequency at institute level

	Very seldom	A little	Fairly often	Very often
IMT	56.1%	29.9%	10.3%	3.7%
GSP	55.8%	26.9%	13.5%	3.8%
PR	21.3%	46.3%	24.1%	8.3%
SNS	62.7%	25.5%	10.9%	0.9%

Correlation analyses for institutional organizational factors and KT activities, and degree of informality of these activities are presented in Table 3.b. According to the values obtained, organizational factors related to research institutes are not significantly related to KT activity and degree of informality of collaborations. Thus, our results suggest that implementation of KT activity and its degree of informality are not affected by either group or institutional factors.

Table 3.b. Correlations at institute level

	INSTITUTE ORGANIZATIONAL LEVEL			
	IMT	GSP	PR	SNS
KT activities	0.12	0.10	0.13	0.04
Informality	-0.17	0.02	-0.05	-0.03

**Significance at 0.01, *Significance at 0.05

4.3   Organizational level: CSIC

Factors related to the parent organization are subdivided into: those related to policy; and those related to management.

4.3.1 CSIC: Policy

The factors associated with CSIC´s policy include: consideration of level of KT activity in scientific promotions (SP); influence of KT activity on research group's resource

allocations (human and infrastructure) (RA); specific characteristics of the area are considered in KT activities' promotion (SA); and economic incentives for KT activity (EI).

Descriptive statistics related to CSIC policy such as mean, standard deviation and mode, are presented in Table 4. Again, there is no overdispersion in the data, but the dispersion is higher than in the group variables. The average value for the CSIC policy variables is considerably lower than the average for the group variables. In fact, the most common value is 1 ("very seldom"), which is lower than for the group variables (3="fairly often") and equal to or lower than the institutional variables (1="very seldom" and 2="a little"). Thus, we can say that research groups consider that CSIC´s policy rarely supports them in KT activities.

Table 4. Definitions of CSIC variables – Policy

Variable	Description	Scale	Mean	Mode	Standard Deviation
Organizational factors at CSIC level - Policy					
SP	Scientific Promotion	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, CSIC very seldom considers KT for SP. 4, CSIC very often considers KT for SP.	1.69	1	0.78
RA	Valuation of KT activities for Resources' Allocation	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, CSIC very seldom considers KT in RA. 4, CSIC very often considers KT in RA.	1.74	1	0.74
SA	Specificities of the Area of knowledge are considered in institutional promotion of KT activities	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, CSIC very seldom considers SA. 4, CSIC very often considers SA.	1.49	1	0.72
EI	Economic Incentives applied to KT activities	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, Research group very seldom knows EI. 4, Research group very often knows EI.	1.63	1	0.96

Descriptive statistics for the variables analysed in this section show that over 80% of research groups believe that CSIC does not provide inducements to promote KT and ignores the specificities of the HSS area when policies referring to KT activities are implemented (It might be that its policies are not visible to the research groups.). Thus, for adequacy of the policy parameters of SP, 50.5% stated that KT activities are seldom

considered when researchers are being considered for promotion. 84.4% of the research groups surveyed said that CSIC rarely considers KT activities in assessing the level of resources to allocate to research groups (42.2% "very seldom", 42.2% "a little") and 62.2% felt that the particularities of the area were not considered in CSIC's marketing and promotion of KT activity in the HSS. Finally, 63.1% of research groups said that they knew very little ("very seldom") about any economic incentives for KT, and 18.4% knew almost nothing about them "a little" (Table 4.a).

Table 4.a. Frequency at CSIC level – Policy

	Very seldom	A little	Fairly often	Very often
SP	50.5%	30.3%	19.2%	0.0%
RA	42.2%	42.2%	14.4%	1.1%
SA	62.2%	28.6%	7.1%	2.0%
EI	63.1%	18.4%	10.7%	7.8%

Table 4.b presents the results of the correlations analysis for KT activities, degree of informality, and organizational factors related to CSIC's policy. The values indicate a significant and positive correlation between research group involvement in KT activity and the visibility of institutional incentives to promote it. Thus, knowledge of the existence of economic incentive for KT is related to the degree of this activity. However, our analysis does not take account of other policy measures that might be aimed at increasing KT activity.

Regarding the degree of informality in KT, the values reveal a significant and negative correlation between informal KT activities by research groups and their evaluation in terms of allocation of resources (human, infrastructure, etc.) to groups.

Table 4.b. Correlations at CSIC level – Policy

	CSIC ORGANIZATIONAL LEVEL - POLICY			
	SP	RA	SA	EI
KT activities	-0.04	0.03	0.19	0.31**
Informality	-0.06	-0.34**	0.05	-0.15

**Significance at 0.01, *Significance at 0.05

4.3.2 CSIC: Management

Organizational factors related to CSIC's management are: management team facilitating collaborations between research groups and users (CMT); adaptation of CSIC management to the specificity of transfer activities in the area of HSS (AMS); structures and support services for transfer activities (SST); and adequacy of information on relationships with external actors (AIR).

Table 5 presents the mean, standard deviations, and mode of variables related to CSIC's management. Statistically, the data do not present overdispersion, but again, dispersion is greater than in the group variables. As observed for CSIC's policy variables, the average values for management variables is much lower than the average values for the group variables, with 1 ("very seldom") being the most common value for the CSIC management variables, which is lower than the mode for the institutional and CSIC's policy variables. Thus, we can say that research groups consider that CSIC management rarely facilitates the KT activity.

Table 5. Definitions of CSIC variables – Management

Variable	Description	Scale	Mean	Mode	Standard Deviation
Organizational factors at CSIC level – Management					
CMT	CSIC Management Team facilitates collaborations between research groups and user s	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, There is very seldom a CMT. 4, There is very often a CMT.	1.37	1	0.65
AMS	Adapted Management to the Specificity of KT of the area	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, There is very seldom an AMS. 4, There is very often an AMS.	1.37	1	0.57
SST	Structures and Support services to help Transfer activities	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, There is very seldom a SST. 4, There is very often a SST.	1.28	1	0.54
AIR	Adequate Information about the way to establish Relations with social agents.	Ordinal scale of 1-4 (1 being lowest and 4 highest) 1, CSIC very seldom provides an AIR. 4, CSIC provides very often an AIR.	1.48	1	0.64

56.1% of research groups consider that CSIC´s management team seldom facilitates relations with potential users and 67% consider that KT management by CSIC is rarely ("very seldom") adapted to the specific needs of the HSS area. 75.8% felt that support structures "very seldom" helped research groups in their KT efforts. More than 90% think that the information provided by CSIC about cooperation with other agents is inadequate (59.6% "very seldom, 32.3% "a little") (Table 5.a).

Table 5.a. Frequency at CSIC level – Management

	Very seldom	A little	Fairly often	Very often
CMT	56.1%	29.9%	10.3%	3.7%
AMS	67.0%	28.7%	4.3%	0.0%
SST	75.8%	20.2%	4.0%	0.0%
AIR	59.6%	32.3%	8.1%	0.0%

The results of the correlations analysis for KT activity, level of informality, and organizational factors related to CSIC's management indicate a significant and positive correlation between the involvement of research groups in KT and KT procedures adapted to the specificity of the HSS area (Table 5.b). Thus, the level of KT activity in

HSS research groups is associated with their perception of the tools provided to respond to the specificities of the area of knowledge.

Moreover, data indicate a significant relationship between degree of informality of KT and AIR. Thus, the provision of more appropriate information by CSIC about how to establish relationships with external agents is related to the establishment of relationships through less informal channels. So a higher AIR facilitates a higher number of formal relationships and, therefore, collaborations that are visible to the organization.

Table 5.b. Correlations at CSIC level – Management

	CSIC ORGANIZATIONAL LEVEL - MANAGEMENT			
	CMT	AMS	SST	AIR
KT activities	0.19	0.21*	-0.02	0.02
Informality	-0.07	-0.14	-0.12	-0.28*

**Significance at 0.01, *Significance at 0.05

5 Conclusions

HSS research groups believe that they work in groups that are well organized for carrying out R&D and KT activities. However, they do not consider that they receive sufficient support from the higher organizational levels, including lack of support from the management teams of the institution and CSIC.

With regard to the parent organization (CSIC), research groups consider that how KT activities are valued seldom has an effect on scientific promotions or resource allocations to groups. They consider the biggest barriers to KT are management that cannot respond to the specific needs of the HSS area and lack of structure to support KT activities. Research groups are unhappy that engagement in KT does not have positive results for the group. They would be less unhappy if, at least the parent organization put in place structures that would help with the management of KT.

The results of the analysis in this paper show that levels of KT activity are not related to how groups and institutes are organized. Nevertheless, there is a correlation between KT activities and, on the one hand, researchers' knowledge of the economic incentives associated with this activity and, on the other, CSIC management interest in the specific characteristics of the HSS area. KT activity seems to depend on the individual characteristics of researchers, who positively value economic incentives and reduced time spent on activities of management.

We also found there was an influence from CSIC's policies and management on the informal nature of the relationships between research groups and external agents. Thus, KT activities carried out by researchers regardless of formal structures are related to lack of awareness about institutional and personal advantages to be gained from the formalization of these activities, and to lack of knowledge about the existence of institutional channels for collaboration. Thus, if researchers do not perceive there to be significant benefits from formalized KT activities, these activities will remain invisible to the parent organization.

Finally, it should be noted that two-thirds of groups believe that their institutes are not well recognized by society, which does not facilitate relationships with external socio-economic agents.

6 Future research

Further research on KT activities in the HSS area is required based on the results in the literature and those produced by the present analysis. On the one hand, in today's *Knowledge-based Society*, KT activities are a determinant of interaction between academia and the socio-economic environment. Moreover, studies focused on the HSS are scarce even though this is an area of knowledge whose importance is increasing

because of its application to several economic sectors and societal contexts. On the other hand, although the results in this paper do not show significant relationships between the organizational factors of research groups and KT, there might be other factors related to research groups that are affecting their KT activities.

Also most studies of scientific activities analyse the individual (researcher); much fewer consider the team or research group perspective. As scientific activities are mostly done by groups or teams (rarely by individual researchers), we consider that the research group would be an interesting level for further analysis of KT and interactions between research groups and socio-economic agents.

To conclude, we would expect future research to contribute to a deeper knowledge about the determinants of KT activity by research groups and the mechanisms used to establish collaborations with external agents. More particularly, future studies should shed light on the factors related to different group characteristics, such as group composition, research characteristics, etc., that influence KT activity. We intend to make a deeper exploration of the questionnaire/checklist and complement this with data from CSIC´s database before analysing them using quantitative methods.

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