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On the two perspectives on coordination of knowledge flows: knowledge-enabling and control

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Abstract

The purpose of this conceptual paper is to contribute to the understanding of the coordination of knowledge flows – an important theme for organizational performance. In this article, we identify, describe and compare two perspectives on coordination of knowledge flows: the "knowledge-enabling" and the "control" perspective. The "knowledge-enabling" perspective presents a design view on coordination of knowledge flows where coordination is essentially facilitated by the mechanism of organizational structure. The "control" perspective provides a management accounting view of coordination of knowledge flows that are visualized and managed through accounting and reporting practices. The main contribution of

this study is an analysis of the existing literature in the respective area and enhanced conceptual understanding of the coordination of knowledge flows of importance both for theory and practice.

Introduction

This paper addresses coordination of knowledge flows—an important yet insufficiently addressed theme. The importance of coordination of knowledge flows has been highlighted by several authors. However, the scholarly literature in this area is fragmented and lacks systematic approach. Further, the available contributions have failed to provide a sufficient and distinct explanation of the term and its qualities. This paper seeks to fill this gap by providing our definition for the coordination of knowledge flows and presenting two particular perspectives on the matter of interest – the "knowledge-enabling" and "control".

Scholars have acknowledged that organizations need to coordinate their knowledge flows across "a variety of units, teams and communities" (Kotlarsky et al. 2008:99; Zaragoza-Sáez and Claver-Cortés 2011; Williams and Lee 2011) which are separated not only physically, but also through "time, culture and language" (Ambos and Ambos 2009). The definition of knowledge flows embraces "transfer of either expertise (e.g. skills and capabilities) or external market data of strategic value" (Gupta and Govindarajan, 1991), "transfer of business practices" (Szulanski, 1996), and "aggregate volume of know-how and information transmitted per unit of time" (Schulz, 2003).

Coordination of knowledge flows is seen as an important theme for several reasons. First, in the context of big companies, it can solve the problem of subsidiary isolation from corporate knowledge flows, and grant equal circulation of organizational knowledge through the company units (e.g. Konovalenko, 2012). Second, coordination of knowledge flows across organizational unit reduces duplication of knowledge efforts (Teigland et al., 2000) which may result in a time- and cost-saving effect. Third, coordination of knowledge flows may assist in the timely transfer of appropriate and useful knowledge for the organizational unit.

A broad number of studies seek to understand how knowledge flows are coordinated (for example, in terms of coordination mechanisms). However, only few of them define what is meant by coordination of knowledge flows (see Kotlarsky et al. 2008; Corrêa da Silva and Augusti-Cullel 2003). Thus, Kotlarsky et al. (2008:96) define coordination of knowledge flows as "a problem of sharing, integrating, creating, transforming, and transferring knowledge." For them "coordination is less about scheduling pre-defined tasks and more about interrelating the efforts of knowledgeable professionals in a concerted manner, i.e., to achieve order" (ibid., p. 99). Such understanding of coordination emphasizes organizing and connecting individuals for knowledge flows and sharing. A different view on coordination is presented by Corrêa da Silva and Augusti-Cullel (2003:51) for whom "knowledge coordination" implies "design and use of organized and purposeful strategies to control knowledge distribution and dissemination across organizations." This understanding highlights a management control view on the coordination of knowledge flows.

Drawing on previous contributions in the area, we suggest the following understanding of coordination of knowledge flows. Coordination of knowledge flows is a process of

interconnecting individuals, organizational tasks and functions by the power exercised in work relations based on established order of rules in order to reach organizational goals related to enhancing organizational knowledge and learning.

Based on the detailed reading of the research literature addressing coordination of knowledge flows, two different perspectives emerge, which we term the "knowledge-enabling" and "control" perspectives. [Footnote 1]

The "knowledge-enabling" view sees individuals as the prime carriers of valuable and often tacit knowledge. The management task here is to make tacit knowledge accessible for all organizational members. A solution to deal with this problem is to use specific coordination mechanisms to enable knowledge to flow between organizational members and units, where a particularly important role is attached to the structural coordination mechanism.

The "control" view on coordination of knowledge flows, in contrast, assumes that knowledge resides within employees (as collectivities), technologies, organizational processes, and stakeholder relations. The management task here is to "visualize" knowledge resources and thus make them manageable. This view highlights the importance of other types of coordination mechanisms, those related to management accounting, and focuses particularly on reporting and disclosure of knowledge assets.

The remaining part of this paper is organized as follows: The next two sections present discussions of the "knowledge-enabling" and "control" views. The discussion of the "knowledge-enabling" perspective is built around the role of organizational structure for enabling flows of knowledge. The elaboration of the "control" perspective addresses reporting and disclosure mechanisms for measuring and intervening into flows of organizational knowledge. The following section provides a brief summary of the two views and highlights their major tensions. Finally, we highlight implications for theory and practice and suggest avenues for future research.

Coordination of knowledge flows in the "knowledge-enabling" perspective

The "knowledge-enabling" perspective draws on the premise that humans are the main carriers of organizational knowledge. According to Nonaka (1994), individuals are the "prime movers" of knowledge creation, and those who can best transfer the valuable knowledge they possess throughout the organization (for the overview of the research strategies which emphasize the role of individuals for knowledge transfer - see Foss 2009).

Knowledge is considered to possess a number of core dimensions, such as tacitness, stickiness, appropriability and novelty (Foss et al., 2010) [Footnote 2]. The tacit and "sticky" nature of knowledge makes it difficult (or hardly possible) to detach it from its carriers and, hence, to access, which poses the major challenge for the coordination of knowledge flows. The management's concern is thus to enable and trigger flows of (tacit and sticky) knowledge. This is the main reason that studies employing this perspective mainly focus on providing solutions to the questions on how to "extract" this hidden/sticky knowledge and how to enable the flows of knowledge by means of various coordination mechanisms in order to make knowledge explicit and available for all parts of the organization.

A review of the literature reveals a large number of contingency-based studies that investigated how particular coordination mechanisms, such as technology, personal, or structural mechanisms, affect knowledge transfer (e.g. Rabbiosi 2011; Foss et al. 2013). In this literature, scholars particularly emphasize the role of the structural (also referred to as organization design) mechanisms. For instance, Foss et al. (2013:1456) point to the role of organizational design, especially structure, for the successful incorporation and deployment of external knowledge flows in the organization (see also Foss et al., 2011).

While addressing the "knowledge-enabling" perspective, we choose to focus on the structural coordination mechanisms because of two reasons. Firstly, the role of organizational structure for facilitation of knowledge flows and knowledge sharing has been widely discussed and contested in the scholarly literature (the overview of this discussion is presented below in this section). Second, organizational structure is an inalienable characteristic of any organization, which can either promote or be in conflict with the organizational needs for transfer and flow of knowledge (Buckley and Carter 2002), and thus can serve both as a mediator and a hindrance to knowledge sharing. With these thoughts in mind, considering organizational structure seems to be crucial for the understanding of coordination of knowledge flows from the "knowledge-enabling" view [Footnote 3].

In employing the knowledge-based approach to the study of implementation of global software projects, Kotlarsky et al. (2008:107) discovered that organization design mechanisms (such as hierarchies, teams, and direct contacts) "facilitate knowledge flows across organizations and teams". They suggest that structural mechanisms coordinate knowledge flows as they mold the formal structure(s) that channels employees' knowledge. These mechanisms "provide structures for managing knowledge flows" and define the roles of the employees, their responsibility for particular areas of competence as well as cooperation and subordination schemes (Kotlarky et al. 2008:97). Zheng et al. (2010:765) propose that organizational structure can influence knowledge flows by "shaping patterns of communication amongst organizational members," defining centers of decision making, and affecting the implementation of new ideas.

Despite agreeing about the importance of structural mechanism for coordination of knowledge flows, scholars present rather conflicting findings with regard to what type of structure serves the coordination purpose best.

One stream of literature suggests that centralization and formal hierarchical structure impede knowledge flows among organizational units (Tsai 2002). Zheng et al. (2010) suggested that centralized structure hinders interaction between employees and restrains creativity in problem solving and therefore hinders flows of knowledge. Another characteristic of organizational structure—formalization—was argued to provide similar impediments to knowledge flows as centralization by reducing flexibility in knowledge-sharing activity and emphasizing the importance of control (Chen and Huang 2007). Zheng et al. (2010), in referring to Damanpour (1991) and others, concluded that knowledge flows are facilitated best by the decentralized structures because of good internal communication, adaptation of innovations, and creativity stimulation. Claver-Cortes et al. (2007:54) found that organizations that strived for well-ordered knowledge flows possess "horizontal, flexible structures with fewer hierarchical levels and widespread communication at all organizational levels,"

together with decentralized decision-making and a high degree of empowerment. However, they also admitted that large companies still revealed some "bureaucratic" traits because certain rules and regulations are required to maintain control over the organization.

To avoid the impediments to knowledge flows caused by centralization and formalization of hierarchical structures, some scholars propose new distinct models assumed to enable flows of organizational knowledge. Ramezan (2011), for example, proposed a new view of "structure" for an effective coordination of knowledge flows. In his view, "structure" should be characterized by boundarylessness, fluidity, interactivity, and flexibility. Boundarylessness highlights a tendency to depart away from spatial boundaries and advocates for organizational identity and trust. Fluidity implies facilitating smooth knowledge flows rather than fostering knowledge stocks. Interactivity refers to pinpointing informal relations for promoting tacit knowledge. Finally, flexibility should allow for temporary restructuring of units and people to meet current organizational knowledge needs. These characteristics can hardly be subsumed under the notion of formal structure. Such "extreme" structural features may better be classified under the structure of "informal coordination"; the latter can be also found in knowledge-sharing networks (see Willem and Buelens 2009).

Another model of "knowledge-enabling" organizational structure was developed by Nonaka (1994) and Nonaka and Takeuchi (1995). The authors argued that both "top-down" and "bottom-up" management models fail in facilitating dynamic knowledge transfer and creation. Instead, they propose a new "middle-up-down management" model, which is a synthesis of top-down and bottom-up models. In this model, the middle manager plays a key role in the knowledge coordination processes, and teams are seen as prime creators of organizational knowledge. The middle manager performs the role of team leader and interacts with the top and the frontline (or bottom) employees. This position puts him at the intersection of vertical and horizontal knowledge flows in the organization where he functions as a "bridge" between "the visionary ideas of the top and often chaotic realities of business confronted by frontline workers" (Nonaka and Takeuchi 1995:127). The role of the top management in this model is reduced to provide general visions for the desired state to be achieved. The task of the middle managers then is to interpret these visions and translate them into particular work concepts that can be realized by teams.

To function, the "middle-up-down management" model requires "institutional support" from a particular "knowledge-based" organizational design labeled as "hypertext organization" (ibid.). The features of such organization combine the hierarchical formal organization, which carries out routine operations, with a flat organization in the form of self-organizing teams preoccupied with knowledge-creating activity. According to Nonaka (1994:33), the "critical factor" for the design of "knowledge-based" organization lies "in the coordination of time, the space and the resources" within the organization. Therefore, organizational structure enabling an efficient coordination of knowledge flows is supposed to balance the functioning of a hierarchical bureaucratic organization and horizontal cross-functional loosely coupled teams. These two structural elements should also be supplemented by a third one, which Nonaka calls the "knowledge base layer"—the one that embraces tacit knowledge in the form of organizational culture and procedures and explicit knowledge contained in documents and databases.

Nonaka and Takeuchi (1995) and Tagliaventi et al. (2010) argue that the detrimental effect of centralization can be moderated by "spontaneous horizontal coordination" in the form of interorganizational communities of practice. By establishing communities of practice, the willingness of organizational units for knowledge sharing will be enhanced, and hence, the flow of knowledge is not hampered. On the other hand, Willem and Buelens (2009) found no negative effect of hierarchical centralization on the coordination of knowledge flows and could not provide evidence for the assumption that less formalized and centralized structures facilitate knowledge flows best.

The major drawback of the research dealing with the effect of traditional organizational design variables on knowledge flows is that it is "little systematic" (Foss et al., 2010:469). So far, this poses a challenge for providing deeper theoretical explanations about the dimensions of the "knowledge-enabling" perspective and the links between them. In attempt to deal with this challenge, we present Figure 1 that highlights the dimensions of the organizational design prototypes that are relevant for the coordination of knowledge flows. One dimension refers to the level of managerial influence over the process of coordination of knowledge flows. The other dimension relates to whether the particular structure emphasizes the role of individual versus the role of teams as prime movers of knowledge creation and sharing.

Classical hierarchical organizations characterized by a high level of centralization and formalization represent a top-down decision-making structure where the majority of crucial decisions, including knowledge-related issues, are made by managers at top levels. The role of the individual employees then is to follow the general centrally defined corporate knowledge management policies and to participate in the knowledge-sharing process to the extent that is specified in the corporate guidelines and defined by the scope of individual work responsibilities. It is assumed that in such an arrangement, each particular individual holds personal responsibility for participation in the common knowledge-sharing activities.

		Prime movers of knowledge creation and sharing	
		Emphasis on individuals	**Emphasis on teams**
Level of managerial influence	**High**	**Classical hierarchy**	**"Hypertext" organization**
	Low	**Decentralized flat organization**	**"Communities of practice"**

Figure 1. Organizational design prototypes according to the two dimensions reflecting the level of managerial influence and focus on individuals vs groups as prime movers of knowledge creation

Another type of organizational design that is characterized by a high level of managerial involvement is the "hypertext" organization model developed by Nonaka and Takeuchi (1995). Unlike classical hierarchy where top management is in charge of knowledge management activities, middle management here plays the key role in the knowledge coordination process. According to this "middle-up-down" management model, knowledge-creating activity is seen as a task to be essentially facilitated in/by the teams. In this model, this is the only purely theoretical type of organizational design.

"Communities of practice" represent another type of organizational design where the key role in knowledge creation and sharing is allocated to the group of professionals. Such arrangements can be found both in hierarchies as well as in less centralized organizations and depend more on "spontaneous self-organizing" rather than management intervention.

Finally, decentralized organizations can be characterized by a lower level of managerial influence. The underlying assumption is that flat, flexible, and interactive structures with high level of empowerment encourage individuals to willingly cooperate in knowledge creation and sharing while acting as an actor network.

The interplay between the dimensions as indicated in Figure 1 calls for closer attention in the future studies - in order to get deeper understanding about the dimensions of the organizational design and their combinations in affecting coordination of knowledge flows. Closer investigation of this issue will also contribute to building up knowledge about the micro-foundations in the broader knowledge management literature (see Foss, 2009; Foss et al., 2010).

Coordination of knowledge flows in the "control" perspective

The "control" view sees knowledge as embedded in collective processes and procedures as a bundle of knowledge resources (Mouritsen and Larsen 2005). Knowledge is no more the prerogative of an individual human, but rather, it is a constellation of knowledge resources embedded in collectivities, technologies, processes, and procedures and implanted in organizational relationships between employees, customers, and other stakeholders.

The "control" view adopts a management accounting perspective on coordination of knowledge flows. Rather than seeking ways to "enable" flows of organizational knowledge, the focus is on how "to measure and manage" intangible knowledge flows (Mouritsen and Larsen 2005). The new (control) problem concerns "the design of a network of knowledge resources relevant for the corporate purposes" and management/coordination of this network (ibid., p. 373). In this view, coordination of knowledge flows can be understood in terms of aligning "corporate processes and procedures concerned with integration of technologies, skills, processes and relations"

(ibid., p. 379). By measuring and communicating information regarding knowledge resources, flows or corporate knowledge becomes exposed and visible and, hence, amenable to coordination. Thus, the managerial task in this perspective is to "visualize" and "intervene" in the knowledge processes.

Through facilitating accounts of knowledge "from inside" into an "open" collective or "corporate domain" (Mouritsen et al. 2001:736), intangibles become "visible," measurable, and hence, also manageable. The "visibility" provided by reporting offered a possibility for managers to intervene in the process of knowledge coordination to achieve organizational goals and create value (Mouritsen and Larsen 2005; Dumay and Rooney 2011), making reporting/disclosure practices a mechanism of coordination.

During the last two decades, both practitioners and scholars have been preoccupied with developing measurement reporting systems for intangible assets. As a result, a large number of various methods and models have been proposed (e.g., Dumay and Garanina 2013) to both serve accountability purposes to external parties and provide internal information for managerial decision-making. For example, Sveiby (1997) suggested a model of "intangible assets monitor" to account for individual competence and internal and external structures. Edvinsson and Malone (1997) have described Skandia's "intellectual capital navigator," which accounts for five particular areas: financial, customer, processes, human, and renewal and development. Besides these pioneering models, numerous intellectual capital (IC) reporting models were elaborated and described by organizational scholars.

The idea of IC reporting is to track knowledge coordination activities that organize the knowledge resources of a particular company. Thus, IC statements tend to report on knowledge embedded in the knowledge and expertise of the employees, the customer attitude toward the company, the organizational infrastructure, the efficiency of business processes, and information technologies (Mouritsen et al. 2001). Accounts presented in the IC statements are provided in terms of numbers, narratives, and visualizations. Practice reveals that firms account for their knowledge resources differently: they provide different stories, visualizations, and numbers regarding their knowledge assets.

Although it attracts the attention of scholars, reporting on knowledge assets possesses a number of drawbacks briefly mentioned below. First, one of the key reasons for reporting on knowledge assets was companies seeking to explain the difference between their market and their book values, which was attributed to the value of knowledge assets (Sveiby 1997). However, succeeding in visualizing, their knowledge assets didn't solve the firms' problem of the "market-to-book ratios" because of fluctuating market values, historical cost accounting, and inability to measure intangible assets in monetary terms (Dumay and Garanina 2013). Still, little evidence exists that knowledge assets have a causal link with value creation and that efforts to manage them lead to greater profitability (ibid.).

In order to confirm the link between intangibles and value creation, scholars have developed new disclosing frameworks and models. Assuming that these frameworks essentially are context-dependent, more models have been introduced. The problem, however, seems to be not in the lack of appropriate measurement models, but in the lack of organizations' willingness to adopt available models (Mouritsen 2006).

Another drawback is related to the division of IC in three categories—human, organizational, and relational capital—and their usefulness for capturing and accounting for particular events. For instance, Mouritsen (2006) exemplifies how the same event—training—can simultaneously be understood and perceived as all three types of IC. Such inconsistency makes the categories "weak" and "fragile" and poses the questions about stability of the categories, and interpretation of IC statements (ibid.).

The reported knowledge is supposed to be codified into some hopefully useful information about knowledge assets. However, some aspects of knowledge (e.g., its tacit dimension) can only be reflected/made visible indirectly. Therefore, in order to facilitate "knowledge management," one should make some essential efforts. First is to identify knowledge within reports and then to interpret it. Based on this, a sound question creeps in: is it really knowledge that is "managing," and how can one obtain a "correct" interpretation of reports corresponding to the reality of the state of knowledge assets?

Finally, the major overall problem with the disclosure of knowledge assets is that once they are made visible and reportable, they often can be easily imitated by the firm's competitors, and then the company faces the risk of losing its competitive advantage (Schultze and Stabell 2004). Therefore, attempts to manage tacit knowledge by making it explicit and visible can bring counterproductive results. Barney (1991:109) argues that in order to protect rare and firm-specific organizational resources, "all competing firms must have an imperfect understanding of the link between the resources controlled by a firm and a firm's competitive advantage." At the extreme, "in order for tacit knowledge to be a firm's source of sustainable advantage, the firm should avoid trying to manage it" (Schultze and Stabell 2004:562). However, such a position seems unsatisfactory and impossible for most organizations because the company that "chooses not to manage its critical tacit knowledge stocks is neither likely to grow nor dominate anything but a very specialized competitive niche" (ibid.). Therefore, the following paradox emerges: companies incline toward the importance of managing their knowledge assets, and by making tacit knowledge—the source of their competitive advantage—manageable (i.e., explicit and visible), they risk destroying their very platform of competitiveness. Thus, the manager is faced with the intricate task of managing the knowledge flows in such a way as to minimize the risk of being imitated by rivals.

Summary and discussion

This section provides a summary of the "knowledge-enabling" and "control" perspectives discussed above – see Table 1. The Table is to be read in the following way. The left-hand column reveals four dimensions for characterizing the two regarded perspectives (addressed in columns 2 and 3, respectively). The four dimensions are the nature of knowledge in terms of its embeddedness, the managerial focus/concern in relation to coordination of knowledge flows, the mechanism of coordination of knowledge flows in focus within each perspective, and tensions related to each viewpoint.

Table 1. Key characteristics of the "knowledge-enabling" and "control" perspectives

Dimensions	**Knowledge-enabling perspective**	**Control perspective**
The nature of knowledge	Personal: Knowledge of individuals	Interpersonal: Knowledge embedded in collectivities, organizational relationships, procedures, and technologies
Managerial focus/concern	"Enabling" knowledge flows	"Exposing" and "managing" knowledge flows
Mechanism of coordination of knowledge flows	Organizational design	Management accounting/ disclosure
Problems/tensions	Unsystematic and fragmented research Which structure is best? Tension of centralized hierarchical and flat decentralized structures	Measuring knowledge is counterproductive: the risk of losing competitive advantage. Symbolic and rough distinction of IC elements Report interpretation

The first comparative dimension refers to the nature/source of knowledge. In the "knowledge-enabling" view, it is the individual who is the carrier of valuable knowledge embedded in his or her mind, experience, skills, and expertise. The "control" view sees knowledge as embedded in interpersonal communication, focusing on organizational relationships, procedures, and technologies.

The second dimension relates to the managerial problem focus. In the "knowledge-enabling" view, knowledge that is meaningful for the organization is, to a large extent, individual and tacit. Tacit knowledge hidden in the minds of humans is difficult to measure, compute, and manipulate. Hence, the main managerial concern is seen in "extracting" this knowledge and making it accessible and available for all organizational members. An important role in this process is attached to organizational structure, which is seen as a major mechanism for facilitating coordination of knowledge flows in the organization.

In the "control" view, knowledge assets are seen as susceptible to registering and measuring and hence liable to managerial intervention. Therefore, the task of the manager is broader: this includes identifying and visualizing organizational knowledge resources, manipulating these resources in order to produce the required effect, and evaluating this effect to employ it as an input for further managerial intervention. Here, the disclosure of intangibles (in particular, intellectual capital reporting) is seen as the major coordination mechanism, which serves as an input for and as an output of managerial intervention.

The fourth comparative dimension refers to discrepancies and tensions appearing in each view. Thus, the "knowledge-enabling" view presents controversy arguments about the type of organizational structure that best provides coordination of knowledge

flows. A number of scholars argue in support of decentralized, flat, and horizontal structures as mostly beneficial for unhampered flowing of knowledge. However, this stream of research overlooks the fact that many corporations are structured to the "logic of vertical integration" (Hernes 1999:90) for the purposes of performance management and control. Hence, a discrepancy appears between the "overall logic of organizing" and conditions that favor knowledge flows (ibid.).

Challenges of the two perspectives

The literature within the "knowledge-enabling" view suggests that "successful" coordination of knowledge flows would combine elements of both centralization and decentralization (Buckley and Carter 2002), hierarchical bureaucracy and flat organization (Nonaka and Takeuchi 1995), and an optimal state of formalization, which means that neither strong formalization nor its absence are beneficial (Willem and Buelens 2009). Such an attitude toward coordination of knowledge flows poses a serious managerial challenge. In addition, there is a lack of empirical evidence to show how such a combination of organizational structures is possible and can function in practice. In sum, the research suggests that the relationship between organizational structure and coordination of knowledge flows is "nuanced and complex" and "context dependent" (ibid.).

One of the key challenges in the "control" view appears when tacit knowledge—in order to be managed—is made explicit through disclosure and hence susceptible to imitation and copying by competitors. Such a situation may lead to loss of the firm's competitive advantage, and hence, attempts at managing knowledge seem to be counterproductive.

Disclosure of knowledge assets and external reporting in the form of IC statements also seems to reveal a number of drawbacks.

First, as noticed by Mouritsen et al. (2001), all reports under investigation are different, in terms of stories and indicators. Although common reporting themes in the statements can be distinguished in terms of resources, activities, and effects, the link between these in the reports does not seem obvious and clear-cut. Reports are not self-explanatory. In order to become useful, each report requires an interpretation and explanation of the meaning of its various elements.

Second, it is suggested that reporting makes effects, or consequences of knowledge-related activities, visible. This statement seems problematic too because effects and consequences cannot always easily be expressed in figures (financial or nonfinancial). This is especially relevant when we want to distinguish between the outputs of knowledge activity (immediate effect—for instance, the number of participants in the training program) and its outcomes (intermediate effect—for instance, effect of the training for organizational performance). Together, these two characteristics mold the general final outcome (Dwyer 2007). Yet a distinction between outputs and outcomes seems barely visible in the reports, if at all.

Despite the fact that reporting has received vast attention of scholars and policy makers, the implementation studies reveal that intangibles disclosure and, more generally, intellectual accounting management practices "have not proliferated in

organizations today" because managers and other stakeholders seem to be "not interested in what is reported" (Dumay and Garanina 2013:20).

Because of these problems with reporting, scholars suggest paying more attention to accountability for knowledge assets, rather than focusing on measurement and external reporting issues. Thus, drawing on an extensive literature review, Guthrie et al. (2012) claim that very few papers address the accountability issue (only 7 papers of a total number of 423). Instead of coming with more measurement and disclosure models that can be generalized to many organizations, researchers are encouraged to "investigate the praxis of IC in specific contexts" and to deliver "accounts" of intangible assets, rather than concrete "measures" (Dumay and Garanina 2013:21).

The call for provision of accounts and accountability for intangibles seems to be sound. Accountability is a much broader and capacious concept as it stretches beyond mere provision of accounts (as in the reports/disclosure)—to provision of justification of decisions and choices inherent in any accountability system (Kirk and Mouritsen 1996; Ezzamel et al. 2007). "To be accountable means, as any dictionary will confirm, to give reasons for and explanations of what one does" (Normanton 1966:1, in Carnegie and Wolnizer 1996). However, the reporting statements seem to be essentially missing this justification part (Normanton, 1966). Disclosure frameworks are not complete: they lack explanations and require interpretation in order to obtain a proper understanding of the reported events and their effects. To recall Gray (1983:4, in Carnegie and Wolnizer 1996), "*Accountability is a concept which is generally underdeveloped in the accounting literature. As a result, it is frequently misused and commonly taken as synonymous with external financial reporting or financial accounting. Accountability is, however, a very "rich" concept, and its relationship with "accounting" is rather more complex than is generally recognized in the literature.*" Drawing on these reflections, it is suggested here that the control perspective of the knowledge coordination literature may essentially benefit from studying "accountability for knowledge". This is an area that is still very underdeveloped, but which may produce a deeper insight about management intervention into intangible assets—by addressing, for instance, justification of accounting choices and decisions, and provision of explanations for accounting performance (see Kirk and Mouritsen 1996).

Implications and avenues for future research

The practical value of this study is that it informs managers and practitioners about possible choices for the coordination of knowledge flows in organizations, and subsequent opportunities and challenges which are connected with each choice. As this paper suggests, managers may choose to facilitate coordination of knowledge flows either through organizational design mechanisms or through accounting practices. In the first case, managers, for example, can leverage the level of own influence and individual vs team-based approach (as shown in Figure 1) to enhance coordination of knowledge flows. In the second case, managers can construct measures and thus gain control over intangible organizational resources. However, the potential benefits of each perspective are associated with certain challenges. Regarding organizational design, these challenges refer to identifying the type of structure that provides a balanced solution for enabling knowledge flows and simultaneously facilitating a certain degree of control. In relation to disclosure of intangibles,

managers face the following challenges: how to master a need to report knowledge assets and not to disclose "too much" to avoid leakage of knowledge and rival copying; how to classify and organize intangible assets around meaningful and valid accounting categories; and how to obtain a sound interpretation of the reported knowledge elements. Being aware of the potential difficulties while adopting any of these approaches may help managers and practitioners to search for balanced solutions for the coordination of knowledge flows in the specific contexts and minimize the drawbacks associated with each choice.

In order to advance our understanding about the role of organizational design for the coordination of knowledge flows, further research could look into the relationship between structural coordination mechanisms and specific types of knowledge flows to be facilitated. In particular, new studies should investigate whether different types of knowledge flows—such as organizational best practices (which are aimed at organizational "normalization" and "harmonization") or innovation efforts (which are meant for driving organizational change)—require and prosper from different types of organizational structures.

While addressing the "knowledge-enabling" perspective, this paper has focused attention only on one (though arguably, most important) coordination mechanism—organizational structure. Further studies may therefore provide an in-depth analysis of the roles, characteristics, and tensions related to other mechanisms enabling knowledge flows, such as social, work-based, or technology-based.

One of the proposed solutions is to shift focus from measuring and disclosure to the accounts of and accountability for the knowledge-related praxis and practices in particular organizational contexts. The framework elaborated in Figure 1 can be employed as a starting point for investigating "accountability for knowledge". On the one hand, organizational structure refers to the "the power and responsibility structure" (Ramezan 2011:90) and defines "roles, reporting relationships, and division of responsibilities" (Gupta and Govindarajan 2007:8). That is, organizational structure highlights power and authority relations and specific tasks and functions allocated to particular actors within these relations. On the other hand, accountability could be understood as a process of accounts provision to organizational stakeholders, backed up by the justification of certain accounting choices (Kirk and Mouritsen 1996; Ezzamel et al. 2007). Accountability reflects and "animates" organizational structure. Therefore, further research can investigate whether and how organizational structure and accountability interplay as mechanisms for the coordination of knowledge flows.

The focus on accountability and "accounts" of knowledge-focused activities can make a beneficial and fruitful research direction for scholars and policy makers, in terms of attracting more interest and attention of managers and other stakeholders to the knowledge management practices. Account of knowledge praxis strengthened by explanations and justifications can make an interesting, credible, and inspiring story. After all, as Heath and Heath (2007) argue, it is the stories that attract our attention and "stick" to our memory—not numbers.

Footnotes

1. This conceptual paper draws on the extensive literature review carried out as a part of wider research project addressing coordination of knowledge

flows in the context of a multinational corporation (Konovalenko, 2012). The literature search was undertaken by scanning electronic databases of scholarly publications, in particular: Science Direct, Emerald Journals, Taylor & Francis Online, ProQuest and JSTOR where keywords were "coordination", "coordination mechanisms", "control", "knowledge", "knowledge flows" and "knowledge management". The abstracts and - when appropriate – the full texts of the returned results were examined. Based on the initial literature scanning two streams in the literature dealing with coordination of knowledge flows were identified. The first stream discussed the role of various coordination mechanisms for effective facilitating of knowledge flows, where a large number of papers put emphasis on the structural coordination mechanisms. Another stream comprised a bulk of publications which can be gathered under the label of "intellectual capital accounting" research (see also Mouritsen and Larsen, 2005). We examined literature within both streams, paying particular attention to the often cited publications and cross-references in the studies. To secure a broad theoretical population, we considered publications addressing various organizational contexts and employing qualitative and quantitative research techniques, case studies, and literature reviews. The analysis of the publications resulted in identification of the two perspectives on coordination of knowledge flows, which we present, describe and contest in this paper.

2. Foss et al. (2010) with reference to Spender (2005) point that, "While considerable agreement thus exists on some core knowledge issues, it cannot be ruled out that further epistemological inquiry may identify other relevant knowledge dimensions".

3. The deliberate choice to focus on the structural coordination mechanism implies the limitation of the study and possibility to address other coordination mechanisms, such as technology-based or social (personal). Meanwhile this paper seeks to address the challenge posed by coordination of both tacit and explicit types of knowledge, technology-based mechanisms are preoccupied with coordination of mainly explicit knowledge (or information). Social coordination mechanisms deal with both explicit and implicit types of knowledge, and are concerned with communication, relational and cognitive aspects. Addressing the role of these mechanisms for the coordination of knowledge flows requires further examination, and may provide fruitful avenues for future research, in particular within a research perspective which has recently started to gain more attention from scholars in which communication serves as an important constitutive of organizing (see e.g. Cooren et al., 2011; Ashcraft et al., 2009).

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