Putting Your Money Where Your Mouth is: Monetizing Knowledge Using Communication Roles

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Abstract: In this paper we suggest that knowledge flows constitute the antecedences of value creation by means of its communication component. We bridge accounting theory with communication theory and explain how the role of communication is instrumental in capturing the knowledge value and allows for a connection with monetary value. Knowledge is increasingly accepted as a source of value creation and a differentiator between firms. Building on the perspective of knowledge as a flow, and postulating that value is based on knowledge use – rather than knowledge possession – this paper address the research question: How can we express knowledge in such a way that it can be monetized and opened up for specific managerial interventions? Extant literature on organizational communication roles emphasizes the role of boundary-spanners in search and combination of experience and tacit knowledge. Individual nodes in the organizations network can possess knowledge. However, to be valuable the knowledge resources need to be deployed and utilized. The use of knowledge will involve the communication of this knowledge through ties to other nodes. The paper proposes that the boundary-spanning roles provide the focal point for such monetization efforts. The contribution of this paper is five propositions for future research on how management accounting and control systems can be brought to bear in their governable and calculable aspects if communication functions are given more attention.

Keywords: Boundary spanners, intellectual capital, monetization, communication, knowledge flows.

1. Introduction

In this conceptual paper, we suggest that knowledge flows constitute the antecedences of knowledge based value creation. We seek to extend theory on intellectual capital and knowledge management by bridging it with insight from accounting theory and communication theory by explaining how specific communication roles are instrumental in capturing knowledge value creation and its monetization. Existing management accounting approximations of the knowledge resource tend to centre on management control perspectives; matching the aspects or components of knowledge resource management against existing management control perspectives. In addition, the systems theory-based decomposition logic of conventional management control systems, breaking down strategies into objectives, targets and performance metrics, reduces knowledge resource management to a strategy implementation problem, involving the selection of the appropriate implementation responsibilities, budget allocations and performance measurement models. The latter has been a key tenant of intellectual capital approaches invoking accounting concepts and tools around the knowledge resource as if it is similar to the financial resource in its characteristics. However, knowledge resources are different from financial resources that can be exploited for economic rent through a regime of transactionable property rights, measurements, reporting systems and responsibility assignments.

We identify two fundamental premises for the monetization of knowledge resources. First, in order to be valuable, knowledge resources need to be deployed and utilized rather then be merely possessed (owned). This resonates with intellectual capital research emphasizing the need to visualize and identify before measuring and managing. Second, following a network argument, the dynamic use of knowledge involves the communication of this knowledge between network nodes, with the latter consisting of individuals or specific arenas taking up different roles within the network. Building on the perspective of knowledge as a flow, and postulating that value is based on knowledge-in-use within communication networks, this paper addresses the research question: *How can we express knowledge in such a way that it can be monetized and opened up for specific managerial interventions?*

The paper is build up as follows. First, we address knowledge value creation as knowledge flows and integrate theory on communication networks indicating how the concept of boundary spanners can offer a suitable vantage point for managerial intervention. Second, the monetization opportunities and management interventions related to the networked communication flows are discussed. We conclude by discussing both the theoretical and practical contributions of this paper, and the perspectives it advances for future research.

2. Knowledge value creation in the relational component

Measuring and managing knowledge has predominantly centred on viewing knowledge as stock or inventory. Management accounting approximations of the knowledge resource reverse to management control perspectives, matching specific aspects or components of knowledge resource management against existing management control perspectives and their accompanying tools. This paper argues that if the organization is viewed as a network of knowledge flows with an emphasis on the role of communication within this network, then monetizing the knowledge value could be achieved. Moreover, we argue that what you deploy your knowledge on (application and use), is more related to value creation than how much knowledge you have 'on inventory'. Furthermore, we argue that communication as carrier of knowledge flows, is fundamentally relational albeit supported by organizational artefacts and technology. Finally, postulate the role of management accounting as a technology for constructing a governable reality (Miller and O'Leary, 1987) given its instrumental capabilities towards monetization. We subsequently formulate five propositions to expound the role of communication in monetizing the knowledge value.

Our line of argument corresponds with the Intellectual capital literature (Bontis, 1999, Roberts and Bjurström, 2007) in that; knowledge originates from human capital, is combined with other knowledge resources in relational capital, and ultimately harvested in organizational capital as new sets of routines, procedures and managerial processes. We surmise that knowledge value creation is located within relational capital, combining individual knowledge in a networked fashion and based on communication (Breunig and Roberts, 2013). Typically, efforts in managing relational capital involve establishing such communication networks, make them work, direct them, and maintain them. Our main underlying proposition is that the social relations among (groups of) people constitute a firm's knowledge value creation process while it is the communication within these people-to-people networks that provides the novel combination of hitherto separated knowledge into perspectives on which new business ideas and innovative practices are based. We label this as the concurrent existence of "contactivity" (between people) and "connectivity" (between communication systems).

The communications field itself has specified these processes, and refined them in subsequent research studies. For example, in the communication model developed by Tucker et al. (1996), strategic knowledge capabilities are developed as the result of interpersonal communication systems at institutional level. Their model stresses the role of organizational routines and managerial direction, implicating the importance of management intervention in authorizing and establishing the necessary communication opportunities and channels. Once communication occurs, connectivity and contactivity are created and subsequent stages of combining knowledge can be entered, for example, those of knowledge sharing, expertise leveraging or collaborative work (Cross and Prusak, 2002, Nahapiet and Ghoshal, 1998, Tucker et al., 1996, Davenport and Prusak, 1998). The communication perspective on knowledge value creation revolves around the design features, procedures and routines that establish the connections within a network. Some of these are codified and hardwired into ICT systems but many relate to concepts and methods outside the domains of knowledge management, ICT or communication theory. Examples are incentive systems for sharing and collaborative efforts, a project staffing system that engenders contactivity between people with diverse sets of interpretations and action vocabularies, the meeting and debriefing methods used around reporting systems within management control, and a leadership style that is based on openness and involvement rather than entrenchment into job descriptions and other formal mandates of responsibility.

In summary, knowledge value creation through communication networks requires pulling from a broad set of distinct disciplinary areas. Criteria for soliciting conceptual and instrumental inputs revolve around the connectivity of systems and the contactivity between people, in doing so in a sequential, step-wise manner, initiating from awareness and development, to creation, and to implementation and use.

2.1 Communication processes and community networks

In order to use the firm's knowledge resources, the communication system can be conceived as a concurrent and simultaneous use of the codification strategy of knowledge, using Communication Technology, and of the personalization strategy of knowledge, using personal networks and contacts (Hansen et al., 1999).

Communication as a personalized process refers to the interpersonal transfer of knowledge. From the perspective of the firm, however, such interpersonal exchange is understood as personal networking, with the role of the firm revolving around encouraging, allowing, bounding, and focusing the development of such personalized communication networks. In it, both codified and objectified knowledge as well as non-codified

and subjective knowledge are communicated. Thus, interpersonal communication networks become the focus of a deliberate effort to manage knowledge in terms of combining different perspectives. But how can these processes be managed and followed up using management accounting and control systems?

Present research has indicated that firm level networks are frequently revolving around communities, be that a community of practice, a community of collaboration, a community of interest, or a community of innovation (Wenger and Snyder, 2000, Inkpen, 1996, Adler et al., 2008, Ahuja, 2000). These communities are networks that are organized around a number of ground rules, one of which is that of purposeful information and experience sharing. Communities of practice can arise spontaneously but can also be encouraged by management to develop, i.e., they can be deliberately designed (Brown and Duguid, 2000). The interest of management in developing communities is in using these as vehicles for more effective information and knowledge sharing, compared to the more hierarchical reporting flows that accompany the usual responsibility structure of an organization (Stevenson, 1990). The emergence of the community concept and its apparent usefulness in information, experience and knowledge sharing, has triggered a large array of application areas, ranging from online communities on the Internet to the civic communities in urban renewal and political participation (Putnam, 2000). The community of practice concept is informing this paper in two ways: First, the community as a social network of communication and, second, the community as organizing format for the structuring of communication flows.

The social aspect of these communities, i.e., the fact that communication is interpersonal and personalized, provides, however, a possibility to map the communication flow pattern. Using Social Network Analysis (SNA), these maps outline who communicates with whom, and with what frequency (Scott, 2000, Wasserman and Faust, 1994). Actors (communicators) within these "communicaties" that have high frequency counts can be classified according to certain roles they fulfil. This implies that we conceive communication networks as stable communities over time, and not only the other way around, i.e., communities as communication networks. Moreover, for communication networks to classify as communities, network roles need to develop over time. Hence, the community becomes an organizing format to group and classify communication. Consequently, we suggest that:

Proposition 1: *Knowledge value creation is communication network-based*

2.2 Managing networks by their roles

Communities conceived as organizing formats for communication flows and patterns are demarcated by the various roles that people take up within these networks (Cross and Prusak, 2002). Each role is defined as creating a certain type of connectivity, with a distinct set of communication functions tied to it. Breunig and Roberts (2013) identify four roles (i.e., central connectors, boundary spanners, information brokers, peripheral specialists, Cross and Prusak, 2002) in social networks that allows for the specific management of these networks. For example, including boundary spanners can accelerate the implementation of a corporate-wide communication system with boundary spanning individuals acting as gatekeepers to other domains within the organization. Similarly, the information brokers within a selected number of social networks can be asked to chair formal meetings thus levering the distribution and acceleration of information across constituencies. As these examples elucidate, identifying the above roles within social networks is followed by a selection of which roles and which networks are important for the knowledge-based value creation.

Although these roles are originally stated vis-à-vis people, they can also be elaborated towards roles for typical organizational formats. That is, an item on the organization chart or within work process flows where cross-functional coordination and exchanges occur. Such 'organizational arenas' can be relatively low key, for example meetings that are systematically structured into work flows and occur with periodic regularity. But in contrast to be based on an agenda defined by hierarchical reporting on formal responsibility areas, these 'arenas' are defined by activities and shaped by a role towards (diversity of) interpretations and requisite actions caused by a dynamically changing context. For example, a customer order flow might be standardized as a formal activity protocol, but with each different customer requirement, variety and diversity is introduced, needing a response in terms of its requisite knowledge deployment, for instance codified (design blueprints and installation blue prints) and/or tacit (earlier personal experiences with executing a similar job).

Moreover, a combination is equally possible; personal roles harnessed or leveraged by the roles of the organizing arenas. That is, people can fulfil boundary spanner or connector roles within networks, but

organizing arenas can take up those roles too. For example, a meeting sequence can have a connector role within dispersed functional knowledge areas or it can have a boundary-spanning role across different knowledge domains. Jones (2007, chapter 4) holds that, within the organization design discipline, these 'integration mechanisms' are already known. However, these tend to be related to the allocation of tasks and responsibilities, in order to counteract the silo-effect of functional specialization and, by purpose, are far less intended for the exchange and sharing of insights, tacit knowledge, and experience. Therefore, the organizing format of communities has a different agenda and a different purpose. This also shows in how such organizational arenas are commonly identified: not on the organization chart but in the activity/work flow process map. The boundaries that these roles (fulfilled by people and by organizational formats either separate or in combination) span, determine the diversity and richness of the tacit and explicit knowledge inputs that is invoked in them. High diversity (of knowledge inputs) across all knowledge dimensions requires the involvement of boundary spanning roles, with high diversity increasing the potential for novel knowledge creation that, in turn, increases the potential for value creation.

Therefore, in order to connect monetary value to a firm's knowledge resources, identifying a firm's boundary spanners provides a first step towards monetizing knowledge-value based on communication. Although, all the roles identified above are relevant for knowledge exchanges to occur, we suggest that the role of boundary spanner is particularly important. Boundary spanners bridge different knowledge communications in which knowledge is produced and maintained, including their related interpretative schemata. Bringing this diversity of knowledge, practice and learning together via boundary spanners contains a high potential to create new knowledge. As a result, it is important to identify the organization's boundary spanners. Once identified who/what fulfil the boundary spanner roles within an organization, the ties that connect different communities and knowledge repositories are identified and are available for managerial interventions (Obstfeld, 2005). That is, identifying and managing the boundary spanner roles fulfils the first value creation step originating from connectivity. This implies that the boundary role 'discovery' through, for example, network analysis or deliberate construction through, for example, a purposely organizational design intervention on establishing 'arenas', creates a similar opportunity for conversion of knowledge into monetary values. The various ideas that are pulled in via boundary spanner roles (and combined into novel knowledge configurations on that specific boundary spanning location), similarly allow for the identification of opportunities for alternative ways of configuring the monetary value encapsulated in each knowledge input, e.g., in terms of business or pricing models. Consequently, we suggest that:

Proposition 2: *Boundary spanner roles provide the vehicle for monetization.*

2.3 Boundary Spanners

The concept of boundary spanners is hardly new and well known across a number of disciplines. For example, within the communications discipline, they are sometimes referred to as "communication stars" (Tushman and Scanlan, 1981a, Tushman and Scanlan, 1981b). Such "stars" are able not only to connect, but also to translate information into a format that matches the decision-making processes going on within an organization. Internal communication stars are seen by their co-workers as being technically competent and to have work-related expertise. These stars communicate significantly more often than non-stars with other areas in their closer work environment, in the organization as a whole and with areas outside the organization.

Some qualifications of boundary spanners include technical skills, economic skills, legal skills, network knowledge on the partner, and experiential knowledge through past interactions. Boundary spanners conceived as persons and not as organizational format, contain social qualifications such as autonomous, extravert and ambiguity-tolerant behaviour in a social setting. Typical communication abilities include conflict management, empathy, emotional stability, self-reflection and cooperativeness. This long list of individual characteristics allows for identifying boundary spanners by means of questionnaires issued within organizations (Ritter, 1999). For example, the authors of this paper used such a questionnaire in screening for boundary spanners as part of a communication's instrument developed for the International Association of Business Communicators (IABC) (Roberts et al., 2003) . Alternative to the use of questionnaires, given the skill and social characteristics of boundary spanners, this is typically information that human resource departments tend to possess in their skill and social profiles data bases, which can be used as a first-stage filter to pre-screen, identify, and target specific individuals (for a subsequent boundary-spanning survey questionnaire). Consequently, we suggest that:

Proposition 3: *Uncovering knowledge value-creation potential based on individual roles relies on information available within the Human Resource department.*

Where boundary spanner roles at a personal, individual level refer to the "contactivity" in social networks, organizational formats also can fulfil this role. Typically, it refers to deliberate interventions in the flow of information that is concentrated in a specific 'stoppage point' within an activity sequence or protocol. This 'stoppage point' creates a natural arena that accumulates, combines and reconfigures diverse knowledge inputs, commonly for subsequent use in activities downstream from the 'stoppage point'.
Key feature is the systemic design and regularity of the 'stoppage point's agenda; its purpose needs to be declared and its presence for this purpose (of knowledge (re)configuration) needs to be known and visible for all involved. Hence, it is not a temporary, one-off intervention that is related to singular projects or special circumstance of short duration (as in project management), but a regular feature of an activity stream (across projects). Boundary spanning arenas, thus, tend to be visible on activity flow charts and embedded in organizational routines of knowledge work in terms of systemic debriefing and 'what did we learn?' agenda points and performance measures. Boundary spanning arenas are not elements on an organization chart, despite that they can involve specific tasks and responsibilities that are allocated to individuals or functional expertise areas. Its boundary-spanning role would break down if it would be locked down into a specific domain that is bounded by numerous other disciplining forces such as reporting, key performance indicators (KPIs), and job titles and ranks. These arenas tend to be located at the outside of existing responsibility areas and at the periphery of organization, an idea which resonates with existing perceptions on where organizational learning takes place (Lave and Wenger, 1991). Consequently, we suggest that:

Proposition 4: *Uncovering knowledge value-creation potential – as based on organizational format – relies on activity flows rather than organization design locations.*

3. Monetization opportunities
The monetization of knowledge can be conceived as a form of capital conversion as inspired by Bourdieu (2008). Its aim is to exemplify the reciprocal interdependence between knowledge and financial resources without getting stuck in a 'chick or the egg' argument. Both knowledge and financials are interrelated, with one driving the other and vice versa; financial resources are necessary in order to both create originating stocks and receptor pools as well as "making sure that knowledge actually flows". Vice versa, knowledge actively stored and mobilized within networks and 'spun' by boundary spanners, acts as both the cost and revenue drivers for a firm's financial success. To paraphrase a tired management slogan, people might be the organisation's most important resource, but one needs to be able to afford converting knowledge carried by people into knowledge made financially productive for the organization. Ultimately, the argument here is that of the sustainability of a firm's competiveness: in order to compete over time, the conversion of non-financial (knowledge) resources into financial resources and back again, is essential (Allee, 2008, Taug and Roberts, 2002). Thus, conversion requires addressing how one can be expressed in terms of the other, showing the interdependence between both.

Knowledge networks and the role of the boundary spanner in creating reciprocal interdependencies necessitate a requisite conceptualization in terms of networks, and binding within and between networks. In this respect, we use a biological metaphor and borrow from the field of ecology (Cardille and Turner, 2002), which similarly addresses clusters of a different nature within an overall habitat. For the purpose of this paper, we conceive of the organization as a relational ecology in which clusters of relations exist which can spill over from one cluster of relations to another. The boundary spanner role here is to develop 'contagion' between network clusters (e.g., different plants, bushes, trees, grass etc.), with the relative success of contagion being measured by a "contagion index". The latter can be understood as a metric of the relative success of organizational knowledge sharing or transfer of best practice (Szulanski, 1996). We conceive the concept of contagion within ecology as similar in its phenomenological purpose as that of 'connectivity', creating influence carrying from one cluster to another. Monetization of knowledge value, thus, can be addressed as a conversion of one resource to another, with the boundary spanner role as developing the contagion and, ultimately, the reciprocal relationships between networks.

There are two main roads that can be (simultaneously) used for capital conversion: the costs road and the revenues road. Neither of the two is at present well developed in terms of instrumental functionality. For example, the use of revenue management models, in notably the airline and hospitality industries, addresses

issues of capacity over issues of flow, although there is an ontological overlap in a shared attention for networks (Bobb and Veral, 2008). Identification of revenue streams (as generated by knowledge value creation) expressed at various organizational levels is limited to so-called 'driver hierarchies' in which revenue drivers represent operational factors that cause ('drive') financials. A simplified version of these driver hierarchies can be found in the various categories of intellectual capital metrics, most of which are non-financial items that cue subsequent financial outcomes (Leibowitz and Suen, 2000). The extent and specifics of this causal chain implied by revenue drivers are presently under-researched. In terms of costs, which we address below, the attention is directed toward identifying relevant cost categories, relevant 'cost drivers', and assessing the dimensions of conversion causality, i.e., what leads to what and how deep do we need to follow that chain? For the purpose of this paper, we focus on the cost road because costs are of relatively higher immediacy to organizations and because costs historically reside in broader longitudinal data sets than revenues.

In order to identify and express how networks morph into new networks, monetization implies a (mixed-cost category) multiplier effect. For example, creating a mixed people-organizational arena engenders a similar mix; organizational-level resources (facilities, IT support, and general overheads) and individual-level resources (salaries, travel, supplies) are drawn from the various departments, expertise pools and the overall organization. This mixed cost category can be labelled as 'boundary-spanning expenses', and are encompass direct and indirect, and fixed and variable expenses. The more people from a wider set of departments are involved in these mixed people-organizational networked arenas, the higher the boundary-spanning expense. Pulling in a large group of different experts is driven by the complexity of the project. Hence, the cost drivers of boundary-spanning expenses are the volume of human resources invoked, the complexity of the knowledge output, and the time it takes (duration) to coordinate these expertise areas. The coordination effort of such diverse knowledge inputs drives organizational-level costs up (e.g. Grant, 1996). It would there be plausible that knowledge-intensive firms have a comparatively higher number of structural cost drivers as related to the complexity of the knowledge deployment/task at hand. The deeper the complexity, the higher the organizational-level costs; the expansion of complexity following the equally expanding network of involved knowledge and expertise. In other words, boundary-spanning expenses tend to work according to an expanding multiplier logic and carrying an expense pattern that finds its origination in the boundary-spanning node in knowledge networks. Consequently, we suggest the following:

> **Proposition 5:** *A boundary-spanning expense occurs in a knowledge network and is primarily driven by the complexity of the required knowledge output and expressed as an expanding pattern rather than a single line-item expense or expense category.*

3. Conclusion

In this conceptual paper, we have addressed the research question: "How can we express knowledge in such a way that it can be monetized and opened up for specific managerial interventions?" and distil five propositions for future research on how accounting can be brought to bear onto the governable and calculable aspects of knowledge management.

The contribution of this paper is that knowledge value creation can be addressed at the level of the communication flows within networks: It is at the meso-level of networks that the identification, visualization and management of knowledge value creation can be operationalized. The communication flows use the organizational format of communities of practice – the so-called "communicaties", emphasizing boundary spanners and other connectivity roles held within communication network. The monetization of knowledge value revolves around identifying communication roles each of which act as point of origin of expense patterns that reflect the knowledge value-creation process. Boundary-spanner expenses are expressed in financial terms while the expenditure patterns are multipliers (not aggregations) driven by the communication patterns initiated by the boundary spanner (role) within the network. The fact that communication is a commonly existing function within organizations, supported by both technology and specific human expertise each of which with their accompanying set of databases, makes it a useful starting point to operationalize knowledge value creation.

The paper thus proposes that the boundary-spanning role brings together diverse knowledge, and provides the focal point for monetization efforts. Extant literature on organizational communication emphasizes the boundary-spanner role in the search and combination of tacit knowledge and user experience. We address

how the boundary-spanner role is fundamental for this combinatory effort to occur. In addition, we address how these combinatory efforts within boundary-spanning roles can be extended to communication-enhancing regimes at the organizational level. Moreover, we show how monetization itself reflects the networked characteristic as the combinatory perspective (rather than the conventional point-item aggregation) of flows. Therefore, we suggest that the argument starts from the resource consumption perspective (i.e., costing) rather than the commonly used valuation or pricing perspective. The visualization of knowledge communication activities is important because it shows how the knowledge resources of a firm actually "flow". The monetization aspect here falls back on the identification of the various communication roles, notably of which the boundary spanner role acts as a focal point for monetization. The boundary-spanning expenses consist of patterns that overlap with the characteristics of the communication network. Consequently, this paper does not claim to provide an instrumental algorithm that converts knowledge into money. Rather, it directs attention of *where* to focus the conversion effort (boundary spanners), and how to build an argument of primarily *what* to convert (communication) as well as indicating *which* shape such a conversion might take (multiplying patterns). In doing so, the paper hopes to bring the research and practitioner communities within the knowledge management field closer together (Metaxiotis et al., 2005).

The practical benefits of visualizing knowledge value creation by means of communication networks are twofold: First, the insight gained can be used to improve accountability. Visualizing the exchange of knowledge within communication networks shows what we actually do, not what we say we do or what the instructions/contracts/task descriptions say we nominally do. This transparency allows for an immediate allocation of accountability with a subsequent 'reality capture' in terms of localized metrics and relevant costs. Second, there is an external and immediate usefulness for communicating the knowledge flows within the organization to its external constituencies. This is a form of "turning the firm inside out" towards, for example, customers and suppliers (notably in industrial and B2B markets), showing how expertise and knowledge resources are internally connected and made productive, including how management coordinates, enhances and directs knowledge resource flows.

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