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Capacity development in Water Operator Partnerships: more than just the right methods

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This paper explores the question of effectiveness of knowledge transfer processes in Water Operator Partnerships (WOP). Increasing funds are allocated to the promotion and implementation of WOP projects, conceived as a strong approach to strengthening the capacity of water operators in developing countries. They are considered particularly useful for the transfer of tacit knowledge, crucial to support locally owned change. Despite the great promotional efforts there is very little known on how they function. This work aims at shedding light on the knowledge transfer activities in WOPs by analysing two WOP projects through the lenses of tested knowledge management theories. The findings show how in both cases there is an alignment between methods used and type of knowledge to be transferred, as well as a predominance of methods allowing for the transfer of tacit knowledge. However, despite both projects applying the same methods, the degree of knowledge integration into the local operator's working routines greatly differs, which calls for attention to other relevant factors beyond KT methods if effective KT is to be realised.

Introduction

A strong sense of urgency to increase access to water services, the awareness of the limited reach of PPPs, the realisation that more than 85% of operators worldwide remain in public hands and that many of them deal with similar challenges set the ground to consider that if adequately facilitated and supported, collaboration between water operators by means of knowledge exchange offers a great potential for improvement in terms of access to water services (UN-HABITAT, 2007). The figure of Water Operator Partnership (WOP) was hence proposed by the United Nations Secretary-General's Advisory Board on Water and Sanitation (UNSGAB) in 2006 as promising non-for-profit approach to strengthen capacity of water operators as a conduct to improved and sustained performance. However, WOPs have been criticised for being generally accepted for their nature of solidarity despite the little knowledge on how they function and the meagre empirical evidence of their effectiveness (Boag & McDonald, 2010). A widely overlooked aspect is the knowledge transfer process that takes place in WOPs and its effectiveness. Reports on WOPs knowledge transfer activities are frequently limited to number and type of trainings (as inputs) and number of people receiving them (as outputs), which does not really inform about how the KT process takes place and its effectiveness. This paper draws on theory on knowledge transfer and applies it to analyse inter-organisational knowledge transfer processes in two WOP cases as a first step to better understand the KT process. It does so by looking at: (i) suitability of methods used for KT in each activity, (ii) degree of integration of new knowledge into working routines as an indication of KT effectiveness, (iii) extent to which the application of the theoretically right methods aligns with a greater integration of new knowledge into working routines.

Theory

Knowledge transfer process in partnerships

Capacity development partnerships constituted by organizations from developed and developing countries have been historically facilitated by development agencies as a promising development approach, on the assumption that the developing country organizations (recipients) will benefit from the knowledge base of the developed country organization (senders), which in turn will enhance its competitiveness(Narteh, 2008). Partnerships are thought to be a highly effective channel for CD given the potential for transferring tacit knowledge (Kim, Chun, Ling, & Roberts, 2011). However, inter-organisational knowledge transfer can follow diverse approaches, not all leading to the expected results. There is a strong criticism to capacity development approaches limited to knowledge transfer, in which knowledge is considered a commodity essential to development, conceived as a technical entity that can be moved unchanged from place to place (McFarlane, 2006). This view of knowledge sees the North as 'senders' and the South as 'receivers' overlooking the fact that knowledge and learning are highly political and contextually embedded. Such conception implies separation of knowledge from socio-political context. McFarlane proposes a conception of knowledge, knowledge transfer and learning as produced through translation as opposed to diffusion, and argues against a view of development knowledge as an objective and universal solution that can be conceived as separate from context and politics. He argues that knowledge, far from travelling in a linear way, always changes as it moves, through translation. According to this view, transfer of knowledge through partnerships requires the engagement of partners in shared practices, for the knowledge to be translated into relevant one for the recipient as well as a negotiation process between different situated knowledge- local indigenous knowledge and external knowledge-. This process is expected to heavily rely on the interactions and power relations between the different agents involved, among others.

Knowledge transfer as knowledge creation

Knowledge transfer entails the creation of knowledge where it does not yet exist. Nonaka and Takeuchi propose a knowledge creation model (Figure 1), in which they state that knowledge is created and expanded through social interaction between tacit and explicit knowledge (1995). T*acit knowledge* is referred to as knowledge which is non verbalized or even non-verbalizable, , difficult to articulate, develop from direct experience and action and usually shared through highly interactive conversation, storytelling and shared experience (Zack, 1999);*Explicit knowledge* is described as articulated knowledge, specified either verbally or in writing, computer programs, patents, drawings or the like (Hedlund, 1994);. At times, technical knowledge has been categorised as mostly explicit, hence easier to transfer and managerial knowledge as mostly tacit, hence more difficult to transfer (Narteh, 2008; Simonin, 1999).

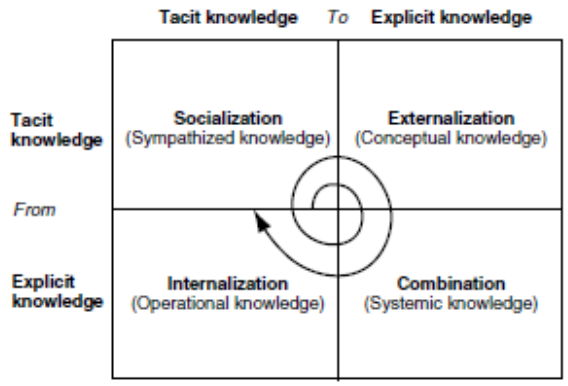

Figure 1. Knowledge spiral model

Source: Nonaka and Takeuchi (2005)

The model contemplates two dimensions, the epistemological dimension –tacit and explicit knowledge- and the ontological dimension – level of social interaction. The spiral process comprises four different modes in which knowledge can be shared, referred in this paper as knowledge management processes:

Socialisation - process of converting tacit knowledge into new tacit knowledge- , *Externalisation* -process of articulating tacit knowledge into explicit knowledge-, *Combination* - process of converting explicit knowledge into more complex explicit knowledge, and *Internalisation* - process of embodying explicit knowledge into tacit knowledge. The interactive spiral process of knowledge creation extends from the intra- to the inter-organisational setting, starting at the individual level and expanding as it moves through communities of interaction that transcend departmental and even organisational boundaries (2000). The knowledge creation model has been empirically used to analyse knowledge creation in inter-organizational settings (Chini, 2004; see Pedro López-Sáez, José Emilio Navas-López, Gregorio Martín-de-Castro, & Jorge Cruz-González, 2010; Rice & Rice, 2005).

Different methods for knowledge transfer (E.g. teaching in a class or on-the-job training) respond to different conversion modes (E.g. externalisation or socialisation). Becerra-Fernandez and Sabherwal (2001) claim that the suitability of the methods used to transfer knowledge in a certain organisational subunit is dependent on the predominant characteristics of the tasks of the subunit. They characterise tasks by two attributes: orientation (content or process) and domain (focussed or broad). The authors explain how content-oriented tasks target specific ends or goals to be achieved, relying on 'know what' associated with explicit knowledge; Hence, benefiting more from externalisation and combination. Process-oriented tasks (know-how) centre on the processes that should be used to attain the goals, relying mostly on 'know how', associated with tacit knowledge. Hence, benefiting more from socialization and internalization; Focussed-oriented tasks in domain often require specialised knowledge directly available to the individuals within a subunit. Hence, benefiting more from internalisation and externalisation; Tasks broad in domain are those that rely on dynamic interaction between individuals from different units, for which communication and coordination across is supportive. Thus, benefiting more from combination and socialisation. In summary, the authors hypothesised and tested that: (i) a task that is process-oriented and focussed in domain will mostly benefit from methods conductive to internalisation, (ii) a task that is content oriented and focussed in domain will mostly benefit from methods leading to externalisation; (iii) a task that is content oriented and broad in domain will mostly benefit from methods enabling combination; a task that is process oriented and broad in domain will mostly benefit from methods favouring socialisation

Effectiveness of the KT process

Measuring knowledge gained or co-created in order to provide an indication of effectiveness of KT processes presents multiple challenges. Previous work on how to measure results in WOPs proposed an approach to indicate KT effectiveness (Pascual Sanz, Veenstra, Wehn de Montalvo, & Alaerts, 2013). The proposed approach is grounded in Szulanski's model(2000). According to Szulanski, KT is an unfolding process composed of several stages – initiation, initial implementation, ramp-up and integration. *Initiation* comprises the process that takes place during from the initial idea of a transfer to the moment the decision is taken about what knowledge to transfer. *Initial implementation* covers the period from the time the decision is taken until the first time the recipient unit uses this new knowledge. *Ramp-up* encompasses the process from the first time that new knowledge is used to the moment in which new knowledge has been incorporated into working routines. *Integration* comprises the process of maintaining desired performance in new working routines. Szulanski claims that obstacles or what he calls ‘sources of knowledge stickiness’ for KT will appear in every stage and that they should be understood as inherent in the process

Methodology

A comparative case study was applied. Two WOP cases were selected, namely Lilongwe and Blantyre Water Boards partnering with the Dutch water operator Vitens Evides International. The analysis comprised the first 2,5 years of the project. The data collected concerned two different enquiries: (i) KT methods for each activity and (ii) degree of new knowledge integration. For both inquiries the data collection methods used were mainly documentary review and 38/ 32 semi-structured interviews for Blantyre and Lilongwe respectively with representatives of both partners in both cases. Once the methods for each activity were identified a classification process was undertaken. Activities were characterised in terms of knowledge-task domain (focussed or broad), knowledge-task orientation (content or process) and the methods were classified by type of conversion mode. The findings on effectiveness of KT are gathered from an earlier publication on the same cases (Pascual Sanz et al., 2013). In that work the authors explain how the effectiveness of the WOP activities was informed by the stage of knowledge transfer in which each project

activity was, according to Szulanski's model. I.e. Initiation complete (stage 1): a decision on which knowledge to be created is made; initial implementation complete (stage 2): new knowledge is gained and used; Ramp up complete (stage 3): changes in working routines are effective; Integration complete (stage 4): desired performance is achieved and maintained.

Results and discussion

(i)Alignment of type of knowledge (or task) with the type of KT method (conversion mode)

The results of both cases are synthesised in the same table given that most of the registered KT activities were implemented following the same methods in both projects. That explains the presentation of the results of both projects in one table. Table 2 summarises the results obtained and a first level of analysis, comprising: (i) addressed tasks/ type of knowledge, (ii) characterisation of each tasks/type of knowledge in terms of the attributes 'orientation' and 'domain', (iii) recommended conversion mode based on existing theory, (iv) KT methods used for each task and corresponding conversion mode.

(i)Implemented task / type of knowledge	**(ii) Assigned tasks attributes**		**(iii) Recommended conversion mode**	**(iv) Applied KT Method / conversion mode**			
	Orientation	Domain		Classroom type of training/ *-Externalisation and internalisation-*	On-the-job training/ *-Socialisation and Internalisation-*	Joint-development of tools *-Combination and externalisation-*	Workshops with group discussions/ *-Socialisation and Externalisation -*
Financial management							
Advance excel - I	P	F	I.	■	■		
Financial management (use of decision support systems) - IE	CP	F	I, E.		■	■	
Tariff calculation model - IE	CP	F	I.E.	■	■		
NRW reduction							
NRW components - caretaker approach theory -CS	C	B	c	■		■	■
Plumbing - I	P	F	I.	■	■		■
GPS use to geo-reference elements from the water system - I	P	F	I.		■		
Identification of boundary valves-I	P	F	I.		■		
GIS development and maintenance -CS	CP	B	c.S.	■	■	■	
Hydraulic modelling and related tasks-CS	CP	B	c.S.	■		■	
Distribution data management-I	P	F	I.		■		
EDAMS customer database maintenance	P	B	S.	■			■
Customer care	P	B	S.				■
Meter reading procedures	P	F	I.		■		■
Operations and Maintenance (O&M)							
Pumping efficiency tests and flow tests	P	F	I		■		
Management support							
Management information system (MIS)	CP	B	c.S.		■	■	■
Team building	P	B	S.				■
Communications management	P	B	S.		■		■

Table 2 Summary of results (Process (P), Content (C), Focussed (F), Broad(B), Socialisation (S), Externalisation (E), Combination (c), Internalisation (I))

The main methods used in both projects were: on-the-job training, joint-development of tools/systems from the distance, classroom type of training and workshops /group discussion. A total of 17 different tasks / type of knowledge were addressed by KT activities in the projects, grouped in key areas of knowledge in water utility operations - financial management, Non Revenue Water reduction, commercial management, operations and maintenance and general management. The results show the strong presence of methods promoting the transfer of tacit knowledge, such as the extensive use of on-the-job training and workshops and group discussion, both of which favour internalisation and socialisation. When comparing recommended and applied knowledge conversion modes, it is notable that the expected methods (and equivalent conversion modes) for each activity coincide in both projects with the applied ones. Moreover, additional methods were used for some activities.

(ii)Effectiveness of the knowledge transfer process

The Knowledge Consolidation Map retrieved from Pascual et al. (2013) shows that Blantyre Water Board (BWB) had progressed further than Lilongwe Water Board (LWB) on the selected tasks.

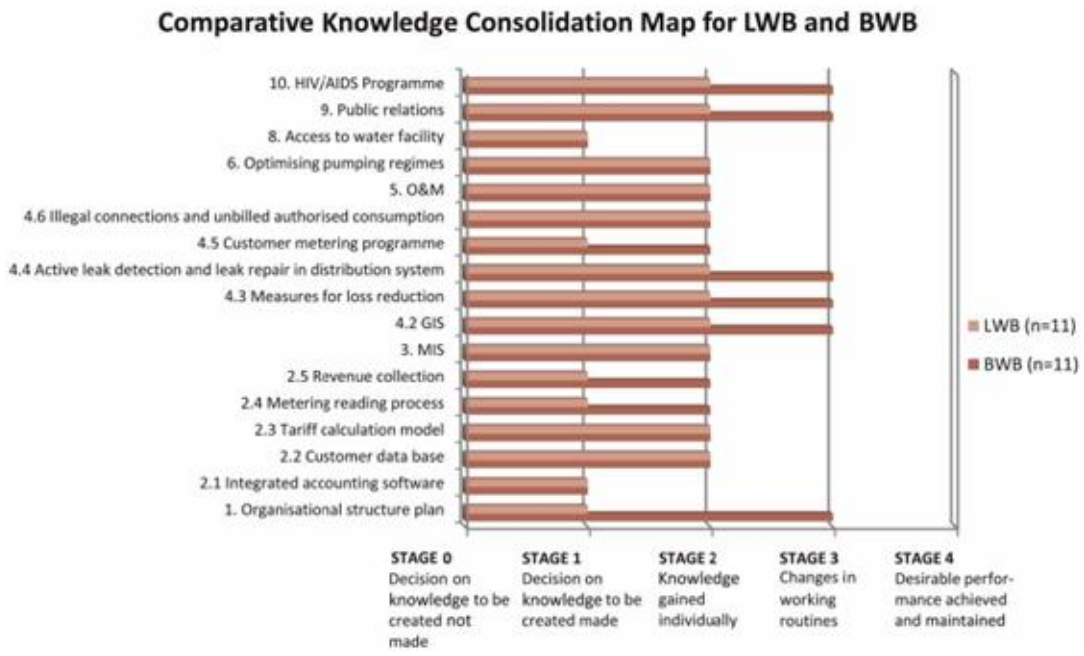

Figure 2. Comparative knowledge consolidation map of LWB and BWB

Source: Pascual Sanz et al., 2013

The identification of obstacles in the KT process is also valuable information to better understand the challenges of knowledge transfer for each specific task. For example, the main obstacles identified for some task-related knowledge that prevented them from moving to Stage 3 in LWB were: (i) low interest from executive management (possibly influenced by external forces) in the incorporation of the tariff calculation model as a working routine; (ii) weak internal communication and coordination between departments and sections and low interest by executive management in the MIS; and (iii) insufficient training and follow-up from VEI for the tasks pumping regimes and measures for loss reduction (Pascual Sanz et al., 2013).

Conclusion

The paper stresses the generalised narrow understanding and account of KT process in WOPs, frequently limited to methods applied for training. Drawing on knowledge management theory, an analytical approach is devised to examine both, (i) the alignment between KT methods and type of knowledge to be transferred in order to illustrate the suitability of methods applied, and (ii) the effectiveness of KT activities. A WOP

comparative case study showed how both projects strongly emphasised methods for the transfer of tacit knowledge. Besides, the methods used strongly aligned with the theoretically recommended ones according to the type of knowledge. Interestingly thought, the findings illustrate how despite the fact that both projects made use of the same methods, the effectiveness of the KT activities differed considerably. This work manifests the importance of factors other than 'KT methods' in achieving effective KT in WOPs. The author cautions on the preliminary nature of the findings and proposes further empirical testing of the theoretical constructs presented in order to precisely identify the obstacles to KT for typical water operator improvement areas.

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