

Organisation Design and Structure with regard to the Facilitation of Tacit Knowledge Management

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ABSTRACT

We conducted empirical studies in three IT organisations of varying size, type and structure that found that organisational structure can have a direct bearing on the quality and volume of tacit knowledge exchange. Our research indicates there is likely to be a strong positive correlation with organisations whose structure and work design promotes face to face contact and have employees sharing close physical proximity with one another, being those more successful at ensuring their tacit knowledge is well shared.

INTRODUCTION

Workplaces are likely to benefit through the nurturing of intellectual capital, chief among which is the effective utilisation of tacit knowledge (Curtain 1998). But how do organisations differ in their usage or transference of tacit knowledge? Can we, the researchers, expect to see a difference of tacit knowledge utilisation depending on the different organisational types along Mintzberg's (1991a, b, c, d, e) organisational lines? Lam (2000) for example argues "the knowledge of the firm is socially embedded. It is rooted in the firms' coordination mechanisms and organizational routines which, in turn, are heavily influenced by societal institutions" (:488).

Although recent evidence (Cavusgil, Calantone and Zhao 2003) would seem to suggest that firm *size* does not have any effect on the strength of relationships between individuals and the extent to which tacit knowledge is likely to be transferred, the *type* of organisation at the macro level as noted by Lam (2000) does.

The goal of this paper is to present our findings based on three case studies into whether there is indeed a relationship between organisation design and structure and the effective management of tacit knowledge as suggested by Lam.

RESEARCH METHOD

Empirical research was conducted in three IT organisations, which we shall refer to as X, Y and Z. In each organisation, we measured the extent to which a person could be said to possess tacit knowledge and then measured the flow of that knowledge within each of the organizations using an inventory of IT workplace scenarios and answer options along the lines of a Sternberg-based (1995) psychological testing instrument. To track the soft knowledge dissipation cycle we employed Social Network Analysis (SNA) (Scott 1991). The final part to our triangulated methodology was the use of Formal Concept Analysis (FCA) (Wille 1997) as a means to model the behaviour (that is, scenario responses) and characteristics (that is, biographical features) of the respondents (see Figure 1).

THE CASE STUDIES

Organisation X with 108 participants was quite multicultural, with 53 of the 108 staff speaking at least one language other than English. The gender ratio of our sample population was roughly 60:40 with there being more males. The organisation comprised mostly of IT professionals, around 35 to 50 years of age, typically with 10 to 15 years IT experience, clustered around what would ordinarily be middle management level, and working independently. Most had been with the present organisation for less than 4 years. They tended to be tertiary educated, a small proportion even held doctorates. They were mostly permanently employed. Around 30% of our sample was identified as being expert, where experts were those identified by their peers as proficient at what they did in the IT domain. The experts seemed to have lower academic qualifications than the non-expert respondents.

Organisation Y, an IS management consultancy, had 7 respondents participate in our study. The firm had a staff profile that was senior in terms of age (50 – 55 years of age) and IT experience (> 20 years IT experience for the most part). The staff were largely Anglo-Celtic Australian and all were tertiary educated. Six were male and one respondent was female. The structure of the firm was very flat. Peer surveys identified five out of the seven participants as being experts.

Organisation Z with 16 respondents was substantially more multicultural than *Y*, with effectively 50% of its IT staff being non-Anglo-Celtic Australian. The experts tended to be in managerial and/or 'front office' type positions. Conversely novices appear to be in more technical roles. Furthermore there appeared to be a strong positive correlation between being considered to be an expert and having a number of subordinates. At the same time there was only a weak positive correlation between IT experience in this organisation and being considered to be an expert. There was a strong positive correlation with expertise and length of tenure in the organisation. Experts had generally been present for more than 5 years; the opposite was true of novices. Experts were not particularly well qualified from a technical computing qualification point of view, however they were consistently better formally educated *on the whole* than the novices as a group. The experts appeared to be either 'young guns' or they are 'grey haired'.

ORGANISATIONAL TYPES

Mintzberg classified organisations into principally five types, being those of entrepreneurial, machine, diversified, professional and finally innovative. Lam (2000) also mentions the J-form (J for Japanese) organisation. Please peruse the references provided (or contact the author) for definitions of these types.

According to the Mintzberg organisational forms, *Organisation X* on the whole was a *diversified company*, however the IT branch operated as a combination of a *machine bureaucracy* and a *professional bureaucracy*. The IT group in *Organisation Z* was very similar to the IT group in *Organisation X*, except on a much smaller scale. Finally, *Organisation Y* could be said to comprise a *professional bureaucracy*.

DISCUSSION

Whilst relations between colleagues in *Organisation X* were generally more than cordial, some bottlenecking was occurring with certain work groups tending to avoid one another. If we couple this with a more or less widespread use of electronic mediums for data transfer then we conceivably have a situation where tacit knowledge is being withheld within certain cliques and aggressively transferred within others (a clique is considered to be a grouping of ≥ 3 people). It is worthwhile noting that the size of the firm necessitated some codification of knowledge and transfer through electronic mediums, which tends unfortunately to destroy the opportunity for tacit knowledge transfer. At the same time, some of the interaction and mentoring patterns within the firm could be improved. For example certain 'power' cliques could also be seen to comprise dense networks of expert colleagues in certain work areas. Whereas other 'novice' colleagues could be seen to be missing out on access to groups high in tacit knowledge density.

In many ways the dynamics of *Organisation Y* proved ideal with regard to the intra-organisational transfer of tacit knowledge. The 'boutique' size of the firm and the dense social interaction patterns

combined to form a harmonious working environment where all members are well interconnected and transfer their knowledge on a solidly face-to-face basis. The advantages of soft knowledge transfer in this firm are compounded by the general lack of electronic means of interaction indicating that wherever possible the employees see passing knowledge in a personal setting as preferable. The frequency with which meetings are conducted in this organisation indicates that any misunderstandings, which might occur because of a possible loss of tacit knowledge transfer, can easily be remedied given the almost hourly contact that takes place between the staff. A further advantage for the firm is the physical layout of the offices and buildings (all in the same building), which illustrates a firm that is able to make maximum use of its intra-organisational communication.

In *Organisation Z*, it would appear that the potential for soft knowledge to flow is high in this firm given the fairly intimate size of its workgroup and their location within the same building. There are examples of tacit knowledge bottlenecks occurring here. Factors, which affect the knowledge flow for this firm, include for example the number of cliques. Unlike our small organisation (Y) with only one clique, this small-medium sized firm displays 13 cliques. There is some utilisation of electronic means of communication. The extent of this is not significant; nevertheless it could have a negative bearing on tacit knowledge transfer. This sized organisation clearly seems to feel it requires electronic mediums of data transfer, but not quite to the extent of our large firm (X).

CONCLUSIONS

Tacit knowledge can be gained through personal experience. Nevertheless should it need to be transferred from one individual to the next then this must necessarily take place through verbal and visual interaction. Generally speaking it would appear the larger the organisation, the more the firm is inclined towards electronic forms of data administration and transfer. There would appear to be a strong positive correlation between organisational size and diminishing ease with which tacit knowledge is being transferred. Furthermore our research indicates that there is not a strong positive correlation between technically qualified or formally qualified personnel and their tacit knowledge richness. Nor for that matter is there a strong positive correlation between increasing age and tacit knowledge richness.

From a tacit knowledge transfer effectiveness point of view the optimal firm would be that of Y. That is to say a small firm along the lines of an operating adhocracy (Lam 2000) or perhaps professional bureaucracy (Mintzberg 1991a). Factors that were helpful here included: A dense communication pattern insofar as daily meetings involve all staff. No staff were strongly avoided. Meetings in this firm are largely informal. Staff occupied the same floor of the building. The organisation revolves around management consultancy, which is naturally communication intensive. Staff were senior management types (a role that is strongly communication based). The firm is largely mono-cultural (meaning cultural distances are minimal). The staff held each other largely in high esteem (given that the majority were selected as experts). In view of these factors, it is highly unlikely that tacit knowledge bottlenecks could be said to be taking place certainly not on any noticeable scale. It is highly probable that similar sized firms with analogous communication patterns would also be effective in transferring their tacit knowledge.

In terms therefore of tacit knowledge diffusion likelihood, the firm best placed for its transfer is clearly our small one (Y), but the next best would have to be our medium one (Z) followed by our largest one (X). One could with *some* degree of certainty as a result of this research make claims to the effect that the larger the firm the less likely tacit knowledge is to be successfully transferred from one individual to the next.

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