Neapolis University

HEPHAESTUS Repository **http://hephaestus.nup.ac.cy**

School of Economic Sciences and Business Conference papers

2006

The Impact of Organisational Bureaucracy ori the Determinants of Knowledge Acquisition

Politis, John D.

ACL, Academic Conferences Ltd

http://hdl.handle.net/11728/8808

Downloaded from HEPHAESTUS Repository, Neapolis University institutional repository

The Impact of Organisational Bureaucracy on the Determinants of Knowledge Acquisition

John D. Politis
Higher Colleges of Technology, Dubai Men's College, United Arab Emirates
john.politis@hct.ac.ae

Abstract: The objective of this paper is to empirically investigate through an industry survey, the impact of organisational bureaucracy on the determinants of knowledge acquisition. The results show that a pyramidical structure has a significant negative effect on the determinants of knowledge acquisition and, by extension, obstruct employees in transferring knowledge from one person to another through sharing experience, dialogue discussions, know-how 'exteriorisation' and teaching. The findings also indicate that a less bureaucratic organisational structure serves as a catalyst to knowledge creation and sharing through its effect on the dimensions of communication/problem understanding, organisation/liberal arts, and negotiation/knowledge.

Keywords: knowledge acquisition, knowledge worker, organisational bureaucracy, organisational structure, self-managing teams

1. Introduction

In his book PowerShift, Toffler (1990) made it clear that knowledge has become the global competitive driver and knowledge work and knowledge workers have emerged as the fundamental assets in today's organisations (Drucker 1993). Given that 42 percent of corporate knowledge is held within employee's minds (Davenport & Prusak 2000), it is important for organisations to set up the work structures and knowledge creation processes whereby knowledge workers are entirely focused on sharing information for the benefit of the organisation (Lang 2001). Crucial in this activity is social interaction, and more specifically, validation of knowledge through discussion with peers, contextualising and recontextualising it in new contexts, and achieving consensus (Coombs & Hull 1998). However, rules and regulations and hierarchy of authority (e.g. organisational structure) tend to provide management the foundation to prescribe or restrict the behaviour, and to a large extent, the socialisation of organisational members (Dalton, et al. 1980). Some researchers suggest that pyramidal structures and bureaucracies frustrate participants (Ferguson 1984) and, by extension, individuals are reluctant to transform tacit knowledge into an explicit knowledge (Bergman, Jantunen & Saksa 2003). Others suggest that bureaucracy provides needed guidance, clarifies responsibility, reduces role stress, and helps individuals feel and be more effective (Hoy & Miskel in press).

Despite the interest in studying the influence of bureaucracy on organisational outcomes, it is being argued that "the research on the relationship between many structural variables and subsequent levels of performance or job satisfaction is far from consistent" (Robbins 2003: 447). In particular, the discussions regarding the contexts within which knowledge is created and used tend to be inadequately considered (Lang 2001). Consequently, there is an increased interest from academics and practitioners in addressing the extent to which organisational bureaucracy enables or disables the process of knowledge management/acquisition. The goal of this study is to empirically examine the relationship between organisational bureaucracy and a number of knowledge acquisition determinates in a self-managing environment.

2. Literature review

2.1 Knowledge creation in a learning organisation

In the theory of organisational knowledge, the knowledge creation process is a continuous and cumulative process, in which accumulated prior knowledge increases the ability to gain more knowledge and learn subsequent concepts more easily (Bhatt 2000). Nonaka (1994) and Nonaka and Takeuchi (1995) proposed a theory of knowledge creation which is based on "social interaction" between tacit and explicit knowledge (Nonaka 1994: 15; Nonaka et al. 1994: 338). In this theory four phases of knowledge conversion were identified (see Figure 1): tacit to tacit (Socialisation); tacit to explicit (Externalisation); explicit to explicit (Combination); and explicit to tacit (Internalisation). After Internationalisation the process continuous at a new "level', hence the metaphor of a "spiral" of knowledge creation (Nonaka & Takeuchi 1995: 71-2, 89) often referred to as the Socialisation, Externalisation, Combination, and Internalisation (SECI) model.

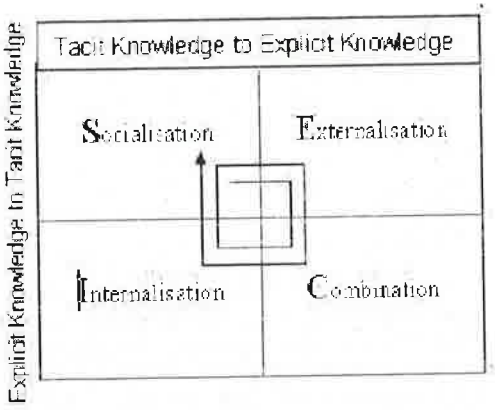

Figure 1: Knowledge creation process adapted from Nonaka and Takeuchi (1995:57, 62, 71)

The SECI model starts with socialisation, which is a process of converting new tacit knowledge through shared experience in day-to-day social interaction. Socialisation within the originating 'ba' or 'place' (Nonaka & Konno 1998) provides a rich and meaningful platform for face-to-face natural interaction. Nonaka and Konno suggested that the four types of ba (originating, interacting, cyber and exercising) act as promoters of socialisation, externalisation, combination and internalisation, and so enable knowledge creation. In relation to socialisation a review of the literature suggests that the organisational structure, size and job designs are positively associated with the process of socialisation (Ashforth, Saks & Lee 1998). Moreover, in a study of successful knowledge management projects, Davenport, DeLong and Breers (1998) identified eight key factors that led to project success, and amongst them, organisational structure was found to create a trustworthy environment for knowledge generation, collaboration and knowledge sharing. Yet, it is suggested that social relationship is the link between individual memory and organisational memory and the 'structuration' process (Giddens 1984) is the link between individual learning and organisational learning.

All in all the review of the literature suggests that studies in knowledge management today underscore the inseparable relationship between knowledge management, organisational culture and structure (Davenport & Prusak 2000; Nonaka & Takeuchi 1995). Therefore, there must be a dynamic interaction between organisational structure (bureaucratisation) and socialisation in a way of impeding or encouraging knowledge acquisition of knowledge workers.

2.2 Bureaucratic characteristics and knowledge management/acquisition

According to Robbins (2003) 'bureaucracy' is a "structure with highly routine operating tasks achieved through specialisation, very formalised rules and regulations, tasks that are grouped into functional departments, centralised authority, narrow spans of control, and decision making that follows the chain of command" (p. 434) and, by extension, includes the physical office space, departmental or business classifications and boundaries, lines of authority, and definition of employee roles (Symon 2000; Von Krogh, Ichijo & Nonaka 2000). Although most discussions on bureaucracy-organisational structure and their relation to socialisation and knowledge management occurred over the last decade, bureaucracy is an old phenomenon and it has its roots on the Weberian theory (Weber 1947). Since the 1960s, different and rather inconclusive approaches to measure bureaucracy have been used (Yucel 1999), with Hall (1961) being the first to empirically measure bureaucratic dimensions in organisations. Hall (1961) has developed a 62-item survey instrument to measure the degree of bureaucratisation in organisations. His research has identified six dimensions of bureaucracy, namely, *hierarchy of authority*; *rules and regulations*; *impersonality*; *technical competence*; *procedural specifications*; and *division of labour* or *specialisation*. The definitions of these dimensions are shown in the Appendix.

Review of the literature on studies conducted from 1998 through to 2002 revealed that traditional organisational cultures, structures and systems include factors that create major barriers to successful knowledge management (De Long & Fahey 2000; Rastogi 2000). Specifically, it has been argued by Guptara (1999) that most barriers to success with knowledge management are ingrained within the culture and structure of organisations. Moreover, the bureaucratic organisations, whether organised by function, region, or business units, tended to prevent flow of knowledge throughout the organisation because of the focus on silos (Symon 2000). Besides the literature provided evidence that the formal structure (e.g. bureaucratic) of most companies prevented effective knowledge management from taking place (De Long & Seeman 2000). It is thus plausible to predict that the factor of bureaucracy with high mean scores (e.g. pyramidal structure) will be negatively related with the determinants of knowledge acquisition, than the factors representing a flatter structure. This prediction is expressed in Proposition 1.

Proposition 1: Factors of bureaucracy with higher mean scores (increased bureaucracy) will be negatively related to the determinants of knowledge acquisition, than those with lower mean scores (reduced bureaucracy).

The literature also suggests that many theory-based studies referred to learning organisations and the need to create an organisational structure that encouraged learning through knowledge creation and sharing (Davenport & Prusak 2000; Nonaka & Takeuchi 1995; Von Krogh et al. 2000). These studies presented methods of building an organisational structure that supported learning, which included teams, work groups, and communities of practice (Blackler 2000; Cross & Baird 2000; De Long & Seeman 2000). In these studies the most discussed concept of organisational structure was the formation of communities of practice (Blackler 2000; Cross & Baird 2000). In contrast to teams and work groups, which formed collaborative work structures on a project-by-project basis, communities of practice formed informal groups that interacted and collaborated regularly around work-related issues and challenges (Cross & Baird 2000), thus increasing social interaction and knowledge sharing. These structural approaches are known to be less specialised and less differentiated; flatter with few hierarchical levels; and less bureaucratic (Hill & Jones 2004). It is thus reasonable to assume that the factors of bureaucracy with low mean scores (e.g. flatter and less bureaucratic structure) will be more strongly and more positively related with the determinants of knowledge acquisition, than the factors representing a pyramidal structure. This assumption is expressed in Proposition 2.

Proposition 2: Factors of bureaucracy with lower mean scores (reduced bureaucracy) will be stronger, and more positively related to the determinants of knowledge acquisition, than those with higher mean scores (increased bureaucracy).

3. Subjects and procedure

3.1 Sample

The sample was drawn from a public utilities (electricity and water) organisation operating in the United Arab Emirates. The sample consisted of members of non-unionised employees closely linked to operations and included operators of simple equipment, maintenance engineers, industrial engineers and planners, customer assistants, clerical staff, accountants, and first-line supervisors. All respondents were full-time employees and volunteered to participate in the study. Respondents have known their immediate leader for at least 8 months. Questionnaires containing items measuring the determinants of knowledge acquisition and the dimensions of bureaucracy were distributed to 168 employees. The final cohort contained data from 9 self-managing teams, for a team response rate of 84 percent. A total of 129 employees (76.8 per cent response rate) returned usable questionnaires. Nine incomplete questionnaires were excluded from the final sample. The final sample consisted of 3.1% females and 96.9% males. Approximately thirty percent of the sample had attained a college degree and almost one half had received technical school qualifications or equivalent technical training in the English language.

3.2 Analytical procedure

The propositions were tested using covariance structure analysis. Covariance-based structures are exemplified by software packages such as LISREL, EQS and AMOS. The analysis of moment structures (AMOS, version 5) software (Arbuckle 2003) was used for the factor analysis (measurement model) and for the regression analysis (structural model). The combination of factor analysis and regression analysis is known as causal modelling (Hair et al. 1995) or structural equation modelling (SEM). Following the recommendations of Sommer, Bae and Luthans (1995), a measurement model was developed and then, with this held, a structural model. Using confirmatory factor analysis (CFA) the factorial validity of the measurement models was assessed. Given adequate validity coefficients of those measures, the number of indicators in the model was reduced by creating a composite scale for each latent variable (see Politis 2001).

As a test of the measurement and the structural models, a mixture of fit-indices was employed to assess model fit. The ratio of chi-square to degrees of freedom (χ^2/df) has been computed, with ratios of less than 2.0 indicating a good fit. However, since absolute fit indices can be adversely effected by sample size (Loehlin 1992), four other relative indices, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI), and the Tucker and Lewis index (TLI) were computed to provide a more robust evaluation of model fit (Tanaka 1987; Tucker & Lewis 1973). For GFI, AGFI, CFI and TLI, coefficients closer to unity indicate a good fit, with acceptable levels of fit being above 0.90 (Marsh, Balla & McDonald 1988). For root mean square residual (RMR) and root mean square error approximation (RMSEA), evidence of good fit is considered to be values less than 0.05; values from 0.05 to 0.10 are indicative of moderate fit and values greater than 0.10 are taken to be evidence of a poorly fitting model (Browne & Cudeck 1993).

4. Results

4.1 Measurement models

4.1.1 Independent variables

Bureaucracy made up of six subcategories, namely, hierarchy of authority; rules and regulations; impersonality; technical competence; procedural specifications; and division of labour or specialisation. These categories were assessed using Hall's (1961) 62-item instrument. The instrument employs a 5-point response scale (1 = strongly disagree to 5 = strongly agree). We conducted CFA of all items measuring bureaucracy in order to check for construct independence. We first fit a six-factor model to the data, corresponding to that proposed by Hall. The fit indices of CFI, AGFI, CFI, TLI, RMR, and RMSEA were 0.79, 0.81, 0.82, 0.71, 0.16, and 0.22, respectively, suggesting a poor model fit. It appears that certain factors should be combined and solutions examined with fewer factors. A series of CFAs were therefore performed by considering a hierarchy of competing models, from a simple null model of zero common factors through to from one-, two-, three-, four-, and five-factor solutions. Substantial gains were obtained by moving from a four-factor to five-factor solution. The data supported the independence of five factors, the first being the factor of 'authority and regulations' (19 items, α = 0.86), which consists of the original factors of hierarchy of authority, rules and regulations, and, the factors of impersonality (11 items, α = 0.91), technical competence (8 items, α = 0.78), procedural specifications (8 items, α = 0.74), and division of labour or specialisation (10 items, α = 0.76). Six items of the bureaucratic instrument were dropped due to cross loading and/or poor loading of the order of, or less than 0.09.

4.1.2 Dependent variables

Knowledge acquisition determinates were assessed by using the 26-item (skills and traits) instrument developed by Mykytyn, Mykytyn and Raja (1994). The instrument employs a 7-point response scale (1 = very unimportant to 7 = very important), and consists of six subscales, namely, communication/ problem understanding, personal traits, control, organisation, negotiation, and liberal/nonverbal communication. The selection of Mykytyn and colleagues scale is justified for a number of reasons: *first*, the questionnaire is short and it is easy to administer. *Second*, its scoring is simple. *Finally*, the 26 skills and traits for knowledge acquisition were previously tested with the underlying dimension of knowledge creation (e.g. sociability – socialisation) in Politis's (2005) study, and hence are relevant to the current study.

We conducted CFA of all items measuring knowledge acquisition in order to check for construct independence. We first fit a six-factor model to the data, corresponding to that proposed by Mykytyn and colleagues. The CFA results indicated that the six-factor model does not fit the data well since the values of GFI, AGFI, CFI and TLI fell below the recommended level of 0.90. Thus, items were removed when AMOS showed non-significant paths or were loaded on another factor when modification indices suggested strong cross loading. Through this process a four-factor model has emerged which fits the data reasonably well (χ^2/df = 2.09; GFI = 0.92; AGFI = 0.89; CFI = 0.94; TLI = 0.86; RMR = 0.07; and RMSEA = 0.09). The CFA supported the independence of four factors, the first being the factor of communication/problem understanding (7 skill/traits, α = 0.73), personal traits/control (6 skill/traits, α = 0.74), organisation/ liberal arts (7 skill/traits, α = 0.72), and negotiation/knowledge (5 skill/traits, α = 0.68). One item was dropped due to poor loading of the order of 0.10.

As a result of the CFAs, the theoretical model to be tested contains five dimensions of organisational bureaucracy and four determinants of knowledge acquisition, as shown in Figure 2.

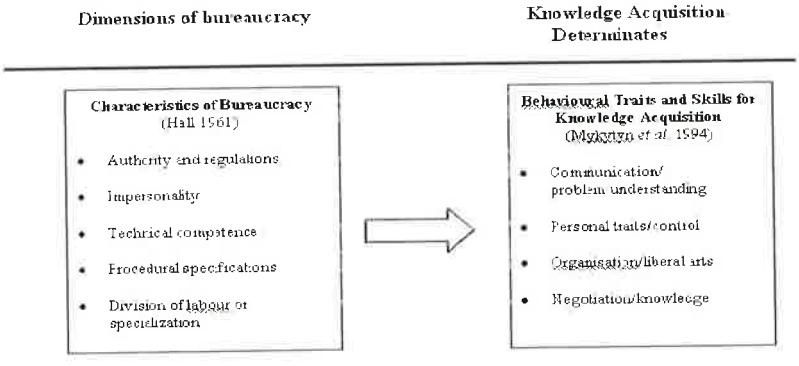

Figure 2: Summary of variables used in the paper

5. Path modelling

Using the analytical procedure outlined in Politis's (2001: 358-359) study, the computation of the regression coefficients (λs) and the measurement error variances (θs) were performed. We build this information into the path model to examine the relationships among the latent variables. Table 1 contains the means, standard deviations, reliability estimates, the regression coefficient λ and measurement error θ estimates.

Table1: Descriptive statistics, reliabilities, λ and θ estimates

			Reliability estimate	Loading	Error variance
Variable	Mean	SD(σ)	Cronbach Alpha (α)	$\lambda = \sigma * \sqrt{\alpha}$	$\theta = \sigma^2 * 1 - \alpha$
Dimensions of bureaucracy					
Authority and regulations	3.97	0.64	0.86	0.59	.057
Impersonality	4.06	0.65	0.91	0.62	.038
Technical competence	3.86	0.67	0.78	0.59	.099
Procedural specification	3.76	0.66	0.74	0.57	.113
Division of labour/specialisation	1.88	0.61	0.76	0.53	.089
Knowledge acquisition determinates					
Communication/problem understanding	5.48	0.70	0.73	0.60	.132
Personal traits/control	5.42	0.83	0.74	0.71	.179
Organisation/liberal arts	5.34	0.74	0.72	0.63	.153
Negotiation/knowledge	5.60	0.68	0.68	0.56	.148

Note: λ has been rounded to two decimal places
N = 129

The model of Figure 3 contains the five independent variables of organisational bureaucracy and the dependent variables of knowledge acquisition. The analysis revealed that the structural model of Figure 3 fits the data well, with χ^2/df = 1.97; GFI = 0.92; AGFI = 0.89; CFI = 0.93; TLI = 0.90; RMR = 0.05; and RMSEA = 0.08. Alternative models were examined with either paths added, reversed or removed, but none improved the model fit.

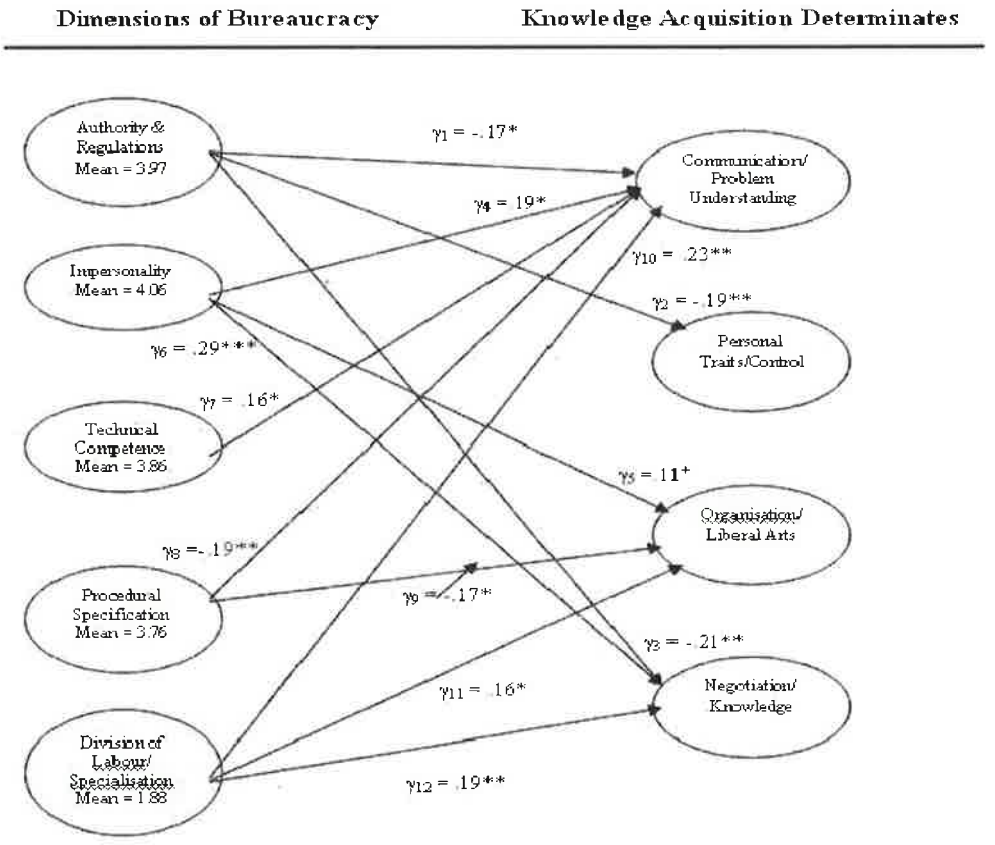

Figure 3: Structural estimates of the hypothesised model[α]

Note: [α] Standardised path coefficients; N = 129[+] $p < 0.10$, *$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.1 Propositions testing

Figure 3 displays results of propositions testing using SEM. Standardised path estimates (γs) are provided to facilitate comparison of regression coefficients. It should be noted that only the significant regression coefficients are reported. As predicted by Proposition 1 the factors of bureaucracy with higher mean scores (increased bureaucracy) are negatively related with the determinants of knowledge acquisition. Specifically, *authority and regulations* (mean = 3.97) was significantly and negatively related to *communication/problem understanding* (γ_1 = -0.17, $p < 0.05$), *personal traits*/control (γ_2 = -0.19, $p < 0.01$), and *negotiation/knowledge* (γ_3 = -0.21, $p < 0.01$). Moreover, *procedural specification* (mean = 3.76) was significantly and negatively related to *communication/problem understanding* (γ_8 = -0.19, $p < 0.01$), and *organisation/liberal arts* (γ_9 = -0.17, $p < 0.05$). Contrary to our proposition, the results showed that the effect of *impersonality* on the determinants of knowledge acquisition was significant and positive. Specifically, *impersonality* (mean = 4.06) was positively related to *communication/problem understanding* (γ_4 = 0.19, $p < 0.05$), *organisation/liberal arts* (γ_5 = 0.11, $p < 0.10$), and *negotiation/knowledge* (γ_6 = 0.29, $p < 0.001$).

Proposition 2 (*P2*) predicted that the factors of bureaucracy with lower mean scores (reduced bureaucracy) will be stronger, and more positively related to the determinants of knowledge acquisition, than those with higher mean scores (increased bureaucracy). The standardised path coefficients between *division of labour/specialisation* and the determinants of knowledge acquisition were significant and positive, supporting *P2*. The factor of *division of labour/specialisation* (mean = 1.88) was positively related to *communication/ problem understanding* (γ_{10} = 0.23, $p < 0.01$), *organisation/liberal arts* (γ_{11} = 0.16, $p < 0.05$), and *negotiation/knowledge* (γ_{12} = 0.19, $p < 0.01$). Finally, the factor of *technical competence* (mean = 3.86) was significantly and positively related to *communication/ problem understanding* (γ_7 = 0.16, $p < 0.05$). No other paths were significant between the determinants of knowledge acquisition and the dimensions of bureaucracy.

6. Discussion

The aim of this study was to empirically investigate the impact of organisational bureaucracy on the skills and traits of knowledge workers (e.g. determinants of knowledge acquisition) that are most essential for creating and updating knowledge stock, a stock that can be accumulated and retrieved for reuse in various situations and contexts. The study has demonstrated that a hierarchical, or a pyramidical structure (e.g. increased bureaucracy with mean scores lying between the high end of 'neutral' to the lower end of 'agree') has a significant negative effect on the knowledge acquisition determinants of communication/problem understanding, personal traits/control, organisation/liberal arts, and negotiation/knowledge. Specifically, the combined dimension of hierarchy of authority and rules and regulations with mean score equal to 3.97 out of 5, with 5 being the higher score, is found to obstruct employees in transferring knowledge from one person to another through sharing experience, dialogue discussions, know-how 'exteriorisation' and teaching. Similarly, the relatively high score of procedural specialisation (mean score equal to 3.76) is found to discourage and even restrict employees' interviewing, listening, probing, rational thinking, conceptualising and hindsight (e.g. communication/problem understanding); speaking, writing, managing and leading (organisation/liberal arts). From the viewpoint of knowledge management, it was demonstrated that the bureaucratic dimension of procedural specification impedes socialisation and hence the creation of new knowledge though experimentation, improvisation, creativity, contextualisation and externalisation.

Furthermore, the results show that the less specialised organisational structures tend to correlate positive with the determinants of knowledge acquisition. Specifically, the bureaucratic dimension of division of labour/specialisation with mean score equal to 1.88 (reduced bureaucracy) is found to create an enabling environment for knowledge generation and supports collaboration and knowledge sharing, a view shared by Symon (2000). Moreover, the study has demonstrated that the high score of impersonality (mean score equal to 4.06) serves as a catalyst to knowledge creation through its effect on the dimensions of communication/ problem understanding, organisation/liberal arts, and negotiation/knowledge. In other words, it is the friendly climate that encourages open communication and enables employees to access the correct information at the right time (Handzic 2001).

It is implied in these results that organisations must strive to design flatter and less pyramidical structures for encouraging, fostering and enforcing socialisation and, by extension, creativity, knowledge acquisition and knowledge sharing. The findings suggest that a networked structure with modern technologies can be the enabling tool in improving employees' ability to acquire knowledge as well as facilitating knowledge sharing, representation and transformation. Traditional and more bureaucratic organisational structures tend to hamper knowledge sharing and problem solving. It is thus suggested if organisations wish to harvest the results of knowledge creation and knowledge sharing they should focus on designing structures that are flatter, less specialised and less differentiated and should be organised around teams, especially empowered teams or self-managing teams. The notion of developing self-managing teams through organisational structures is very consistent with the idea of the horizontal organisation (Byrne 1993).

6.1 Limitations and directions for future research

While this research has established a clear relationship between independent and dependent variables, some caution must be exercised when interpreting these findings due to a number of limiting factors. First, the cross-sectional nature of the study renders it vulnerable to problems typically associated with survey research (common method variance). To account for the common method variance problems, it would have been advantageous for future researchers to gather data from multiple sources.

Second, although the variables of bureaucracy used in this study were considered important in predicting the skills and traits (determinants) of knowledge acquisition, future research models should examine the relationship of knowledge acquisition with other factors, such as information technology (Davis 1998), organisational trust and power (Ford 2001), culture and leadership (Davenport et al. 1998), and organisational and social networks (Granovetter 1985). Finally, the bureaucratic dimension of impersonality consists of the sub-dimensions of friendliness and formality and it was used as one dimension in the SEM. Since the dimension of friendliness of an organisational climate is most likely to be an outcome variable rather than a structural variable it is suggested future research should analyse friendliness and formality separately.

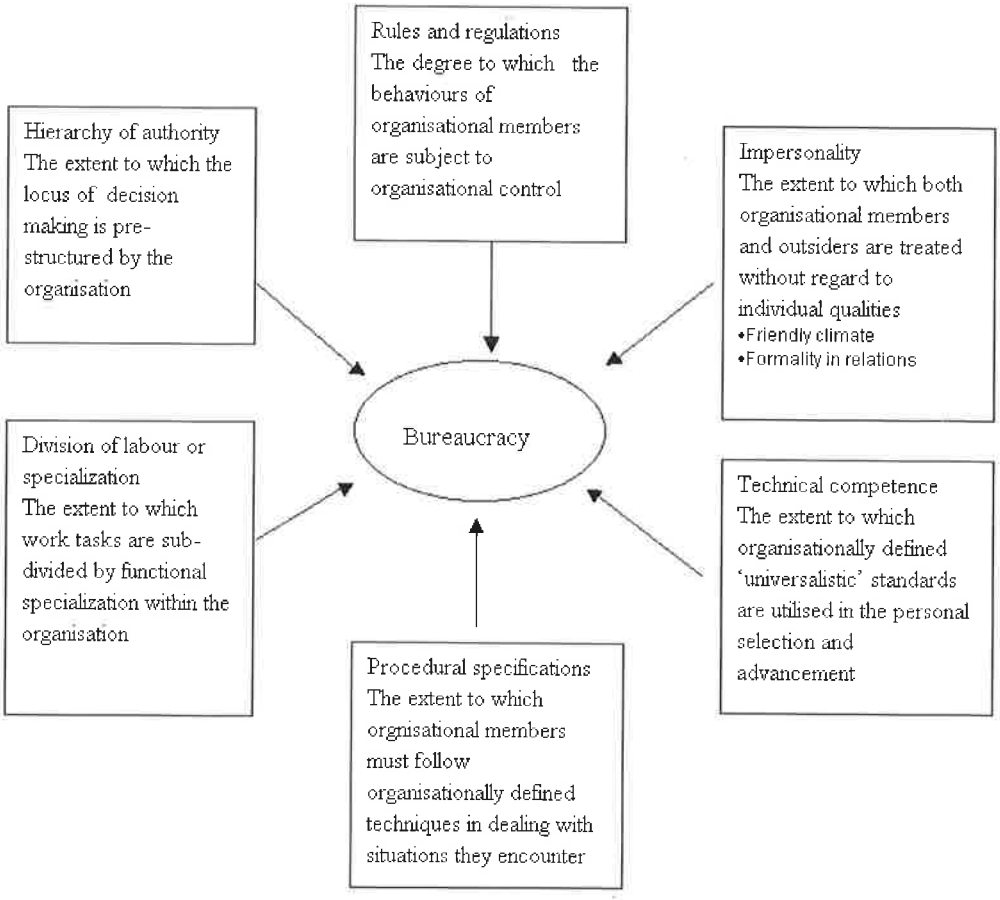

Figure 4: Characteristics (dimensions) of bureaucracy

Adapted from Hall (1968: 95)

References

Arbuckle, J. L. (2003) *Analysis of moment structures (AMOS), user's guide version 5.0.* SmallWaters Corporation, Chicago, IL.

Ashforth, B. E. Saks, A. M. & Lee, R. T. (1998) "Socialization and newcomer adjustment: The role of organizational context", *Human Relations*, Vol 51, No.7, p897.

Bhatt, G. (2000) "Information dynamic, learning and knowledge creation in organisations", *The Learning Organisation,* Vol 7, No.2, pp89-98.

Bergman, J. Jantunen, A. & Saksa, J. M. (2003) "Knowledge creation and sharing in a corporation – The role of the scenario process and dynamic capabilities in knowledge management", in the proceedings of

The 4th European Conference on Knowledge Management (ECKM 2003), Oriel College, Oxford University, UK, 18 - 19 September, pp57-66.
Blackler, F. (2000) "Collective wisdom", *People Management*, Vol 6, No.13, pp61-63.
Browne, M. W. & Cudeck. R. (1993) "Alternative ways of assessing model fit", in Bollen, K. A. &. Long, J. S (eds.), *Testing Structural Equations Models,* Sage, Newbury Park, California, pp136-162.
Byrne, J. A. (1993) "The horizontal corporation", *Business Week,* December 20, pp76-81.
Coombs, R. & Hull, R. (1998) "Knowledge management practices and path-dependency in innovation", *Research Policy,* Vol 27, pp237-253.
Cross, R. & Baird, L. (2000) "Technology is not enough: Improving performance by building organizational memory", *Sloan Management Review*, Vol 41, No.3, pp69-79.
Dalton, D. R. Todor, W. D. Spendolini, M. J. Fielding, G. J. & Porter, L. W. (1980) "Organisation structure and performance: A critical review", *Academy of Management Review,* Vol 5, No.1, pp49-64.
Davenport, T. H. DeLong, D. W. & Breers, M. C. (1998) "Successful knowledge management projects", *Sloan Management Review,* Winter, pp43-57.
Davenport, T. H. & Prusak, L. (2000) *Working knowledge: How organizations manage what they know,* Harvard Business School Press, Boston, Massachusetts.
Davis, M. C. (1998) "Knowledge management: Information strategy", *The Executive's Journal,* Fall, pp11-22.
De Long, D. W. & Fahey, L. (2000) "Diagnosing cultural barriers to knowledge management", *Academy of Management Executive*, Vol 14, No.4, pp113-127.
De Long, D. W. & Seeman, P. (2000) "Confronting conceptual confusion and conflict in knowledge management", *Organizational Dynamics*, Vol 29, No.1, pp33-44.
Drucker, P. F. (1993) *The post-capitalist society,* Butterworth-Heinemann, London.
Ferguson, K. E. (1984) *The feminist case against bureaucracy,* Temple University Press, Philadelphia.
Ford, D. (2001) "Trust and knowledge management: The seeds of success", *Working Paper 01-08,* Queen's KBE Centre for Knowledge-based Enterprise, Kingston.
Granovetter, M. (1985) "Economic action and social structure: The problem of embeddedness", *American Journal of Psychology,* Vol 91, No.3, pp481-510.
Giddens, A. (1984) *The constitution of society,* Polity Press, Cambridge.
Guptara, P. (July/August 1999), "Why knowledge management fails", *Knowledge Management Review*, Melcrum publishing, pp26-29.
Hair, J. F. Anderson, R. E. Tathan, R. L. & Black, W. C. (1995) *Multivariate data analysis with readings,* 4th ed., Prentice Hall, Englewood Cliffs, New Jersey.
Hall, R. H. (1961) *An empirical study of bureaucratic dimensions and their relationship to other organisational characteristics,* Unpublished Doctoral Dissertation, The Ohio State University, Columbus.
Hall, R. H. (1968) "Professionalisation and bureaucratisation", *Administrative Science Quarterly,* Vol 3, No.1, pp92-104.
Handzic, M. (2001) "Knowledge management: A research framework", in the proceedings of The 2nd European Conference on Knowledge Management (ECKM 2001), Bled School of Management, Bled, Slovenia, 8 - 9 November, pp219-229.
Hill, C. W. L. & Jones, G. R. (2004) *Strategic management – An integrated approach,* 6th ed.,
Houghton Mifflin Company, Boston, NY.
Hoy, W. K. & Miskel, C. G. (in press) *Educational administration: Theory, research and practice,* 6th ed, McGraw-Hill, New York.
Lang, J. C. (2001) "Managerial concerns in knowledge management", *Journal of Knowledge Management,* Vol 5, No.1, pp43-57.
Loehlin, J. (1992) *Latent variables models,* Erlbaum, Hillside, N.J.
Marsh, H. W. Balla, J. R. & McDonald, R. P. (1988) "Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size", *Psychological Bulletin,* Vol 103, No.3, pp391-410.
Mykytyn, P. P. Mykytyn, K. & Raja, M. K. (1994), "Knowledge acquisition skills and traits: A self-assessment of knowledge engineers", *Information and Management*, Vol 26, pp95-104.
Nonaka, I. (1994) "A dynamic theory of organisational knowledge creation", *Organization Science,* Vol 5, No.1, pp14-37.
Nonaka, I. & Takeuchi, H. (1995) *The knowledge-creating company,* Oxford University Press, New York.
Nonaka, I. Byosiere, P. Borucki, C. C. & Konno, N. (1994) "Organisational knowledge creation theory: a first comprehensive test", *International Business Review,* Vol 3, No.4, pp337-351.
Nonaka, I. & Konno, N. (1998) "The concept of 'ba': Building a foundation for knowledge creation", *California Management Review,* Vol 40, No.3, pp40-54.
Politis J. D. (Jan. 2005) "Networking: the relationship between friendship values-sociability and knowledge acquisition attributes", *International Journal of Applied Management*, ISSN 1742-2590, Vol 1, No.3, pp1-17.
Politis, J. D. (2001) "The relationship of various leadership styles to knowledge management", *The Leadership and Organizational Development Journal*, Vol 22, No.8, pp354-364.
Rastogi, P. N. (2000) "Knowledge management and intellectual capital - The new virtuous reality of competitiveness", *Human Systems Management*, Vol 19, No.1, pp39-49.

Robbins, S. P. (2003) *Organisational behaviour,* 10th ed., Prentice Hall, Upper Saddle River, NJ.
Sommer, S. Bae, S-H. & Luthans, F. (1995) "The structure-climate relationship in Korean Organisations", *Asia Pacific Journal of Management*, Vol 12, No.2, pp23-36.
Symon, G. (2000) "Information and communication technologies and the network organization: A critical analysis", *Journal of Occupational and Organizational Psychology*, Vol 73, No.4, pp389-415.
Tanaka, J. S. (1987) "How big is enough? Sample size and goodness-of fit in structural equation models with latent variables", *Child Development*, Vol 58, pp134-46.
Toffler, A. (1990) *PowerShift: Knowledge, wealth, and violence at the edge of the 21st Century,* Bantam Books, New York.
Tucker, L. R. & Lewis, C. (1973) "The reliability coefficient for maximum likelihood factor analysis", *Psychometrika*, Vol 38, pp1-10.
Von Krogh, G. Ichijo, K. & Nonaka, I. (2000) *Enabling knowledge creation: How to unlock the mystery of tacit knowledge and release the power of innovation*, Oxford University Press, New York, New York.
Weber, M. (1947) *"The theory and social and economic organisation",* in Parsons, T. ed., Henderson, A. M. & Parsons, T. (Trans), Free Press, New York.
Yucel, C. (1999) *Bureaucracy and teachers' sense of power*, Unpublished Doctoral Dissertation, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, U.S.A.