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THE RELATIONSHIP BETWEEN LEADERSHIP STYLES AND KNOWLEDGE ACQUISITION: KNOWLEDGE-ENABLED LEADER. THE AUSTRALIAN EXPERIENCE

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Abstract

Knowledge has been identified as one of the most important resources that contribute to the competitive advantage of an organisation. Many firms have reached the conclusion that effective management (acquisition) of knowledge is the only way to leverage their core competencies and achieve competitive advantage. On the other hand, there is extensive literature which argues that leadership often exhibits high performance coupled with job satisfaction, organisational commitment and trust. This triggered intensive interest from both academia and practitioners in studying knowledge management and leadership effectiveness.

Despite this interest, there is little empirical research to support the relationship between leadership and knowledge management. This is in part because in the dynamic nature of knowledge capture, dissemination, reward, and creation, leadership does not provide active means (supportive environment) that will advance knowledge acquisition. It's about creating a climate in which sharing knowledge is encouraged, or even demanded. Workers must understand why the organisation has turned to knowledge management and what payoff exists.

In view of the increasing internationalisation and globalisation of many organisations this research started by asking; Which leadership style best supports knowledge management (acquisition)? Which leadership style facilitates the management of knowledge? Does leadership have a clear understanding of the strategic role of knowledge management? The answer to these questions is one of the objectives of this paper.

The research reported in this paper investigates the relationship between Knowledge Management and the newer leadership dimensions measured by the Manz and Sims's (1987) Self-Management Leadership Questionnaire (SMLQ). It also explores the relationship between Knowledge Management and the more established dimensions of Transformational and Transactional leadership style, Initiating Structure and Consideration, as measured by Bass's (1985) Multi-factor Leadership Questionnaire (MLQ) and Stogdill's (1963) Leadership Behaviour Description Questionnaire (LBDQ).

Questionnaires containing items measuring the above leadership style dimensions and knowledge management were distributed to a large manufacturing organisation. These were subjected to a series of correlational and regression analyses. The analyses conducted produced mixed results: the leadership styles that are characterised by participative behaviour and mutual trust and respect for subordinates' ideas and feelings are correlated stronger with knowledge acquisition when compared with the leadership styles that are characterised by task oriented and autocratic behaviour. Implied in this statement is the leadership style that folds Knowledge Management into the strategy set if the enterprise is to take advantage of the knowledge available in impacting efficiency, effectiveness, productivity, and competitive position.

Such leaders do not manage knowledge but they carry out their mission to effectively apply and use knowledge from a variety of traditional positions located throughout the enterprise. We choose to call this new breed Knowledge-Enabled Leader (KELdr).

Key Words: Knowledge Management, Knowledge Acquisition, Self-management, Transformational, Transactional, Initiating Structure and Consideration Leadership, Knowledge-Enabled Leader (KELdr).

1. Introduction

Knowledge has been identified as one of the most important resources that contribute to the competitive advantage of an organisation. Many firms have reached the conclusion that effective management (acquisition) of knowledge is the only way to leverage their core competencies and achieve competitive advantage. There is extensive literature, which argues that leadership often exhibits high performance including job satisfaction, commitment, etc (Cohen & Ledford, 1994; Cohen, et al. 1996; Hackman, 1986; Kirkman & Shapiro, 1997; Manz, 1983; 1986; Manz & Sims, 1980; 1989; 1993; Politis & Crawford, 1998a; 1998b; Stewart & Manz, 1995). It is also being suggested that management and leadership play a critical role in establishing the multi-level context for the effective assimilation of knowledge management practice (Pan & Scarbrough, 1998).

Despite this interest, there is little empirical research to support the relationship between leadership style factors and knowledge acquisition attributes. This is in part because in the dynamic nature of knowledge capture, dissemination, reward, and creation, leadership does not provide active means (supportive environment) that will advance knowledge acquisition. It's about creating a climate in which sharing knowledge is encouraged, or even demanded. Workers must understand why the organisation has turned to knowledge acquisition and what payoff exists.

In view of the increasing internationalisation and globalisation of many organisations this research started by asking; Which leadership style best supports knowledge acquisition? Which leadership style encourages communication and promotes interactive processes for knowledge acquisition? Which traits and behaviour skills ensure that management acquisition goals are achieved?

This paper begins to provide answers to many of these questions. Specifically, a survey was conducted to investigate the relationship between leadership style dimensions and a number of behavioural skills and traits that are essential for knowledge acquisition. The paper also assesses the predictive power of the new "self-management" leadership style on the knowledge acquisition attributes, after statistically controlled for predictive effects of the older leadership measures (i.e., transformational and transactional leadership measures, initiating structure and consideration leadership measures).

2. Determinants of Knowledge Acquisition Attributes

Knowledge acquisition is defined as "acquiring information directly from domain experts" (Mykytyn, et al. 1994: 98). A review of the literature revealed that the background, skills, training and traits of knowledge workers (KWs) are most often essential for successful knowledge acquisition (McGraw & Harbison-Briggs, 1989; McGraw & Seale, 1987; Mykytyn, et al. 1994; Rolandi, 1986). Mykytyn, et al. (1994) revealed 26 behavioural skills and traits (attributes) that are essential for knowledge acquisition. These attributes produced five factors namely communication/problem understanding; personal traits; control; organisation and negotiation. But these factors do not emerge spontaneously or in a vacuum. They evolve out of

the context and the history of the organisation and their impact is conditioned by the subjective perceptions of knowledge workers (KWs) whose experience is ruled by that history.

This draws attention, among other things (i.e., organisational process and mechanisms), to the roles played by leadership in developing and linking these factors for successful knowledge acquisition. It is being argued that the guiding role of management for any knowledge management strategy is crucial (Pan & Scarbrough, 1998). Having outlined the attributes of knowledge acquisition, it is important to recount the way in which these attributes developed and particular the proactive role which leadership plays in their formation for the competitive benefit of the organisation.

There must be a dynamic interaction between leadership and KWs in a way of encouraging and energising the perceptions and attitudes of people for knowledge acquisition. In that respect, leadership style dimensions are hypothesised to be the predictive variables for the attributes of knowledge acquisition. This functional relationship is shown in the schematic diagram below (figure 1).

Leadership is defined broadly as influence processes affecting the actions of followers (KWs), the choice of objectives for the group or organisation (Yukl, 1981). Various theories of leadership have emerged over the past hundred years, such as the Trait Theory, Behaviour Theory, Situational Theories and Self-leadership Theory. Other approaches for effective leadership (transformational, transactional, empowerment, etc) have been also reported in the literature.

The model of figure 1 has two categories of predictor variables. They are grouped into new leadership style dimensions (i.e. self-management leadership behaviour) and the more established leadership style dimensions (i.e. transformational and transactional leadership dimensions; initiating structure and consideration leadership dimensions). Each of these categories of variables reflects a theoretical perspective, and testing the model will enable us to compare these theoretical perspectives.

New Leadership Style - Self-management leadership dimensions

The first category is derived from Manz and Sims' (1986, 1987) theory and research on self-leadership in self-managing work teams. The purpose of Manz and Sims' (1987) research work was to find the independent dimensions of leader behaviour that are appropriate for the success of self-managing teams. Such leadership behaviours are known in the literature as "self-management" leadership dimensions (Manz and Sims, 1987, Politis and Crawford, 1998a). Manz and Sims (1987) developed the Self-Management Leadership Questionnaire (SMLQ) as a measure of such leader dimensions. The six dimensions tapped by the SMLQ are:

- *Encourage self-observation* so that the members of a team can gather the information and the knowledge required in monitoring their performance.
- *Encourage self-goal setting* so that the members of a team set performance goals.
- *Encourage self-reinforcement* so that the members of a team recognise and reinforce their performance.
- *Encourage self-criticism* so that the members of a team are self-critical and discourage poor performance.
- *Encourage self-expectation* so that the members of a team have high expectations for performance.
- *Encourage rehearsal* so that the members of the team practice a task before performing it.

Findings suggest that self-management leadership behaviour (Cohen, et al. 1996) assist employees to develop their own performance standards and acquire the information required to managing themselves. Previous studies have not assessed the impact of self-management

leadership behaviours on the behavioural skills and traits that are essential for knowledge acquisition. We hypothesised that self-management leadership behaviour will facilitate these skills and traits.

Hypothesis 1a: Self-management leadership measures will be positively and highly related with knowledge acquisition attributes (behavioural skills and traits) of KWs.

Hypothesis 1b: Self-management leadership behaviours will provide statistically significant additional predictive power, after statistically controlled for the predictive effects of the more established leadership measures (Transformational and Transactional leadership dimensions, Initiating Structure and Consideration leadership dimensions).

Summary of Variables Used in the Paper

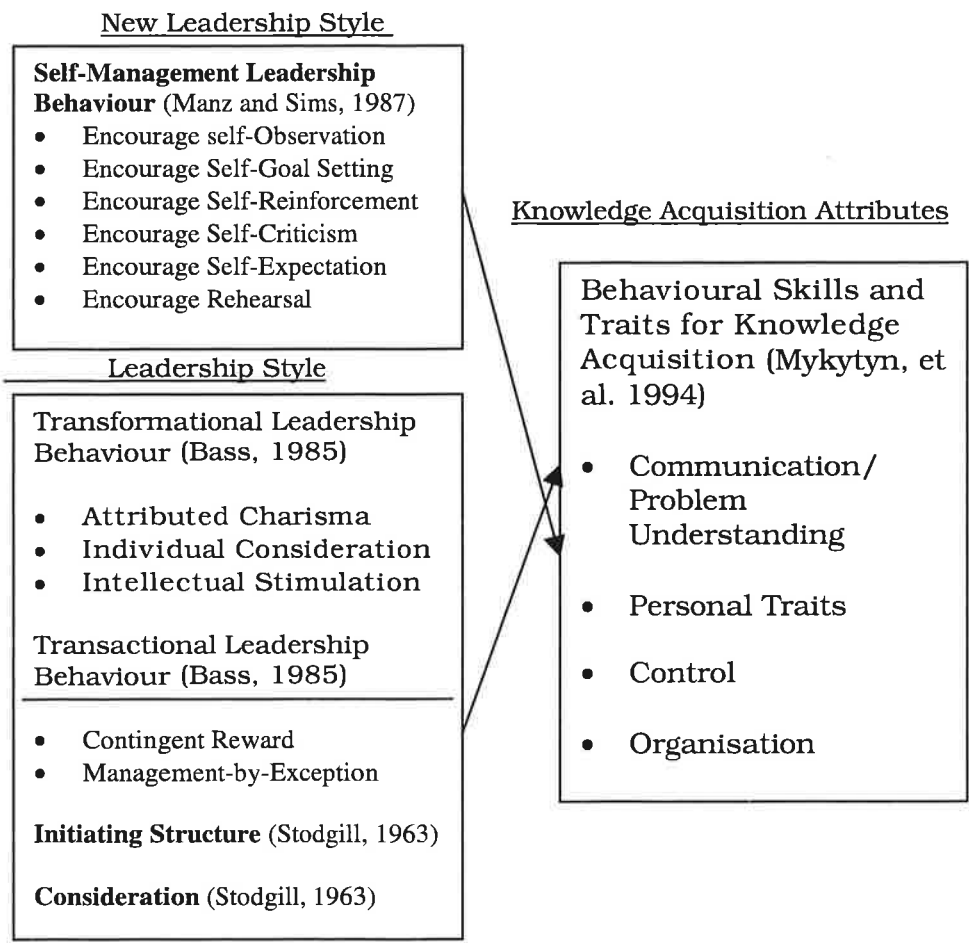


Figure 1

Established Leadership Styles

The second category consists of the subcategories of Transformational and Transactional leadership dimensions. It also includes the older Ohio State University leadership dimensions of Initiating Structure and Consideration.

Transformational leadership style: This leadership style inspires followers to exceed their own self-interest for the good of the organization (Bass, 1990). Transformational leadership

increases the confidence and motivation of followers to obtain performance beyond expectations (Bass, 1985).

Transactional leadership style: This leadership style is based "on a series of exchange between leader and followers" (Bass, 1985: 12). Transactional leaders clarify follower's role and what must be done to obtain designated outcomes. Behaviour and traits of followers are influenced by incentives (rewards) offered by the leader.

Bass (1985) developed the Multifactor Leadership Questionnaire (MLQ-Form 5) as a measure of transformational and transactional leadership dimensions. The five factors tapped by the MLQ are: *charisma*, *individual consideration* and *intellectual stimulation* forming the transformational leadership dimension. *Contingent reward* and *management-by-exception* forming the transactional leadership dimension. The following definitions are taken from Hater and Bass (1988: 696).

Transformational leadership

- *Charisma:* "the leader instills pride, faith, and respect, has a gift for seeing what is really important, and transmits a sense of mission".
- *Individual Consideration:* "the leader delegate projects to stimulate learning experiences, provides coaching and teaching, and treats each follower as individual".
- *Intellectual Stimulation:* "the leader arouses followers to think in new ways and emphasises problem solving and the use of reasoning before taking action".

Transactional leadership

- *Contingent Reward:* " the leader provides rewards if followers perform in accordance with contracts or expend the necessary effort".
- *Management-by-Exception:* "the leader avoids giving directions if the old ways are working and allows followers to continue doing their jobs as always if performance goals are met".

Research findings suggest that transformational leadership would be more highly related to employees' perceived satisfaction and effectiveness than transactional leadership (Hater and Bass, 1988, Yammarino and Bass, 1990). However, transactional and transformational leadership should not be viewed as opposing approaches to getting things done (Bass, 1985). So the development of the behavioural skills and traits of KWs may depend upon the leader's (transformational or transactional) ability to innovate knowledge management strategies that will guide KWs for knowledge acquisition. Our hypotheses are:

Hypothesis 2: Transformational leadership behaviours will be positively and highly related with knowledge acquisition attributes (behavioural skills and traits) of KWs than Transactional leadership style.

Finally, the purpose of the research work at Ohio State University was to find the independent dimensions of leader behaviour, and the outcome was the development of the Leader Behaviour Description Questionnaire (LBDQ). Factor analysis showed that two dimensions Initiating Structure and Consideration, accounted for 83% of the variance in leader behaviour (Halpin and Wiener, 1957). Reddin (1970) asserted that Initiating Structure and Consideration are independent dimensions. The following definitions are taken from Robbins, et al. (1997: 571).

- *Initiating Structure* "refers to the extent to which the leader is likely to define and structure his or her role and those of subordinates in the search for goal attainment. It includes behaviour that attempts to organise work, work relationships and goals".
- *Consideration* refers to "the extent to which a person has job relationships characterised by mutual trust and respect for subordinates' ideas and feelings".

Although most of the leadership studies to date have extensively used the LBDQ, a review of the literature suggests that it is difficult to understand the evolution of those skills and traits that result in successful knowledge acquisition. So investigating the impact of Initiating Structure and Consideration on knowledge acquisition attributes, may provide the barometer to understand the success or failure of knowledge acquisition that are either not currently considered important, but which should be. Alternatively, it may allow modification of those attributes that may be deemed to impede knowledge acquisition. Our hypotheses are:

Hypothesis 3: Consideration leadership behaviour will be positively and highly related with knowledge acquisition attributes (behavioural skills and traits) of KWs than Initiating Structure leadership style.

3. Subjects and Procedure

Sample

The sample was drawn from a large-sized high technology manufacturing organisation operating in Sydney, Australia. The sample consisted of staff closely linked to manufacturing operations and included design engineers, manufacturing engineers, industrial engineers, production planners, production controllers, clerical staff, and first line supervisors. Respondents were engaged in a wide variety of new technologies that requires high level of knowledge acquisition skills and all had received training on self-leadership theory and practices.

All respondents were full-time unionized employees and volunteered to participate in the study. Respondents have known their immediate leader for at least 6 months. It is believed that 6 months is sufficient time for a team member to be able to assess the influence and attributes of his/her leader. The author conducted the survey himself. Questionnaires containing items measuring the above leadership style dimensions and knowledge acquisition attributes were distributed to 280 employees. A total of 227 employees (81 per cent response rate) returned usable questionnaires. Eleven employees were excluded from the final sample since their questionnaires were incomplete.

Employees were 7.9% female and 92.1% male. The majority of employees (96.7 per cent) were engaged in day shift activities. Approximately $\frac{1}{4}$ of the sample was in the 21-30-age range (23%) and $\frac{1}{4}$ of the sample was in the 31-35-age range (24.3%). Approximately a $\frac{1}{3}$ of the sample was in the 36-45-age range (28.4%). Approximately $\frac{1}{2}$ of the sample (48.9%) had tenure with the organization over 5 years. In terms of the level of education, approximately a $\frac{1}{4}$ of the sample had attained a university degree or postgraduate studies and almost $\frac{1}{2}$ has received technical college qualifications or equivalent technical training.

Analytical Procedure

The Analysis of Moment Structures (AMOS) was used for the factor analysis (measurement model) and for the regression analysis (path model). The combination of factor analysis and regression analysis is known as causal modelling (Hair, et al. 1995) or structural equation modelling (SEM). In past work using AMOS, researchers who are attempting to model relationships among a large number of latent variables have found it difficult to fit models even to predictors with strong theoretical support. For successful model fit, a rule of thumb suggests that there should be at least five cases for each latent variable in the model (Bagozzi and Yi, 1988). Therefore, steps are needed to reduce the number of measurements in the model (Joreskog and Sorbom, 1989).

Following the recommendations of Holmes-Smith (1998) and Sommer, et al. (1995), we first developed the measurement model and then, with this held fix, a structural model is developed. Using confirmatory factor analysis (CFA) we first assess the validity of the measurement model of the variables used in the paper. Given adequate validity of those measures, we reduced the number of indicators in the model by creating a composite scale for each latent variable. Joreskog and Sorbom (1989) showed that it is possible to compute an estimated score (ξ^{\wedge}) for each subject using factor score regression weights (ω), which are given in the output of SEM statistics program. This is shown in equation 1.

$$\xi^{\wedge}_i = \sum \omega_i x_i \quad (1)$$

where:
 ξ^{\wedge}_i = is the estimated score
 ω = is the row vector of factor score regression weights, and
 x = is a column vector of the subject's observed indicator variables.

For example, the Initiating Structure composite scale was created from its six indicators in the measurement model. Then we determined the composite reliability for each latent variable.

Given the composite reliability estimates, we build this information into the structural model (path) model to examine the hypotheses. Munck (1979) showed that it is possible to fix both the regression coefficients (λ_i 's), which reflect the regression of each composite variable on its latent variable, and the measurement error variances (θ_{ii} 's) associated with each composite variable. Munck showed that in the situation whereas the matrix to be analysed is a matrix of correlations among the composite variables, then the parameters of λ and θ can be computed using equations 2 and 3 respectively. The variances of the composite variables in this case are equal to 1.

$$\lambda = \sqrt{\alpha} \quad (2)$$

$$\theta = 1 - \alpha \quad (3)$$

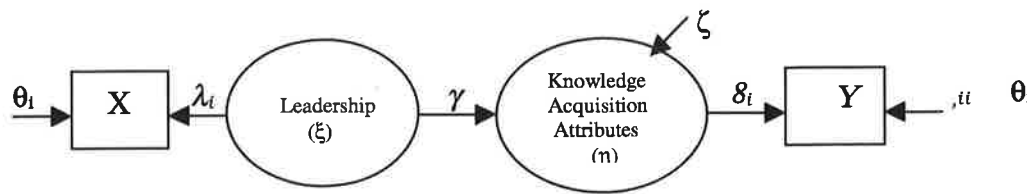
However, in the situation whereas the matrix to be analyzed is a matrix of covariances amongst the composite variables, then Munck showed that the parameters of λ and θ can be computed using equations 4 and 5 respectively.

$$\lambda = \sigma \sqrt{\alpha} \quad (4)$$

$$\theta = \sigma^2 (1 - \alpha) \quad (5)$$

Where:
 λ = regression coefficients
 θ = measurement error variances
 α = composite reliability coefficient (r_c)
 σ = standard deviation (SD) of composite measure
 σ^2 = variance of composite measure

In the causal modelling the covariance-based methods are exemplified by software packages such as LISREL, EQS, AMOS, etc. Because AMOS is been used in this paper, equations 4 and 5 were employed to compute regression coefficients (λ_i 's) and measurement error variances (θ_{ii} 's). In turn these values have been used as fixed parameters in the structural model as shown in the simplified path model of figure 2 below.



Simplified Structural (Path) Model
Figure 2

Where: X and Y = composite latent variables derived from measurement model
 λ_i = regression coefficients computed by equation 4
 θ_i = measurement error variances computed by equation 5
 γ = the regression coefficient of the regression of η on ξ

Each estimated coefficient can be tested for statistical significance for the hypothesised causal relationship. To assess the model fit, a mixture of fit-indices was employed to assess the overall fit of the measurement models. 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 indices can be adversely affected by sample size (Loehlin, 1992), three other relative indices (AGFI, TLI, and PGFI) were computed to provide a more robust evaluation of model fit (Tanaka, 1987; Tucker - Lewis, 1973). For the AGFI, TLI, and PGFI, coefficients closer to unity indicate a good fit, with acceptable levels of fit being above 0.90 (Marsh, Balla and McDonald, 1988). The same fit indices were also used to assess the fit of the path model.

4. Measurement Models

As shown in figure 1 the categories of variables that we measure on the survey are self-management leadership behaviour, transformational and transactional leadership behaviour, initiating structure and consideration leadership behaviour (as rated by team members) and employees (KWs) behavioural traits and skills that are essential for knowledge acquisition.

Independent Variables

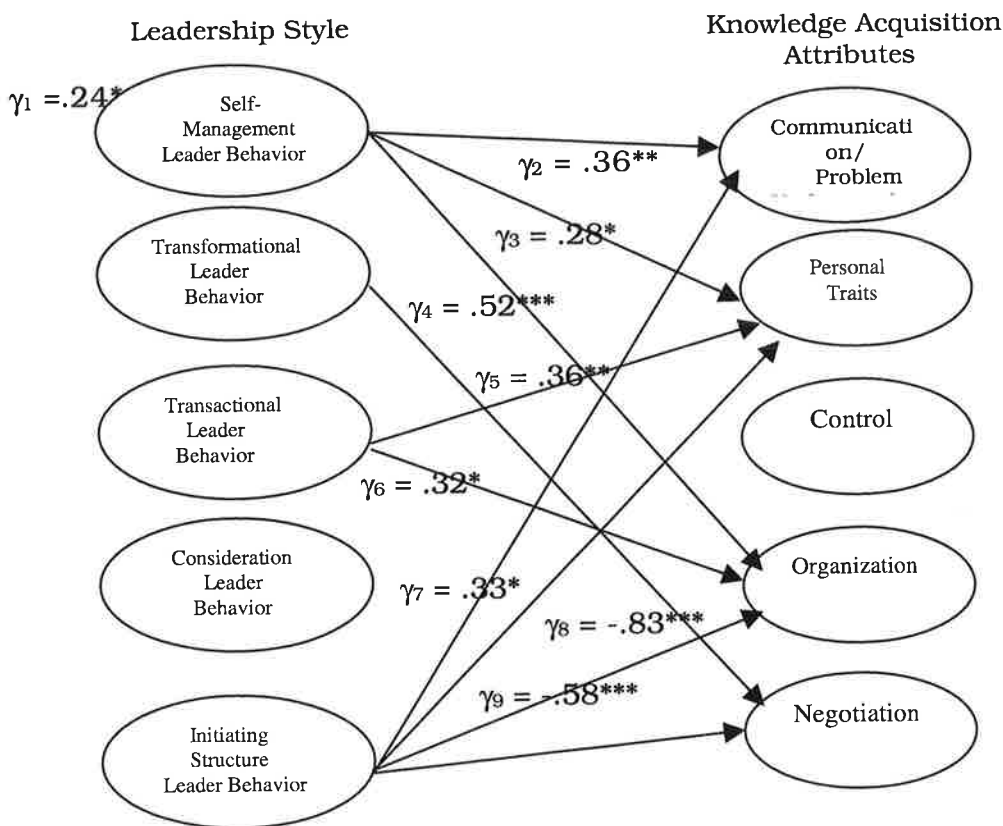
Self-management leadership measures were assessed using Manz and Sims' (1987) SMLQ. The theory posits six dimensions of self-leadership behaviour (encouraging self-rehearsal, encourage self-reinforcement, encouraging self-goal setting, encouraging self-observation, encouraging self-expectation, and encouraging self-criticism). Based on the results of a CFA supporting five factors, these items were used to create five scales: encouraging self-rehearsal (five items, $\alpha = .87$), encouraging self-goal setting (three items, $\alpha = .88$), encouraging self-observation (three items, $\alpha = .84$), encouraging self-expectation (three items, $\alpha = .81$), and encouraging self-criticism (four items, $\alpha = .87$). Four items were dropped due to cross loading.

Transformational and Transactional leadership measures made up of the subcategories of attributed charisma, individual consideration, intellectual stimulation, contingent reward, and management-by-exception. To avoid the questionnaire becoming too large and cumbersome the original Bass's (1985) 73 items from MLQ were reduced to 23. The 23 items were those that had the highest factor score loading in Bass's (1985: 208-209) study. The theory posits three dimensions for *transformational leadership* (attributed charisma, individual consideration, and intellectual stimulation) and two dimensions for *transactional leadership* (contingent reward, and management-by exception). The results of CFA supported three factors for transformational leadership, and one factor for transactional leadership. The three factors of transformational leadership were: attributed charisma (five items, $\alpha = .90$), individual consideration (four items, $\alpha = .80$), and intellectual stimulation (three items, $\alpha = .84$). For transactional leadership we

dependent variables (communication/problem understanding, personal traits, control, organization, and negotiation).

The analysis revealed that the structural model of figure 3 fit the data fairly well, with $\chi^2 = 117$; $df = 25$; $GFI = .90$; $AGFI = .82$; $TLI = .81$; $RMR = .11$; and $RMSEA = .12$. Figure 3 displays results of hypotheses testing using SEM. Standardised path estimates are provided to facilitate comparison of regression coefficients. It should be noted that only significant regression coefficients are shown.

Three out of four hypotheses are supported by this data, for at least some dimensions of knowledge acquisition attributes. As predicted, self-management leader behaviour had positive effect on three out of five knowledge acquisition attributes, partially supporting Hypothesis 1a: Specifically, Self-management leader behaviour is positively related to Communication/Problem Understanding ($\gamma_1 = .24$, $p < .05$), Personal Traits ($\gamma_2 = .36$, $p < .01$), and Organisation ($\gamma_3 = .28$, $p < .05$). Transformational leadership style is strongly related with only one out of the five knowledge acquisition attributes, providing limited support for Hypothesis 2: Specifically, Transformational leadership style had strong, positive effect on Negotiation ($\gamma_4 = .52$, $p < .001$), while Transactional leadership style had weaker correlation with some dimensions of knowledge acquisition attributes. Transaction leadership style had moderate, positive effect on Personal Traits ($\gamma_5 = .36$, $p < .01$), and Organisation ($\gamma_6 = .32$, $p < .05$). Finally, Consideration leadership style had no significant paths with any of the five knowledge acquisition attributes not supporting Hypothesis 3. In addition, Initiating Structure leadership style is negatively related to Personal Traits ($\gamma_8 = -.83$, $p < .001$), Organisation ($\gamma_9 = -.58$, $p < .001$), and Negotiation ($\gamma_{10} = -.71$, $p < .001$), which is in the opposite direction predicted by Hypothesis 3. As expected, Initiating Structure leadership style predicted Communication/Problem Understanding ($\gamma_7 = .33$, $p < .05$). No other paths are significant. The structural equation results supported Hypotheses 1b for 80 percent of the dimensions of knowledge acquisition attributes. The results are shown in Table 2 below.



It was also found that the new self-management measures provided statistically significant additional predictive power, after having statistically controlled for predictive effects of the older leadership measures. This implies that leadership style factors that are characterised by participative behaviour and mutual trust and respect for subordinates' ideas and feelings are positively related to knowledge acquisition attributes when compared with the leadership style factors that are characterised by task oriented and autocratic behaviour.

Traditionally middle management has been perceived as information and knowledge gatekeepers. So management should guide the radical cultural change for knowledge-creation and knowledge sharing of all employees. It is the participative and self-management leadership style that encourages and facilitates these attributes (behavioural skills and traits of KWs) that are essential for knowledge acquisition and knowledge sharing. It is the participative and self-management leadership style that has clear and conscious knowledge strategy if the enterprise is to take advantage of the knowledge available in impacting efficiency, effectiveness, productivity, and competitive position.

Such leaders do not manage knowledge but they carry out their mission to effectively apply and use knowledge from a variety of traditional positions located throughout the organisation. Such leaders encourage communication, encourage knowledge sharing and promote interactive processes for knowledge acquisition. They also encourage team members to gather information and the knowledge required monitoring their performance.

We choose to call this new breed of leadership the *Knowledge-Enabled Leader (KELdr)*. The KELdr is capable of understanding the strategic relationship between knowledge acquisition and the business processes and functions; supporting and facilitating employees to acquire and share knowledge; leading the enterprise's effort to exploit knowledge; sponsoring and supporting ideas for further use of knowledge strategies for knowledge acquisition. Knowledge-Enabled Leaders are professionals who are vested with the responsibility to discharge their knowledge in an empowered environment.

In closing, brief mention of some limitations of this study should be made to place our results in proper perspective. The cross-sectional nature of the study renders it vulnerable to problems typically associated with survey research (common method variance). So the measured relationships might not be attributable to true relationship between the constructs but it might be the result of the measurement method. To reduce the problem of the common method variance, it would have been advantageous to gather data from multiple sources.

Though from an analytical perspective SEM has a number of advantages in testing causal relationships, some caution should be noted. First, given the cross-sectional nature of the study, we cannot test causality directly, although the hypotheses imply causation. So experimental or longitudinal data are needed for more definite results. Second, a larger sample size would have allowed simultaneous estimation of measurement and structural models instead of assessing the measurement models first and then, with them holding fix, developing the structural model. A larger sample would have allowed modelling the individual (observed) variables for each of the ten latent variables, rather than just the composite constructs. Future research should estimate models that replicate our results using larger sample size.

Key Words: Knowledge Acquisition, Self-management, Transformational, Transactional, Initiating Structure and Consideration Leadership, Knowledge-Enabled Leader (KELdr).

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