



Leadership and knowledge management in UK ICT organisations

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Abstract

Purpose – While it is well known that leadership can play an important role in engendering effective knowledge management activity, relatively little is known about which styles of leadership are most appropriate for this task. The purpose of this paper is to contribute to theory by exploring dimensions of leadership as presented by Avolio and Bass (Transformational, Transactional and Passive-Avoidance Leadership) and the dimensions of organisational knowledge management activity as presented by Maier and Mosley through a survey of primary knowledge managers from information and communications technology (ICT) organisations in the UK.

Design/methodology/approach – The paper presents the results of a quantitative survey of 111 primary knowledge managers from ICT organisations in the UK.

Findings – The key finding is that when primary knowledge managers within organisations adopt the Transformational and Transactional leadership styles, there is a notable increase in knowledge management activity. Given the results, the authors argue that organisations must be cognisant of the leadership style adopted by their knowledge managers and that it is important that both the Transformational and Transactional leadership styles are mastered and can be employed by knowledge managers within organisations.

Originality/value – The paper provides analysis of two well-known leadership styles and a full range of knowledge management activity, providing insights for practitioners and theorists alike.

Keywords Knowledge management, Leadership, Transactional leadership, Transformational leadership, Leadership styles

Paper type Research paper

1. Introduction

“Knowledge management” can be understood as an umbrella term for a range of practices utilised to manage the knowledge of an organisation’s workforce (Hislop, 2009). Since the mid-1990s interest in the field of knowledge management has increased amongst academics and organisations (Hislop, 2009) and recently knowledge has been argued to be the primary asset for organisations (Sewell, 2005). Knowledge management, therefore, is crucial for maintaining and/or gaining competitive advantage, as it supports more effective knowledge acquisition and transfer (Offsey, 1997; Bollinger and Smith, 2001; McKinlay, 2005).

While research in the field of knowledge management has focused on diverse topics little research has considered the relationship between leadership and knowledge management. The existent knowledge management literature highlights the importance of leadership to knowledge management activity (Johnson, 2002; Bell De Tienne *et al.*, 2004). Indeed, in his examination of failed attempts at knowledge management, Lakshman (2007, p. 51) states that “the growing literature on [...] knowledge management has stressed the lack of leadership support for the failure of many knowledge management projects”, and highlights the importance of leadership for the success of knowledge management activities. Yet relatively little work has been



done to determine which styles of leadership are most effective for influencing knowledge management activity (Hislop, 2009).

At the time of writing few quantitative studies have investigated the relationship between leadership and knowledge management (e.g. Politis, 2001, 2002; Crawford, 2005; Singh, 2008). Of the studies that have been produced none have examined the relationship between Avolio and Bass's (2004) transformational, transactional and passive-avoidant leadership styles and a full range of organisational knowledge management activity. Furthermore, limited research addresses these issues within the UK and European context.

The present work addresses this gap by presenting a quantitative analysis of the relationship between leadership style and knowledge management activity within the context of UK information and communication technology (ICT) companies. The research addresses the specific question: Is there a relationship between the style of leadership adopted by the primary knowledge manager within an organisation and that organisation's knowledge management activity?

2. Leadership and knowledge management: a review

Transformational, transactional and passive-avoidant leadership

Defining leadership is difficult task and the concept has received multiple interpretations (Kakabadse *et al.*, 2004; Kent, 2005; Mullins, 2007; Huczynski and Buchanan, 2007). Two popular and well-known characterisations of leadership prevail – the transformational and transactional leadership styles and as Mullins (2007) notes various researchers have examined the relative benefits of one style over the other in a variety of different contexts.

Avolio and Bass (2004) state that the transformational leadership style is comprised of five dimensions: idealised influence (attributes) – whereby leaders are admired, trusted, have high standards of ethical and moral conduct, are held in high regard and engender loyalty from followers. Attributes include instilling pride in others for being associated with the leader; going beyond self-interest for the good of the group and displaying a sense of power and confidence; idealised influence (behaviours) – as above but displaying behaviours including the leader talking about his/her most important values and beliefs, specifying the importance of having a strong sense of purpose and considering the moral and ethical consequences of decisions; inspirational motivation – whereby leaders behave in ways that motivate those around them, providing meaning and challenges for their followers. Such leaders arouse individual and team spirit and encourage followers to envision attractive future states by making use of persuasive language and actions, building confidence and stimulating enthusiasm; intellectual stimulation – whereby leaders stimulate their followers' effort to be innovative and creative by questioning assumptions, reframing problems and approaching old situations in new ways; individualised consideration – whereby leaders pay attention to their followers' needs and concerns as individuals and develop their strengths through behaviours such as coaching and consulting. These leaders create new learning opportunities and a supportive environment in which followers can grow.

The transactional leadership style is comprised of two dimensions: contingent reward – whereby leaders clarify expectations and offer recognition when goals are achieved. Associated behaviours include providing others with assistance in exchange for their efforts and expressing satisfaction when others meet expectations and management-by-exception (active) – whereby leaders specify the standards for compliance, as well as what constitutes ineffective performance, monitor performance

and take corrective action, but only when performance is not as would be expected. Finally, Avolio and Bass (2004) describe passive-avoidant leadership as being comprised of two dimensions: the first management-by-exception (passive) is similar to the active form of the behaviour but differs in that leaders only take corrective action when a problem becomes serious. The final dimension laissez-faire can be considered a form of non-leadership, whereby individuals avoid leadership, responsibility and activity, failing to be involved when important issues arise.

In the knowledge management literature the transformational and transactional styles of leadership seem to dominate academic opinion and research on the topic, albeit with mixed results (Hislop, 2009).

Knowledge management

It is well evidenced is that knowledge management practices are most effective when they are considered strategically, and aligned with business objectives (Davenport *et al.*, 1998; Greiner *et al.*, 2007). One way in which this strategic alignment can be aided is the categorisation of knowledge management practices, the purpose being that once practices have been categorised they become easier to manage.

Mårtensson's (2000) broad examination of the literature resulted in the conceptualisation of four stages of the knowledge management process: collecting information, storing information, making information available and using information and these general notions of gathering, keeping, sharing and using knowledge are present in the frameworks advanced by other authors. In research closely related to the present study, Singh (2008) adopted the categorisation scheme proposed by Maier and Moseley (2003).

Maier and Moseley (2003) group organisational knowledge management practices into five categories: knowledge identification and creation – the identification and creation of organisational knowledge which is often accomplished through the use of interviews, observation, brainstorming sessions and other analytic methods; knowledge collection and capture – the collection and capture of organisational knowledge, electronically or on paper, where examples of data collection and capture methods include intranet portals, knowledge bases and network servers; knowledge storage and organisation – the organisation and storage of knowledge, where typical classification schemes for organising knowledge include product line, industry, activity and department or function; knowledge sharing and dissemination – the sharing and dissemination of knowledge using both non-electronic and electronic methods of sharing such as the use of meetings, memos and e-mail; knowledge application and use – the application and use of knowledge acquired using both technological and non-technological processes and systems.

Leadership style and knowledge management

It is clear from the above that knowledge management practices are a mixture of both technological and non-technological practices and processes requiring the activity of people. It is because individuals are integral to the practices of knowledge management (by creating, sharing and storing their knowledge and so forth) that a nascent body of research exists that examines the role of leadership in motivating and influencing employee behaviour in this direction. A variety of supporting evidence has been produced (Bell De Tienne *et al.*, 2004), for example, Johnson's (2002) interviews with four leaders who wished to transform their organisations into learning organisations had a recurrent theme – leaders who wish to be successful at encouraging knowledge

management practices need to involve people at all levels of the organisation. Yet precisely which style of leadership is most appropriate for engendering knowledge management activity is less clear.

Contradictory evidence pertaining to the relationship between the transformational and transactional leadership styles and knowledge management activity has been gathered by Politis (2001, 2002). Politis (2001) examined the relationship between leadership and knowledge acquisition within a single high-tech aerospace manufacturing firm in Australia. The sample in the study consisted of 227 employees who were closely linked to manufacturing operations including design, manufacturing and industrial engineers, production planners, production controllers, clerical staff and first line supervisors. Politis (2001) made use of Bass' (1985) multifactor leadership questionnaire (MLQ) and Mykytyn *et al.*'s (1994) instrument for measuring behavioural skills and traits which support knowledge acquisition, and administered them to this sample. From the MLQ, only three of the four dimensions of transformational leadership, namely attributed charisma, individual consideration and intellectual stimulation were included, as were the two dimensions of transactional leadership, namely contingent reward and management-by-exception. The subsequent study (Politis, 2002) again examined the relationship between leadership style and knowledge acquisition within a high-tech Australian manufacturing firm. The sample consisted of 239 employees who had highly similar characteristics to those in the previous study, but who were also described as belonging to self-managing teams. The same instruments were used. The first study can be interpreted as suggesting that both transformational and transactional leadership are significantly and positively related to knowledge acquisition, while the second study can be interpreted as suggesting that attributed charisma and intellectual stimulation are significantly and positively related to knowledge acquisition, whereas individual consideration and contingent reward are significantly and negatively related to knowledge acquisition.

Further evidence for the view that a transactional leadership style is conducive to engendering knowledge management activity was gathered by Crawford (2005). Crawford's (2005) quantitative study involved a survey of over 1,000 American students, 54 per cent of whom held managerial positions. He administered Bass's (1985) MLQ and a knowledge management inventory (KMI) – that measures three personal knowledge management practices, namely information acquisition, information creation and information application, synthesised from Barth's (2003) framework. From Bass' (1985) MLQ all dimensions of transformational and transactional leadership were included, as was the dimension of laissez-faire leadership. The study found that transformational leadership, its four constituent dimensions and contingent reward were significantly and positively correlated with all dimensions of personal knowledge management activity. It was also found that transformational leadership is positively and causally related to all dimensions of personal knowledge management activity.

As noted various authors have argued for the critical importance of leadership for organisations that seek to engage in and increase knowledge management activity. Thus, it would seem to follow that the adoption of the dimensions of the passive-avoidant leadership style (laissez-faire and passive management-by-exception) is unlikely to have a positive impact on the knowledge management activity of followers. Indeed, in Crawford's (2005) study, it was found that the laissez-faire and management-by-exception leadership styles were significantly and negatively associated with all dimensions of personal knowledge management activity – yet it is unclear whether the

relationship of these styles to personal knowledge management activity will also hold between knowledge managers and their followers.

Thus, from the above discussion it appears that there is a consensus that the transformational leadership impacts positively on knowledge management activity and therefore the following hypotheses is presented:

- H1.* There is a significant relationship between the leadership style adopted by an organisation's primary knowledge manager and that organisations knowledge management activity when that style is transformational.

However, the evidence pertaining to the relationship between the transactional and passive-avoidant leadership styles and knowledge management activity is not as strong. With regards to both styles the evidence is limited in quantity and scope, and it is clear from a consideration of the wider knowledge management literature that one may arrive at contradictory expectations regarding the transactional and passive-avoidant leadership styles and knowledge management activity.

Politis (2002) interprets contingent reward as being negatively related to knowledge acquisition behaviours because it may impact on the autonomy of knowledge workers and thus reduce their motivation. As Fahey and Prusak (1998) highlight knowledge work is difficult to observe and measure and this had led some authors, such as Ehin (2008) to argue strongly in favour of the self-organisation of knowledge workers. His contention is that the "generation of knowledge is an indiscernible voluntary cooperative process, as opposed to a practice where the movement of hands and feet can be observed, as was/is the case with the industrial workforce. New ideas cannot be forced out of people who often do not know exactly what tacit knowledge they possess" (Ehin, 2008, p. 338) – thus suggesting that a reduction in knowledge workers' autonomy is unlikely to be beneficial. The importance Ehin attaches to autonomy can also be seen in the work of Nonaka and his colleagues: "Autonomy increases the chances of finding valuable information and motivating organisation members to create new knowledge" (Nonaka *et al.*, 2000, p. 26). However, their views are considerably more moderate and they do highlight the important role that a leader should play in motivating and facilitating knowledge work. If one accepts these views on the importance of autonomy and interprets the transactional leadership style as placing considerable limits on autonomy then it may be supposed that the transactional leadership style is likely be negatively related to knowledge management activity.

However, some empirical evidence seems to contradict this proposition; for example, Eppler and Sukowski's (2000) mixed method study of work teams found that team leaders should take a more balanced approach to autonomy and control of knowledge work. Based on their research they suggest team leaders should seek to create urgency amongst knowledge workers, forcing them to work together and share knowledge while also allowing sufficient time and space for reflection and experimentation – this suggests that leaders may be able to create direction and monitor performance while also providing some degree of autonomy.

In addition – a principle component of the transactional leadership style is the provision of rewards when performance expectations are met (Avolio, 2011) and their appears to be a consensus amongst knowledge management theorists that use of reward systems and providing rewards for knowledge workers is of great import for motivating knowledge management activity (e.g. Hansen *et al.*, 1999; Chua, 2009;

Al-Adaileh and Al-Atawi, 2011); providing further support for the view that transactional leadership is likely to positively related to knowledge management activity.

Similar remarks may be made with regards to autonomy and the passive-avoidant leadership style – while adopting a passive-avoidant leadership style and providing knowledge workers with autonomy are clearly not equivalent, the behaviours associated with this style of leadership may lead to greater autonomy for knowledge workers in some situations, and following Ehin (2008) this lack of direct leadership may increase knowledge management activity. However, as Lakshman (2007) has noted a lack of leadership support has often been blamed for the failure of knowledge management projects, and so it is unclear as to whether the absence of direction as evident in passive-avoidant leadership style will negatively influence knowledge management activity. The relationship between transactional leadership, passive-avoidant leadership and autonomy is clearly complicated, and it is clear from the above that there is no real consensus as to the relationship between the transactional and passive-avoidant leadership styles and knowledge management activity. This can perhaps be explained by previous researchers having adopted different instruments for measuring leadership and knowledge management activity, and in some cases examining only a limited range of knowledge management activity. These problems are further compounded by differences in the samples and scopes of the studies which make generalising the findings difficult. In particular, it is not clear whether Politis' (2001, 2002) findings will be repeated when a wider range of knowledge management activities are considered, or whether Crawford's (2005) findings, with respect to the effect of one's leadership style on personal knowledge management activity, will be similar to the effect that style has on followers.

Thus, it seems the only sensible conclusion to be drawn from the review of the literature is that there is likely be some significant relationship. From this conclusion, we developed the following two hypotheses, which have been tested in the present study:

- H2.* There is a significant relationship between the leadership style adopted by an organisation's primary knowledge manager and that organisations knowledge management activity when that style is transactional.
- H3.* There is a significant relationship between the leadership style adopted by an organisation's primary knowledge manager and that organisations knowledge management activity when that style is passive avoidant.

3. Method

Subjects

The organisations targeted for this research were UK ICT organisations drawn from a publicly available list of 153 organisations. The ICT organisations in the study engage in a wide range of business functions including, networking and communications solutions, software design and management, web site design and hosting solutions, research and development and the production and provision of services related to hardware. ICT organisations are highly suited to knowledge management research as they have been found to be knowledge intensive workplaces, that is, workplaces in

which most of the work undertaken is of an intellectual nature (Alvesson, 2001). This is confirmed by Morris (2001) who has argued that the production of customised (ICT) applications requires the application of existing bodies of knowledge and the creation of new knowledge. Participating organisations were requested to self-select their primary knowledge manager defined as the person they regard as having the primary role for managing the information and knowledge of their organisation and their employees.

Instruments and procedure

To test the hypotheses, each primary knowledge manager was asked to complete two psychometric instruments, namely Avolio and Bass's (2004) MLQ 5 × 5-short and Maier and Moseley's (2003) knowledge management assessment tool (KMAT). The MLQ 5 × 5-short asks individuals to self-report their agreement to 45 statements on a five-point Likert scale, ranging from 0 (not at all) to 4 (frequently, if not always) to determine their leadership style based on the constructs and dimensions of transformational, transactional and passive-avoidant leadership described in the previous section. The KMAT asks individuals to self-report their agreement to 30 questions on a six-point Likert scale from 1 (strongly disagree) to 6 (strongly agree), to determine the organisation's capability of managing knowledge on the dimensions described in the previous section. A third instrument, a demographic questionnaire, was used to gather basic demographic data from respondents.

Analysis

The data have been analysed using a variety of descriptive and statistical methods. To test the hypotheses, the Pearson's correlation was calculated between leadership and knowledge management variables, and given the significant results a multivariate regression model was produced to examine the effects of the three leadership styles on the overall knowledge management activity of organisations. The results of this process are described in the following sections.

4. Results

Of the 153 organisations that were targeted data were gathered from 111, representing an overall response rate of 72.5 per cent. Of these, all responses were valid and for both instruments and Cronbach's α fell within the accepted range (see Table I), indicating that the data are reliable.

Analysis of the demographic questionnaire showed that of the 111 participants, the majority were male ($n = 98$) and had a long history of leadership experience with a modal grouping of 10-15 years being recorded ($n = 33$). Moreover, participants acted at a variety of organisational levels, with the majority being in top management ($n = 33$) and middle management ($n = 26$). The descriptive analysis of the respondents' leadership styles (see Table I) showed that in general, the respondents demonstrate the full range of transformational leadership behaviours and contingent reward behaviours with a higher frequency than management-by-exception (active) behaviours and the full range of passive-avoidant leadership behaviours. The low demonstration of passive-avoidant leadership behaviours is perhaps unsurprising, given the importance of the knowledge management task. Table I also shows that in general organisations demonstrate a high degree of knowledge management activity across all categories. ICT is often used to facilitate knowledge management activity (Scarborough *et al.*, 1999; Bhatt, 2001; Jasimuddin, 2008) and as companies within the sample are engaged in the

	<i>n</i>	Minimum	Maximum	Sum	Mean	SD	Cronbach's α
<i>Transformational</i>	111	2.10	4.00	357.80	3.2234	0.34927	
IIA	111	1.75	4.00	362.50	3.2658	0.58609	0.719
IIB	111	1.50	4.00	363.75	3.2770	0.53762	0.720
IM	111	1.75	4.00	364.25	3.2815	0.56319	0.796
IS	111	1.75	4.00	341.75	3.0788	0.44208	0.568
IC	111	1.75	4.00	356.75	3.2140	0.54444	0.692
<i>Transactional</i>	111	1.50	4.00	264.50	2.3829	0.43113	-
CR	111	1.50	4.00	329.50	2.9685	0.52992	0.567
MBEA	111	0.25	4.00	199.50	1.7973	0.58728	0.606
<i>Passive avoidant</i>	111	0.00	2.38	119.50	1.0766	0.52607	-
MBEP	111	0.00	4.00	154.25	1.3896	0.70926	0.743
LF	111	0.00	2.50	84.75	0.7635	0.63410	0.726
<i>KMAO</i>	111	87.00	180.00	16,437.00	148.0811	18.90942	-
KIC	111	18.00	36.00	3,255.00	29.3243	3.89676	0.702
KCC	111	15.00	36.00	3,269.00	29.4505	4.20117	0.711
KSO	111	17.00	36.00	3,363.00	30.2973	4.18568	0.777
KSD	111	15.00	36.00	3,297.00	29.7027	4.79696	0.789
KAU	111	16.00	36.00	3,253.00	29.3063	4.78405	0.807

Notes: IIA, idealised influence (attributes); IIB, idealised influence (behaviours); IM, inspirational motivation; IS, intellectual stimulation; IC, individualised consideration; CR, contingent reward; MBEA, management-by-exception (active); MBEP, management-by-exception (passive); LF, laissez-faire; KMAO, overall knowledge management score; KIC, knowledge identification and creation; KCC, knowledge collection and capture; KSO, knowledge storage and organisation; KSD, knowledge sharing and dissemination; KAU, knowledge application and use. The table displays respondent's leadership style(s) and their organisations knowledge management activity. Respondents demonstrate the behaviours associated with the transformational and transactional leadership style to a greater extent than those associated with the passive-avoidant leadership style. The mean scores across all dimensions of knowledge management activity indicate that, in general, respondent's organisations are highly successful at managing knowledge across all categories

Source: Data analysis

Table I.
Selected descriptive
statistics – leadership
and knowledge
management scores

production and provision of ICT services, the result may be explained by organisations possessing sophisticated ICT systems thereby increasing their proficiency at the management of knowledge.

The main purpose of the study is to examine the relationship between the leadership style adopted by an organisation's primary knowledge manager and that organisation's knowledge management activity; Table II reveals a number of significant positive correlations between the constructs of transformational and transactional leadership and the knowledge management activity of organisations. The majority of these results are not surprising and are coherent with the findings of researchers discussed earlier: both transformational and transactional leadership appear useful for supporting knowledge management activity. The results also show a negative correlation with laissez-faire and management-by-exception (passive) and knowledge management activity but only the former is significant.

The surprising result is that intellectual stimulation was not shown to be significantly correlated with any of the categories of knowledge management activity, or the overall knowledge management activity of organisations. One possible reason for this result (although it cannot be substantiated) may be that since ICT is knowledge intensive work (Alvesson, 2001) it requires that employees are innovative and

Dimension	KMAO	KIC	KCC	KSO	KSD	KAU
<i>Transformational</i>	0.426**	0.286**	0.266**	0.416**	0.385**	0.466**
IIA	0.241*	0.151	0.189*	0.270**	0.237*	0.189*
IIB	0.355**	0.205*	0.229*	0.327**	0.325**	0.422**
IM	0.392**	0.226*	0.190*	0.406**	0.358**	0.483**
IS	0.169	0.150	0.161	0.087	0.148	0.180
IC	0.214*	0.195*	0.096	0.232*	0.170	0.230*
<i>Transactional</i>	0.371**	0.254**	0.345**	0.334**	0.367**	0.295**
CR	0.612**	0.472**	0.516**	0.566**	0.585**	0.501**
MBEA	-0.009	-0.052	0.041	-0.021	0.010	-0.019
<i>Passive avoidant</i>	-0.124	-0.077	-0.022	-0.195*	-0.078	-0.159
MBEP	0.029	0.082	0.083	-0.052	0.002	0.017
LF	-0.238*	-0.220*	-0.130	-0.266**	-0.132	-0.283**

Table II.

Pearson's correlations
leadership and
knowledge
management variables

Notes: Pearson's correlation (two-tailed) has been calculated to examine the relationship between the leadership style and knowledge management variables. *, **Correlations significant at the 0.05 and 0.01 levels, respectively

Source: Data analysis

creative, and thus that encouraging further creativity yields no additional observable benefit.

Based on the variety of significant correlations between the constructs and dimensions of transformational, transactional and passive-avoidant leadership and knowledge management activity, a multivariate regression model was constructed. The model examines the degree of variance in the overall knowledge management score of organisations (KMAO) accounted for by the three leadership styles. The model showed that 24.6 per cent of variance in organisations' knowledge management activity could be accounted for by the leadership styles of their primary knowledge managers. The model was significant ($F = 12.939$, $df = 3$ and $p > 0.001$) and the regression coefficients are shown in Table III. A second model was also constructed that included a variety of demographic variables (age, gender, work experience, organisational position) but these were not significant.

Given the significance of transformational and transactional leadership coefficients both $H1$ and $H2$ are accepted. However, since the passive-avoidant leadership coefficient is not significant, $H3$ is rejected.

5. Discussion

The major finding of the present study is that there is a significant and positive relationship between the leadership style adopted by an organisation's primary knowledge manager and that organisation's knowledge management activity when that style is transformational or transactional. Thus, when primary knowledge managers within organisations adopt the transformational and transactional leadership styles, there is a notable increase in knowledge management activity. Given the wide range of organisational knowledge management activities accounted for in the analysis we argue that this is a novel finding that has significant implications for scholars and practitioners.

That the transformational leadership style is significantly and positively related to an organisations' knowledge management activity is unsurprising. A variety of authors have argued for the strategic and long-term nature of knowledge management

Variables	<i>B</i>	SE	β	<i>t</i>	Significance
(Constant)	63.410	15.976		3.969	0.000
Transformational	18.066	4.706	0.334	3.839	0.000
Transactional	12.985	3.808	0.296	3.410	0.001
Passive avoidant	-4.183	3.034	-0.116	-1.379	0.171
<i>R</i>	0.516				
<i>R</i> ²	0.266				
Adjusted <i>R</i> ²	0.246				

Notes: The multivariate regression model ($F = 12.939$, $df = 3$ and $p > 0.001$) showed that 24.6 per cent of the variance in organisation's knowledge management activity is accounted for by the transformational, transactional and passive-avoidant leadership styles of primary knowledge managers. The standardised regression coefficients for the transformational and transactional leadership predictors show a significant (and positive) relationship while the passive-avoidant coefficient does not

Source: Data analysis

Table III.
Multivariate
regression model

(Hansen *et al.*, 1999; Davenport *et al.*, 1998; Greiner *et al.*, 2007) and as described earlier, the transformational leadership style is geared towards motivating, stimulating and developing followers to achieve organisational goals – it is a long-term approach to leadership. It is perhaps unsurprising to find that a long-term approach to leadership benefits a strategic long-term activity such as knowledge management.

However, that the transactional leadership style is positively and significantly related to an organisations' knowledge management activity is an unexpected but interesting finding. As noted previous evidence about the appropriateness of transactional leadership for influencing knowledge management activity has been mixed (see Politis, 2001, 2002; Crawford, 2005) and different strands of thought within the knowledge management literature provide contradictory evidence and expectations on the matter. However, our result is in line with those studies that argue for the effectiveness of reward systems for motivating knowledge workers to partake in knowledge management activities (Hansen *et al.*, 1999; Chua, 2009; Al-Adaileh and Al-Atawi, 2011) and this may be one reason why the transactional leadership style, which makes use of cost-benefit exchanges to yield the desired outcomes from followers, is effective. Yet, what the present study does not make clear is whether followers respond better to material or non-material rewards, and in particular what type of transactions and in what context encourage knowledge management activity. Thus, this presents a novel for future inquiry.

In addition, given the positive and significant relationship found between the transactional leadership style and organisation's knowledge management activity our results suggest that too great an emphasis may have been placed on the importance of providing knowledge workers' with autonomy and instead indicates that knowledge work (and knowledge workers) respond well to the setting of goals, monitoring of activity and provision of rewards when performance expectations are met. Thus, we argue that not only can knowledge management activity be positively influenced through transactional leadership behaviours but also that the emphasis that some authors have place on the autonomy that should be provided to knowledge workers may have been overstated. This is of particular importance for practitioners, as although knowledge work may be difficult to measure and observe (Fahey and Prusak, 1998) it is nonetheless an activity that can and should be influenced through the

adoption of the transactional leadership style. Thus, although some authors have argued that knowledge management activity is not amenable to centralised management or leadership (Ehin, 2008) we suggest that on the contrary knowledge management activity can be positively influenced by leadership behaviours.

The importance of leadership styles for knowledge management activity found in the present study seems to be contradicted by the non-significant result for the passive-avoidant regression coefficient. Prima facie it may appear that if leadership increases knowledge management activity amongst subordinates, then passive-avoidant leadership (characterised by reactive and non-leadership behaviours) should surely lower knowledge management activity. Yet this would only be the case if leadership was seen as both necessary and sufficient for influencing knowledge management activity. Indeed as the model accounts for only 24.6 per cent of the variance of organisations' knowledge management activity it is clear that there are a variety of other factors influencing knowledge management activity within organisations which are not included in the model. This is as expected, as many factors (such as organisational culture, structure and trust) crucial for the success of knowledge management activity have been examined previously (e.g. Davenport *et al.*, 1998, Akhavan *et al.*, 2006). We propose that in the present study, these other factors have acted to mitigate the negative effects of passive-avoidant leadership. This line of argument, if accepted, suggests that while leadership is important for increasing knowledge management activity, it cannot be said to be necessary – the present results highlight that leadership is merely sufficient: increasing knowledge management activity when present but not decreasing it when absent. This interpretation of the findings is clearly at odds with much of the literature, such as the work of Lakshman (2007) who found that leadership failure is often blamed for the failure of knowledge management programmes. The present work therefore suggests that the importance of leadership role for knowledge management may have been overstated. Nonetheless, given the variance in knowledge management activity accounted for by the model, it is clear that leadership is important and should not be ignored either by researchers or practitioners.

Overall the findings of the present work partially support and partially contradict the findings of other researchers who have examined the relationship between transformational and transactional leadership and knowledge management activity (see Politis, 2001, 2002; Crawford, 2005). A number of explanations for the difference between the results achieved in the present study and those achieved by others can be offered.

Differences in culture and context may play a large role, as it has been argued previously (Brain and Lewis, 2004) that leadership effectiveness is influenced by culture. Moreover, while the present study examined a range of organisations, the studies by Politis (2001, 2002) examined only single organisations and the study by Crawford (2005) examined personal knowledge management activity. However, drawing on Crawford's (2005) study and the results of the present work, it would seem that the transformational leadership style is equally applicable for increasing the knowledge management activity of subordinates as it is for increasing one's own knowledge management activity. This suggests that there are multiple benefits to organisations encouraging their knowledge managers to adopt the transformational style.

The present study has gone some way to examining the relationship between leadership style and knowledge management activity. However, it has been conducted

within a single national context and a single industry. Given this, the usual caveats with regard to generalisability of the findings must be acknowledged and it is clear that further research needs to address the same and similar questions within different industries. Further research may also wish to examine how critical leadership is for knowledge management activity, and how the leadership styles adopted by leaders on the front lines of organisations can influence the knowledge management activity of followers.

6. Implications for practitioners

The present study has a number of implications for practitioners.

First, organisations must be cognisant of the leadership style adopted by their knowledge managers and should invest in training and developing the leadership abilities of their knowledge managers. Second, it is important that both the transformational and transactional leadership styles are mastered and can be employed by knowledge managers within organisations. Third, it is clear that leadership is not the only factor which will determine the success of knowledge management activities within organisations. Thus, organisations should see changes or improvements in leadership not as one-stop solution for increasing knowledge management activity, but as one tool among the many at their disposal.

7. Conclusion

Knowledge has been argued to be the primary asset for organisations in the modern world (Sewell, 2005), and knowledge management has become crucial to organisations who can maintain or gain competitive advantage by making the way in which they acquire and transfer knowledge more effective (Offsey, 1997; Bollinger and Smith, 2001; McKinlay, 2005). The purpose of the present study was to determine whether there is a relationship between the leadership style adopted by an organisation's primary knowledge manager and the knowledge management activity of that organisation.

The major finding of the present study is that there is a significant and positive relationship between the leadership style adopted by an organisation's primary knowledge manager, and that organisation's knowledge management activity when that style is transformational or transactional.

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