Managerial Tacit Knowledge, Individual Performance And The Moderating Role Of Employee Personality

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Summary

This study investigates the relationship between knowledge sharing mechanisms, managerial tacit knowledge, and individual performance in the Malaysian public sector. Moderation effects of employee personality on these variables were also examined. Findings from 308 Malaysian public sector managers suggest that individual performance is influenced by levels of accumulated managerial tacit knowledge, which were moderated by employee personality traits. The findings also show that individual performance has an impact on the effectiveness of knowledge sharing mechanisms.

Keywords: knowledge sharing, managerial tacit knowledge, personality, performance

INTRODUCTION

The ability of an organization to create and share knowledge is one of the key sources of competitive advantage for today's organizations (Golden and Raghuram 2010). Creating and organizing knowledge, however, remains a major challenge for organizations (Connelly et al. 2012). Some scholars argue that new knowledge is created through interactions between explicit and tacit knowledge (Nonaka and Takeuchi 1995). Whilst the former can be transferred with relative ease using advances in information technology, sharing tacit knowledge is more problematic (Armstrong and Mahmud 2008). According to Nonaka and Van Krogh (2009), an effective way of transferring tacit knowledge is through interaction processes: interacting with the task and therefore learning by doing (situated learning); or interacting with a community and therefore learning from people (communities of practice). This article is concerned more with the latter as a way of enabling employees to disseminate their beliefs, thoughts, and experiences to others, thereby establishing mutual understandings (Yao, Kam, and Chan 2007).

Whilst private organizations are known to be increasingly dependent on the management of knowledge for competitive advantage (Silvi and Cuganesan 2006), the public sector is also becoming increasingly dependent on interdepartmental knowledge sharing (Willem and Buelens 2007) as public servants are expected to not only deliver public services economically and efficiently but also to be creative, enterprising and innovative (Mahbob 2010). Public officers are also expected to use knowledge to shape public demands and ideas about what constitutes the common good in order to increase effectiveness and quality with limited resources (Wiig 2002). This is particularly the case among frontline government servants whose services are seen as representing the government. It also creates a major

challenge for public servants, as the nature of their jobs requires both tacit and explicit knowledge, although arguably tacit knowledge is more useful in managerial practices (Bennet and Bennet 2008).

The recent trend in many public services has been to adopt the successful management techniques and methods developed in the private sector (Common 2011). This suggests that the public sector represents an interesting and important empirical setting for exploring knowledge management at a time when the significance of knowledge management in the public sector is increasingly being recognised (Syed-Ikhsan and Rowland 2004; Kim and Ko 2014). As a result, government agencies are continually seeking new ways of developing their knowledge sharing practices (Willem and Buelens 2007) but little is known about their effect on overall performance (Wang and Noe 2010). Furthermore, there have been a dearth of studies that have addressed knowledge sharing aspects of the human resource management (HRM) function in developing countries where there is a relative lack of human capital development (Turner, 2013), and where poor workplace cultures lead to poor working conditions (Berman 2015, Puppim De Oliveira, Jing and Collins 2015). On the basis that previous HRM studies have demonstrated clear benefits of knowledge sharing in public sector organizations (Amayah 2013; Shamsul and Kilkon 2013) that lead to improved performance (Berman 2015) there is a need for similar studies in an Asian context (Ko, 2013).

The present study of tacit knowledge is particularly important because it is related to practical intelligence and employee behaviour that is acquired through experience (Wagner and Sternberg 1985) and is known to be particularly useful in explaining individual differences in job performance that arise from the processes of learning and practice (Fang

and Zhang 2014). The paper aims to provide theoretical insights into knowledge sharing practices that can assist public sector managers in the development of an effective mechanism for sharing tacit knowledge. Of further interest is the influence of individual differences in personality among community members because these differences are thought to influence both knowledge sharing and knowledge creation (Martzler et al. 2008).

Knowledge management

The field of knowledge management practice is still at an early stage of development and there are ongoing debates about the overall effectiveness of these initiatives (Syed-Ikhsan and Rowland 2004). Operating under a command and control environment that is often characteristic of bureaucracies typical in many public sector organisations leads to problems associated knowledge sharing (Yao, Kam and Chan 2007).

To test the effectiveness of knowledge management initiatives, this study develops and empirically tests a theoretical framework designed to investigate the relationship between knowledge sharing mechanisms, characteristics of individual managers (personality), levels of managerial tacit knowledge, and their combined effects on individual and organizational performance. This is important theoretically because studies (e.g. Amayah 2013) suggest that organizational performance can be improved through intermediate or individual outcomes following the implementation of knowledge management or knowledge sharing practices. However, individuals differ in their ability to learn from experience (Martzler et al. 2008) and acquire tacit knowledge (Matthew and Sternberg 2009) and Barrick and Mount (1991) identified personality as an important construct that allows knowledge to be acquired in a meaningful way.

Knowledge Sharing Categories

Organizational knowledge sharing is defined as the transfer and exchange of knowledge (both explicit and tacit) between and among individuals, teams, departments and organizations (Wang and Noe 2010). Organizational knowledge is often described using two dimensions referred to as degree of aggregation and degree of articulation (Cabrera and Cabrera 2002). Degree of aggregation distinguishes between individual and collective forms of knowledge, or the extent to which knowledge is held by one person or embedded in the interactions amongst a group of people (Nonaka and Takeuchi 1995). Degree of articulation refers to when knowledge can be articulated and communicated to others, which has led to a distinction between tacit and explicit knowledge (Nonaka and Van Krogh 2009). Interactions between the two dimensions of aggregation and articulation have led to the creation of four knowledge categories (Lam 2000): individual-tacit; collective-tacit; individual-explicit; collective-explicit. These categories have paved the way for research that examines a dimension of knowledge sharing mechanism referred to as *personalisation* versus *codification* (Hansen, Nohria, and Tierney 1999). Personalisation refers to ad-hoc and informal approaches, whereas codification refers to formal systems of capturing data (e.g. electronic databases). In a later examination of knowledge sharing mechanisms, Boh (2007) introduced another key dimension that differentiates between whether knowledge-sharing mechanisms are *individualised* or *institutionalised*. Institutionalisation describes socialisation tactics that are collective and formal in terms of the contexts in which organizations provide information. Individualisation describes socialisation tactics that are individual and informal (Nonaka and Takeuchi 1995). By institutionalising codification and personalisation knowledge-sharing mechanisms, Boh (2007) demonstrated that individuals are better able to share knowledge across organizations ensuring that ‘person-person knowledge sharing is not

simply serendipitous but is more systematic' (p54). Institutionalized-personalization mechanisms are created by institutionalizing an organisation's structure in such a way that individuals in receipt of important knowledge and experience are encouraged to provide guidance to less experienced professionals (Amayah 2013). Mechanisms of this type are particularly important when attempting to transfer tacit knowledge.

Tacit Knowledge

Wagner and Sternberg (1985) refer to tacit knowledge as practical 'know how' that is not openly expressed or stated and must be captured in the absence of direct instruction. It is difficult to transfer or imitate because it is acquired through experience and becomes embedded within the individual (Nonaka and Takeuchi 1995). Tacit knowledge can, however, be shared through socialization processes (Nonaka and Van Krogh 2009) where sharing technical skills, experiences and mental models can also lead to collective learning and the creation of new knowledge (Cabrera, Collins, and Salgado 2006).

According to Boh (2007), personalisation knowledge-sharing mechanisms are critically important for organizations conducting tasks and dealing with problems that are unique rather than standardised and routine in nature. Examples of knowledge sharing practices include: departmental meetings, help desks, senior staff brokering knowledge sharing between individuals and project teams (Willem and Buelens 2007). Since knowledge sharing is believed to be an appropriate mechanism to enable tacit knowledge to be disseminated to others, this study hypothesises that:

> *Hypothesis 1a*: There is a positive relationship between institutionalised personalisation and levels of accumulated managerial tacit knowledge.

Codification is ‘knowledge as possession’, which focuses on making knowledge explicit. This mechanism is mostly associated with organizations that emphasise use of information technology in knowledge management to create electronic repositories for storing, searching, retrieving and sharing intellectual capital. It includes databases, use of templates, broadcast emails and forums (Boh 2007). Tacit knowledge, on the contrary, is known to be difficult, if not impossible to share through the use of codification, technology or physical method (Matthew and Sternberg 2009). This study therefore hypothesises that:

Hypothesis 1b: There is no relationship between institutionalised codification and levels of accumulated managerial tacit knowledge.

More experienced managers with superior performance evaluations are believed to accumulate higher levels of tacit knowledge than less successful managers (Tan and Libby 1997) and these increases in tacit knowledge are arguably highly correlated with career success (Wagner and Sternberg 1987; Fang and Zhang 2014). This leads to hypothesise that:

Hypothesis 2: There is a positive relationship between managerial tacit knowledge and individual performance.

Components of Tacit Knowledge

Wagner and Sternberg (1987) identified three components of tacit knowledge: managing oneself; managing others; and managing tasks. The first of these is defined as knowledge about how to manage oneself on a daily basis to maximise productivity. This can be related to interpersonal practical know-how demonstrated in self- organizational facets of performance (Matthew and Sternberg 2009). It includes knowledge about the relative importance of the tasks, efficient ways of approaching work, and knowledge about the

motivation skills required in order to maximise accomplishments (Wagner and Sternberg 1987). Success in managing oneself leads to junior colleagues seeing their senior counterparts as those they would like to imitate (De Vries, Bakker-Pieper, and Oostenveld 2010).

Tacit knowledge related to managing others refers to knowledge on managing subordinates and social relationships. Managers who succeed in managing others often prefer to share their knowledge about their approach by attempting to verbalise it through various knowledge sharing mechanisms (Nonaka and Van Krogh 2009) such as team projects (De Vries, Bakker-Pieper, and Oostenveld 2010).

Tacit knowledge related to managing tasks refers to knowledge about how to establish careers, how to enhance reputations and how to convince superiors about ideas or products (Wagner and Stenberg 1987). Knowledge sharing related to managing tasks in the public sector has been shown to occur when managers talk about how they have overcome work challenges by consulting staff on key decisions and instituting non-monetary rewards for suggestions and publicising improvement ideas (Taylor and Wright 2004). This leads to the next hypothesis that:

> *Hypothesis 3:* There is a positive relationship between institutionalised personalisation and levels of associated managerial tacit knowledge (managing oneself, managing others and managing tasks).

Both knowledge sharing mechanism relationships discussed above provide an effective means for organisations to share knowledge, encourage learning, and build intellectual capital (Hansen, Nohria, and Tierney 1999). For the purpose of this research, refer to the combined

effects of both of these processes as knowledge sharing mechanism (KSM). It is further hypothesised, therefore, that:

Hypothesis 4: There is a positive relationship between overall KSM and individual performance.

Hypothesis 5: There is a positive relationship between overall KSM and levels of accumulated managerial tacit knowledge (LAMTK).

Personality Traits

Personality traits refer to individual differences in the way people tend to think, feel and behave across different situations. Since differences in personality cause people to behave in different ways (Tokar, Fischer and Subich 1998), understanding its influence on public sector management whose function is to process and provide public goods and services based on public demands and government vision is clearly an important area of investigation. One of the most widely used models of personality is the Big Five taxonomy (John, Naumann, and Soto 2008). There is strong agreement that five robust factors of personality serve as a meaningful taxonomy for classifying personality attributes. These are: extraversion; agreeableness; conscientiousness; neuroticism; and openness to experiences (Witt et al. 2002).

Previous research has linked personality traits to a number of important organizational outcomes such as job performance, training success (Barrick et al.1998), self assessment and job satisfaction (Judge and Bono 2000), and employee selection (Hermelin and Robertson 2001). However, only a few studies have attempted to link current theories of personality to knowledge sharing mechanisms. Findings suggest that the dimensions of agreeableness, conscientiousness, and openness to experience may increase knowledge sharing among individuals (Martzler et al. 2008).

Agreeableness is associated with being good-natured, forgiving, courteous, helpful, cheerful, tolerant and cooperative (Witt et al. 2002). The agreeableness dimension has also been linked to a person's inclination to exchange and share knowledge through trusting and good-natured relationships (De Vries, Den Hooff, and De Ridder 2006) leading to more effective performance in organizations (Martzler et al. 2011).

Conscientiousness reflects dependability, according to Barrick and Mount (1991), which includes being careful, thorough, responsible, organised and well planned. This dimension has also been found to be positively related to performance (Witt et al. 2002) and through its association with commitment; conscientiousness is also believed to have a strong influence on knowledge sharing behaviours (Cho, Li, and Su 2007).

The openness to experience dimension reflects an active imagination, intellectual curiosity, originality and independence of judgement (Costa and McCrea 1992). Highly open people tend to show positive attitudes towards learning and engaging with learning activities (Barrick and Mount 1991). Cabrera, Collins, and Salgado, (2006) demonstrate that openness is a strong predictor of knowledge sharing on the basis that it reflects curiosity and originality, leading to the development of new expertise.

Miller (2009) found personality to be a moderating factor influencing other variables linked with knowledge sharing practices. Barrick et al. (1998) identified moderation effects between personality, knowledge, and performance. Since knowledge acquisition is the result of interpreting information based on one's own understanding, it is reasonable to expect that the process will be influenced in some way by the personality of its holder (Martzler et al. 2011). This leads to the proposal that personality is an important moderating factor

influencing the relationship between effective knowledge sharing practices and individual performance. This study therefore hypothesises that:

Hypothesis 6: Personality dimensions of agreeableness, conscientiousness, and openness to experience moderate the effects of knowledge sharing mechanism on individual performance.

Previous research has also suggested that personality may moderate the relationship between knowledge and performance (Barrick and Mount 1991). This leads to finally hypothesising that:

Hypothesis 7: Personality dimensions of agreeableness, conscientiousness, and openness to experience moderate the relationship between managerial tacit knowledge and individual performance.

METHOD

Sample and Data Collection

Management reforms in the Malaysian public sector represent a major priority for the government (Siddiquee 2013) and it is their belief that increased levels of public sector performance can only be supported through effective knowledge management practices (Sandhu, Jain, and Ahmad 2011). Their efforts to improve public sector performance began with the introduction of 'Vision 2020', published in the 9th Malaysia Plan which became part of a national agenda aimed at ensuring Malaysia becomes a fully developed country by 2020 (Islam and Ismail 2010).

The population of interest for this study were employees from management and professional groups of 98 local governments in Peninsular Malaysia. This group comprises

middle level managers involved in policy making for human resource management, financial management and socio-economic development of the country.

The sampling frame comprised 1000 staff members from the managerial and professional group of 39 local government authorities from 6 out of 12 states in Peninsular Malaysia between March and August 2010. Completed questionnaires were returned by 308 subjects, representing an overall response rate of 31%. Of these, 32 (10.4%) were classified as experts whose management experience averaged 16 years, 238 (77.3%) were classified as a typical management group whose experience averaged 7.5 years, and 38 (12.3%) were classified as a novice management group with less than 1 year's experience. Table 1 provides descriptive statistics of levels of experience for the novice, typical, and expert groups.

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Table 1 about here

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Measures

Data were collected using a self-report survey instrument. The instrument collected demographic data in addition to information on: (1) Tacit knowledge; (2) Knowledge sharing mechanisms; (3) Personality; (4) Individual performance. Scale items for tacit knowledge used a 7-point Likert scale (1 = *extremely bad*, 7 = *extremely good*) and instruments (2) to (4) used 5-point Likert scales (1 = *strongly disagree*, 5 = *strongly agree*). Descriptive data for demographic are shown in Table 2.

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Table 2 about here

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Tacit knowledge. Wagner and Sternberg's (1985) Tacit Knowledge Inventory for Managers (TKIM) was administered to all subjects in order to determine their levels of managerial tacit knowledge (LAMTK). Sample items for the instrument and the scoring regime can be found in Armstrong and Mahmud (2008). Theoretically, expert managers are expected to respond differently to lower level managers on each test item due to the content and organization of their tacit knowledge (Wagner et al. 1999). This is referred to as the "expert-novice comparison". A group of expert managers were needed to create a profile against which other subjects could be compared. This is a fundamental requirement of the TKIM used in the study. The scoring system of the TKIM requires scores from the subjects to be compared against the scores of the expert managers' profile. Subjects with TKIM scores close to the scores of the expert profile are deemed to have a higher level of managerial tacit knowledge.

Previous studies of tacit knowledge in the professions have identified expert managers as those who are senior, highly successful and experienced managers (e.g. Wagner and Sternberg 1987). Experts can also be chosen either by nomination by peers and supervisors or on the basis of existing performance criteria (Sternberg et al. 2000). The selection criteria adopted in the present study for the expert management group builds on those adopted in previous studies. It does this by considering only those who stand out as being successful within the same work context as the subjects being studied (i.e. within the Malaysian Local Government). Other major criteria were that they must have high status in the organization with job titles such as Mayor, Council Secretary, Director of HRM; significant length of service at a senior position; a record of high performance appraisals; recipient of a highly prestigious service excellence award for management in the past three years. For the latter, a candidate must have been nominated by their superior as being an exemplary manager and have received a score of greater than 90% for each of the last 3 years on their annual

appraisal form designed to measure overall management success. Managers currently holding this award are deemed to be among the most expert and successful in the organization.

Knowledge sharing mechanisms. Defined as the method, procedure, or process of sharing, integrating and interpreting and applying know-what, know-how, and know-why in organizations that directly influence task performance. Items are divided into two groups: institutional codification and institutional personalisation. The scale items assess participants' perceptions of the most important mechanisms for sharing knowledge within their organizations. Example items are "Important mechanisms for sharing knowledge in my organization are: 'word of mouth sharing through senior staff'; 'cross staffing across projects'; 'manuals written voluntarily'".

Personality. The Big Five Inventory (John, Naumann, and Soto 2008) was used to measure the three dimensions of personality of interest to this study: openness (inventive/curious vs. consistent/cautious); conscientiousness (efficient/organized vs. easy-going/careless); and agreeableness (friendly/compassionate vs. cold/unkind). The remaining two dimensions of extraversion (outgoing/energetic vs. solitary/reserved); and neuroticism (sensitive/nervous vs. secure/confident) were excluded. This was on the basis that: (a) these three personality traits are thought to be determinants of knowledge sharing behaviour amongst employees (Martzler et al. 2008); (b) in previous research on the effects of personality traits on team performance, conscientiousness and agreeableness consistently emerge as the main predictors whilst the other traits are regarded as less significant (Barrick et al. 1998).

Individual Performance. Individual performance was measured using data collected from an annual performance appraisals system known as the Malaysia Remuneration System (MRS).

This approach is consistent with previous studies (Hailesilasie 2009). Outcomes of the MRS are scores for work productivity (50% weighting), knowledge and skills (25% weighting), personal qualities (20% weighting) and activities and contributions outside official duties (5% weighting). This leads to a cumulative mark for overall performance given as a percentage. Scores of 49.9% and below are considered poor, 50-59.9 percent is considered unsatisfactory, 60-79.9 percent is considered satisfactory, 80-89.9 percent is considered good, and 90-100 percent is considered excellent. Because the respondents in the study were officers from management and professional groups, the range of marks were between 83 and 96 percent. This is entirely consistent for this elite category of staff. Scoring resolution is 0.1% which leads to 130 possible values for this dependent variable.

Exploratory Factor Analysis (EFA)

Exploratory factor analysis was employed to confirm the validity of the instrument in the context of the study. The output of Knowledge Sharing Mechanism shows that the Kaisen Meyer Olkin (KMO) Measure of Sampling Adequacy was 0.877, with significant Bartlett Test of Sphericity (sig=.000). The variance explained was 57%, with 2 extracted factors based on an eigenvalue of more than 1.

The managerial tacit knowledge represent the analysis of KMO Measure of Sampling Adequacy for three dimensions, which was 0.804, with a significant Barlett's Test of Sphericity (Sig.=.000). The variance explained is 35.4%, with three extracted factors.

The KMO measure of sampling adequacy for the single dimension solution was 0.894, with a chi-square of Bartlett's test of Sphericity of 2490.774, and the degree of freedom was 210, significant at .000. The variance explained was 47.91% with 3 factors extracted.

As suggested by Chang, Witteloostuijn and Eden (2010) and Podsakoff and Organ (1986) this study employed Harman's single-factor test in exploratory factor analysis to provide an additional check for common method variance. If a single factor emerged from the factor analysis, the result likely indicates that the data suffered from a common method variance problem (Rodwell and Teo 2004). Given that eight factors emerged from this factor analysis, this provides confidence that the data were not influenced by common method variance.

RESULTS

Tacit knowledge scores for novice and typical groups of managers were calculated using the method of scoring outlined by Armstrong and Mahmud (2008). The procedure gives rise to a score for the level of managerial tacit knowledge for every respondent compared with the expert managers' profile. Results are shown in Table 3. Scores are expected to decrease rather than increase with advancing levels of tacit knowledge because these scores represent deviations from the expert group. The closer the pattern of responses to the expert group, the lower the score (Wagner 1987). One-way analysis of variance ($F = 7.56$, $df = 2$, $p = .001$) and Scheffe post-hoc tests revealed that both the novice and typical groups of managers had significantly lower LAMTK than the expert manager group. This is consistent with previous findings (Armstrong and Mahmud 2008).

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Table 3 about here

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Internal consistency reliability for the Knowledge Sharing Mechanism Inventory (KSM), the Tacit Knowledge Inventory for Managers (TKIM), and the Big Five Inventory of

Personality (BFI) were all acceptable for total overall scores, with reliabilities of .88, .77 and .86 respectively. Reliabilities of the individual sub-scales ranged from .64-.88 for the KSM, .71-.77 for the TKIM and .71-.86 for the BFI. A correlation matrix of the study variables are presented in Table 4.

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Table 4 about here

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A correlation analysis revealed a significant positive relationship between LAMTK and institutional personalisation ($r = -.132$, $p < .05$). Hypothesis H1a is therefore supported. Unexpectedly, there was also a significant and positive correlation between LAMTK and institutional codification ($r = -.136$, $p < .01$). Hypothesis H1b that suggested there would be no relationship is therefore refuted. These results are similar to those of one previous study (Syed-Ikhsan and Rowland 2004) where support was found for the hypothesis that tacit knowledge transfer would be more effective among individuals who engage in both formal and informal knowledge sharing practices. This also supports the finding of Willem and Buelens (2007) that formal codifications, such as in a public sector organization, are not necessarily a barrier to knowledge sharing.

Correlations revealed no significant relationship between individual performance and overall LAMTK ($r = -.089$, $p > .05$). However there was a significant relationship between individual performance and the LAMTK sub scale, managing self ($r = .202$, $p < .001$). Hypothesis (H2) suggesting that there would be a positive relationship between managerial tacit knowledge and individual performance is therefore partially supported.

Results in Table 4 reveal a significant relationship between institutionalised personalisation and managerial tacit knowledge associated with managing oneself (r = -.192, p = < .001), and managing others (r = -.140, p < .01). However, there was no significant relationship between institutionalised personalisation and managerial tacit knowledge associated with managing tasks and this hypothesis (H3) is partly accepted. Unexpectedly, there were also significant correlations between institutional codification and LAMTK associated with managing oneself (r = -.186, p < .01) and managing others (r = -.136, P < .01). Again, there was no significant relationship between LAMTK associated with managing tasks and institutional codification (r = .040, p > .05).

Pearson correlations revealed significant relationships between overall knowledge sharing mechanism and individual performance (r = .108, p < .01), LAMTK sub-scales of managing self (r = -.255, p < .001), managing task (r = .126, p < .05), managing others (r = -.185, p < .01) and overall LAMTK (r = -.149, p < .01). The hypotheses (H4) and (H5) are therefore supported.

Hierarchical regression analysis was used to predict the interaction effect through the significance of the R^2 change. The KSM variables (institutional codification and institutional personalization) were first entered into step 1, followed by the personality moderator variables (agreeableness, openness and conscientiousness) into step 2 and the interaction terms in step 3 of the regression model.

Results reveal the set of knowledge sharing mechanism and institutional personalization variables entered at step 1 accounted for approximately 7% of the variance in individual performance. Standard coefficient Beta for institutional codification (β = -0.364, t = -4.004, p<0.05) and knowledge sharing mechanism (β = 0.480, t = 2.951, p< 0.05) had significant main effects on individual performance. The moderator variable entered at step 2 indicates no

significant relationship with individual performance. Agreeableness, openness and conscientiousness were not significantly related with individual performance in step 2 of the regression analysis. Step 3 reveals no interaction between independent and moderator constructs on individual performance. This indicates that agreeableness, conscientiousness and openness do not have a moderating effect on the relationship between institutional codification and institutional personalization in assessing individual performance. Therefore hypothesis H6 is rejected and a results table is not provided. It is probably because in this knowledge era, managers are required to employ techniques where it is possible for them to share knowledge regardless of personality belonging. However, for sharing managerial tacit knowledge, there are particular needs, which have specific traits of personality that influence individual performance.

Table 5 shows the results of the hierarchical regression analysis related to H7. Findings indicate that personality traits moderate the effect of managerial tacit knowledge on individual performance as a pure moderator.

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Table 5 about here

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Overall, managerial tacit knowledge and associated sub-scales (managerial others, task and self) were entered into step 1 of the regression analysis. In step 2 the moderator variables, agreeableness, conscientiousness, and openness were entered. Interaction terms were entered into step 3 of the regression model. Managerial tacit knowledge variables entered in step 1 account for 5% of the variance in individual performance. Of the three sub-scales associated with the managerial tacit knowledge variable, only ‘managing self’ was found to influence individual performance ($\beta = 0.173$, $t = 1.749$, $p = .041$). In the second step, the moderator

factors: agreeableness, conscientiousness, and openness, were entered into the block regression to examine their effects as predictors of individual performance. When these moderator factors were entered in the regression model, the R^2 slightly increased from 4.7% to 5.5% accounting for a change in individual performance. In the third step, the 9 interaction terms were entered into the model. It can be seen from Table 5 that of the variance explained by interaction terms, 11.5% were significant ($p<0.05$), indicating that there was a moderation effect. This pattern of results is very similar to the findings of Sternberg et al. (1995) who reported the results of a hierarchical regression indicating that tacit knowledge accounted for an additional 32% of criterion variance for managerial performance and an additional 5% variance between age, years of education with tacit knowledge. From the final regression model, it can be observed that five of the nine interactions were significant at the 0.05 level. An examination of the full model from the block of interactions in step 3 revealed a pure moderator effect of agreeableness x self ($\beta = 1.625$, $t = 2.023$, $p = 0.022$). Pure moderators can also be seen from the interaction effect of agreeableness x task ($\beta = 1.341$, $t = 1.701$, $p = 0.045$), conscientiousness x self ($\beta = 1.043$, $t = 2.221$, $p = 0.014$) and conscientiousness x task ($\beta = 1.576$, $t = 3.201$, $p = 0.001$) and openness x others ($\beta = 1.022$, $t = 1.714$, $p = 0.044$). Other interactions appear to have no effects on individual performance. Thus, these findings again provide partial support for the hypothesis H7.

DISCUSSION AND CONCLUSIONS

Whilst sharing tacit knowledge may be difficult, this study has demonstrated that it does exist in managerial work within the Malaysian Public Sector and leads to improved performance, as predicted by previous researchers of Asian and global institutions (Willem and Buelens 2007; Sandhu, Jain, and Ahmad 2011; Shamsul and Kilkon 2013). Codifying

knowledge sharing mechanisms captures individual and group-held knowledge and makes it the wider property of the organization (Earl 2001) using information technology to create electronic repositories for storing, searching and retrieving intellectual capital. This study finds that when these mechanisms are institutionalised in the routines and structure of the organization then this leads not only to the transfer of explicit knowledge, but also to increased levels of accumulated managerial tacit knowledge.

The concept of personalisation recognises that individuals play an integral role in the learning and knowledge sharing processes within the organization (Boh 2007). This involves direct interactions between individuals in situations where they are able to restructure their knowledge across different tasks and share their experience and knowledge across the team. These are what Nonaka and Takeuchi (1995) refer to as 'socialisation' processes that lead to the creation and transfer of tacit-tacit knowledge. When organizations institutionalise personalisation mechanisms to facilitate person-person knowledge-sharing at the collective level, this study has demonstrated that this not only leads to increased LAMTK but also to increased individual performance. These findings support the views of Hansen, Nohria, and Tierney (1999) who suggested personalisation mechanisms would lead to both the transfer of tacit knowledge and the development of new knowledge. The findings also indicate that in institutionalising the personalization approach to support knowledge sharing amongst their staff, although the mechanism tends to rely heavily on senior staff, some activities were being set up by communities on a voluntary basis. With regard to the sub-components of managerial tacit knowledge, significant relationships were found between knowledge sharing mechanism and managing self, managing others, and managing tasks. The relationship with managing self is consistent with previous thinking that suggests success in managing oneself among other individuals leads to an increased likelihood of sharing personal beliefs and

knowledge in the interest of creating new knowledge (Nonaka and Van Krogh 2009). The relationship with managing others is also consistent with previous studies such as Cho, Li, and Su (2007) who found that managers most capable of managing others prefer to share their knowledge with them. The relationship with managing tasks supports Von Krogh's (1998) argument that skills associated with this construct are crucial for both managerial success and high performance in knowledge sharing mechanisms. This finding also validates an earlier study of public sector managers (Taylor and Wright 2004) where it was found that managers who are successful in managing tasks have a greater tendency to share knowledge. Effective knowledge sharing has also been argued to depend on the personality characteristics of senior managers (Martzler et al. 2011). However, this study found that the personality dimensions do not moderate the influence of knowledge sharing mechanism on performance. This complements existing studies which also indicate that personality does not always react as a moderator due to cultural differences (Yap, Anusic, and Lucas 2012). This is indicative of the Malaysian public sector where the government has strongly emphasized the cultural requirement of public servants to share their knowledge at work regardless of their personality.

With regard to the influence of managerial tacit knowledge on performance, agreeableness and conscientiousness interacted positively with managing self and managing task, openness to experience significantly interacts with managing others to affect individual performance. With regard to the personality dimensions of agreeableness and conscientiousness, the former includes attributes such as trust, altruism, kindness and affection. Agreeable managers are thought to be good-natured, helpful, tolerant and cooperative, and capable of managing themselves to maximise individual productivity (Barrick and Mount 1991). Common features of conscientiousness, believed to be a

particularly important trait for managers (Witt et al. 2002) include high levels of thoughtfulness, goal-directed behaviours, being organised and mindful of details. In examining the scope of tacit knowledge in a work-related situation, Wagner (1987) categorised this according to 'the content of the situation, that is, whether it primarily involves managing oneself, managing others, or managing one's tasks' (p. 1236). The personality dimensions of agreeableness and conscientiousness moderated the influence of these forms of tacit knowledge on individual performance and similar findings have been reported elsewhere (e.g. Caligiuri 2000). In this study, openness was found to moderate its influence on individual performance. According to Costa and McCrae (1992), open individuals are 'curious about both inner and outer worlds, and their lives are experientially richer. They are willing to entertain novel ideas and unconventional values, and they experience both positive and negative emotions more keenly than do closed individuals' (p.15). It is perhaps not surprising therefore, that the ensuing knowledge transfer process will ultimately lead to increased individual performance.

Given these findings, the present study enhances existing knowledge of what Berman (2015) refers to as the ever illusive human factor that often escapes performance management innovations. With its focus on human development capability in terms of knowledge sharing, learning and personality influences, this complements other recent debates about the importance of human resource engagement in increasing public sector management roles within developing country contexts (Shamsul and Kilkon 2013; Berman 2015; Puppim De Oliveira, Jing and Collins 2015). This study also joins the unique theoretical discussion on knowledge accumulation in Asian public administration research and other developing countries. Whilst this was previously regarded as being unfavourable in terms of getting published in international journals, this is now regarded as a critically important topic (Ko,

2013). Particularly noteworthy is that these findings were derived from western theories and it has been demonstrated that these show promise for management within the Asian style public administration sector and may well be equally relevant across other developing countries.

CONTRIBUTIONS AND LIMITATIONS

This article has contributed to the public sector management literature in several important ways. Firstly, this study complements the literature on development of human resource management in developing countries. Whilst these countries are known to be still struggling with human resource management experiments in the face of issues of economic viability, low education, corruption, and so on, the findings from this research contribute to what Berman (2015) refers to as the ever illusive human function. By raising the importance of sharing managerial tacit knowledge, and highlighting important ways of achieving this, this study partly address Puppim de Oliveira, Jing and Collin's (2015) request for better ways of retaining talented workers, and increasing employees' engagement and managerial performance in developing countries.

Secondly, there is a dearth of studies of knowledge sharing mechanisms and their influence on the creation and transfer of managerial tacit knowledge. This study has addressed this gap in the literature by producing empirical evidence which demonstrates that institutionalising both codification and personalisation knowledge sharing mechanisms leads to increased levels of managerial tacit knowledge across the organization. In addition, most studies have focused on the private sector in Western contexts, whereas this study has focused on the Malaysian public sector, which provides an important empirical contribution to the extant literature. Thirdly, few studies have considered the implications of knowledge

sharing practices on individuals' performance in the workplace. Fourthly, there have been few if any studies that have considered the interrelationships between knowledge sharing mechanism transfer of managerial tacit knowledge, individual performance, and employee personality. This study reveals important interaction effects where the personality dimensions of agreeableness, conscientiousness and openness moderated the influence of both knowledge sharing mechanism and levels of accumulated managerial tacit knowledge on individuals' work performance.

These findings have established important links between the fields of knowledge management and applied psychology that have implications for the public management sector. This Work has shown that establishing effective knowledge sharing mechanisms and practices not only provides access to rich and timely information but also leads to the development of knowledge-sharing routines that result in new knowledge and improved performance. Furthermore, this finding reveals the importance of personality traits when selecting staff to develop systems for facilitating knowledge sharing mechanisms and practices. Identifying different personality traits may also underpin work descriptions that will enable maximum potential in providing quality public services.

These findings offer managers working in the government sector important insights. For example, by identifying the relevant mechanisms in the public sector, managers can improve knowledge sharing activities in their organisations, which will have important implications in terms of fostering an environment of collaboration and innovation. The research findings also have management implications in revealing the importance of the personality traits of managers in local authorities who can help to facilitate knowledge sharing practices and managerial tacit knowledge. The implication is that leaders who know the particular types of personalities who share knowledge in a specific programme may benefit from more

effectively deploying these individuals to create a collaborative and innovative workplace environment.

By identify the related personalities involved in managerial tacit knowledge and in different subscales of managerial tacit knowledge, leaders will be able to unlock important knowledge, which will have a positive impact on organisational productivity. In short, these findings suggest that greater consideration be given to the personality traits of management teams and the types of personality that encourage the sharing of tacit knowledge.

This study acknowledges its limitations. One limitation is that subjects were managers based exclusively in the Malaysian Public Sector. This work would therefore recommend that the research be replicated in a variety of contexts (e.g. Western and non-Western, and in the public, private and not-for-profit sectors) in order to determine whether the findings can be generalised. Additionally, the influence of societal level institutions and authority structures need to be considered. This study was also concerned with public sector managers and it would be useful to extend this work into other professions within the public sector. Finally, while this study has provided an important theoretical and empirical contribution to the knowledge sharing practices, transfer of managerial tacit knowledge, individual performance, and employee personality literatures, through a quantitative approach, it is recognised that there is great value from exploring these topics from a variety of methodological approaches.

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Table 1: Years of experience for the three sample groups

Group	N	Range	Mean	Std Dev.
Novice	38	1	1	0.00
Typical	238	2-26	7.5	5.6
Expert	32	10-31	16.44	5.6

Table 2: Demographic variables

Item	N	Range	Mean	Std Dev.
Age	308	23-57	37.62	8.30
Number of Staff	308	1 – 653	34.93	72.49
*Education Level	308	1 – 6	3.15	0.56

*(1 = Secondary School/below, 2 = Diploma/Certificate, 3 = Bachelor, 4 = Master, 5 = PhD, 6 = Others qualification)

Table 3: Comparison of LAMTK Scores for Expert, Typical and Novice Groups

Groups	N	Mean	Std Dev.	df	F	Sig.
Expert	32	1.13	0.342	2,305	7.563	.001
Novice	38	1.44	0.321			
Typical	238	1.42	0.411			

Table 4: Descriptive statistics and correlation matrix of variables (n = 308)

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
Individual Performance (IP)	89.6		-.202***	.088	-.078	-.089	-.047	.127*	.108**	.119*	.050	.053	.092
1.TKIM (Managing Self)	1.47	0.59	1	-.063	.381***	.633***	-.186**	-.192***	-.255***	-.097*	-.099*	-.055	-.101*
2.TKIM (Managing Task)	1.28	0.58		1	.167**	.580***	.040	.057	.126*	.175**	.044	.061	.116*
3.TKIM (Managing Others)	1.44	0.64			1	.778***	-.136**	-.140**	-.185**	-.136**	-.120*	-.144**	-.167**
4.TKIM (Overall Tacit Knowledge)	1.39	0.40				1	-.136**	-.132*	-.149**	-.024	-.085	-.068	-.072
5.Knowledge Sharing Mechanism – KSM1 (Institutionalised Codification)	3.98	0.56					1	.480***	.745***	.252***	.133**	.253***	.271***
6.Knowledge Sharing Mechanism – KSM2 (Institutionalised Personalization)	4.00	0.53						1	.739***	.203***	.136**	.235***	.244***
7.Knowledge Sharing Mechanisms (KSM) = KSM1+KSM2	4.05	0.37							1	.345***	.194***	.387***	.395***
8.Agreeableness (Agree)	4.28	0.46								1	.545***	.454***	.820***
9.Conscientiousness (Cons)	4.01	0.54									1	.415***	.776***
10.Openness (Open)	3.69	0.63										1	.813***
11.Personality Traits (PT)	4.04	0.43											1

Correlation at the ***p<.001,
**p<.01, *p<.05 levels (1-tailed)

Table 5: The result of moderator regression analysis for hypothesis 9 (dependent variable is individual performance)

Variables	Standardized Coefficients		
	Beta	t	Sig.
Step 1			
(Constant)		159.007	.000
Self	.173	1.749	.041
Task	.098	1.048	.148
Tacit Knowledge	-.036	-.301	.382
Step 2			
(Constant)		52.096	.000
Agreeableness	.105	1.464	.072
Conscientiousness	-.030	-.438	.331
Openness	.003	.045	.482
Step 3			
(Constant)		15.471	.000
Agreeableness x Self	1.625	2.023	.022*
Agreeableness x Task	1.341	1.701	.045*
Conscientiousness x Self	1.043	2.221	.014*
Conscientiousness x Task	1.576	3.201	.001*
Openness x Others	1.022	1.714	.044*
	Step 1	Step 2	Step 3
R	.216	.234	.339
R^2	.047	.055	.115
Adj R^2	.037	.036	.070
R^2 Change	.047	.008	.060
F	4.980	2.918	2.533
Significant	.002	.009	.001

*p< 0.05