The impact of different styles of ‘personal knowledge management’ and ‘leadership’ on ‘organisational performance’: a case of healthcare industry in Thailand

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Abstract: -Today’s business requires top management to be capable of competing successfully in the context of globalisation, which provides not only opportunities but challenges. Different styles of personal knowledge management and leadership contribute to an organisation’s ability to survive. However, there is insufficient research into top management’s approach to conveying and confirming learning in small and medium enterprises, particularly the hospitality industry. This study scrutinises the relationship between top management’s personal knowledge management and leadership styles and sustaining learning in the organisation, and consequently increasing organisational performance. Hospitals in Thailand are taken as a case study. A quantitative research method was applied. Pilot studies ensure reliability and validity. Questionnaires, covering demographics, number of employees, personal knowledge management, leadership styles and organisational performance, were used to collect data, and different statistical methods were used to analyse it. 1,000 questionnaires were distributed to the top management of hospitals in Thailand, with a return of 539, a response rate of 53.90%. The findings indicate that personal knowledge management and leadership styles are associated with organisational performance. In addition, results show that the association between personal knowledge management and organisational performance is mediated by the leadership style.


1 Introduction

Globalisation has both generated new opportunities and presented challenges (e.g. in transport and real-time communication: [1-3]). Large organisations with a vigorous history can no longer survive unless they continue to adapt [4]. Top management capable of competing successfully in the context of globalisation is indispensable in any business [5, 6].

This is equally true in the healthcare industry. In particular, once the ASEAN Economic Community (AEC) is established in 2015, members will more easily be able to travel and communicate with each other, affecting the development of the organisation and the day-to-day business environment [7, 8].

More specifically, Von Eiff [9] and Janoušková [10] stressed that the rise in the incidence of chronic diseases and severe illnesses is putting increasing demands on medical services. The emerging AEC not only provides prospects for any organisation but also introduces challenges in participating in today’s business environment [11, 12]. Patients themselves are becoming more demanding, expecting not only the best medicines, but also a better therapeutic environment.

Through observing its organisational performance with a view to gaining competitive advantage, any organisation can adapt itself by its changing business environment, even with limited resources if they are valuable, rare, inimitable or non-substitutable [13]. Even though not all organisations in the healthcare industry are equipped to meet these criteria, those attaining higher levels of competitive advantage will perform better.

For example, Weil [14] investigated non-profit and commercial healthcare organisations in the G-7 countries, including the UK, US and Germany. Findings indicated that private hospitals in those countries were likely to achieve higher returns, because they possess considerable capital; they know how to make the best use of scarce facilities; and they know how to share knowledge within the organisation, enhancing the skills of organisational members which in turn leads to raising the level of organisational performance.
Wright [15] confirmed that organisations have become increasingly dependent upon the contributions of knowledge workers, those with a high level of expertise, education and experience, whose primary role involves the creation, distribution or application of knowledge. Academics have proposed that the concept of organisational learning has a positive impact on enhancing organisational performance [16], in which top management encourages a learning environment.

More importantly, scholars have emphasised that personal knowledge management (PKM), leadership styles, and organisational performance are crucial and interrelated variables contributing to organisational performance, and thus there is a critical need to examine these relationships [17-19]. As such, PKM can be seen as part of knowledge management (KM), concerned with different management teams carrying out day-to-day responsibilities; and also influencing their leadership styles to have the biggest impact on the development of organisational performance. Thus, appropriate PKM may involve creating and encouraging leadership styles, which in turn can improve organisational performance overall.

2 Research Background

The aim of this research is to investigate which types of PKM and leadership style are supportive to the organisation. Hospitals in Thailand were carefully chosen as the unit of analysis. Like other ASEAN countries, Thailand is confronting another challenge: in 2003 the ASEAN summit declared the establishment by 2015 of the AEC, to encourage the free movement of commodities, services, investment and capital [20]. Thailand aims to be equipped to acquire the most advantage out of the AEC, and various industries are shaping their organisational strategies to cope with oncoming trends. Thailand’s healthcare industry is the focus of this research since its development may affect various aspects of national competitiveness.

3 Literatures

3.1 Personal Knowledge Management

The literature on KM focuses on the organisational level [21-23]. Thus, in recognising the gap between individual learning and organisational learning, there is room for investigation, although few researchers have attempted to define PKM[24-30].

PKM is the best scheme for individual purposes [24] and it has become a part of personal knowledge bases. It provides a strategy for transforming and gathering information to make the most use of it. Avery et al. [25] and Jarche[29] proposed different aspects and argued that PKM assumes that individuals have developed a self-awareness of their limits and abilities, i.e. what one knows and what one can do. It is an understanding of what one knows, how one accesses the things one knows, strategies for acquiring new knowledge and strategies for accessing new information as needed. From the vast amount of information available and the various approaches for attaining new information, they have planned their own areas of expertise and their own methods for additional learning.

Higginson[26] referred to organising and maintaining PKM: being accessible, meaningful and valuable to the individual; maintaining networks, contacts and communities; making life easier, and exploiting personal capital. Jefferson [27] proposed that ‘PKMs concentrated on a bottom-up approach, with an individual perspective to KM’. The goal is to enable the individual to select useful, well-structured information, and who to share it with. Individuals should be able to organise their own information so as to be meaningful and accessible when needed or exploited. PKM signifies the process of individuals to accomplish knowledge and handle embodied and encoded knowledge [28] Martin [30] explained that PKM is a set of knowledge facilitating individuals to accomplish goals and to generate new knowledge.

Drucker[31] found that members of knowledge organisations have positive effects on organisational performance, through individual decision making and individual boundaries [32]. According to Pauleen[21], PKMs is the process of self-development. It is undeniable that the individual plays a crucial role in organisational learning and KM. Nonaka and Tayama[33] suggested that new knowledge always starts with individuals. Thus, organisations need to devote more effort to promoting, developing, valuing and managing their employees as individuals [34].

Ahmed et al.[35]asserted that PKM comprises individuals combining and sharing their experience, skills, intuition, ideas, judgment, contexts, motivations
and interpretations. Pauleen[21] also recommended that in the knowledge-driven society, it has become indispensable for individuals to maintain, develop and contribute their skills in pursuit of competitive advantage in the professional market, both short and long term. The PKM skill model of Avery et al. [25] identified seven information skills: retrieving, evaluating, organising, analysing, collaborating, presenting, and securing.

Hence, PKM is the process of how individuals perceive and transfer knowledge, making it easier to implement valuable knowledge and apply it in day-to-day situations within the organisation.

3.2 Leadership Styles

Leadership style is a key factor related to organisational learning, accomplished by building a sense of commitment based on the shared vision among members of the organisation [36, 37]. Daft [38] recommended that leadership style is especially significant in organisations seeking to transform themselves into learning organisations. However, different styles of leadership may result in improved approaches to encouraging employees [39]. Similarly, Taylor and Rosenbach[40] recognised that although an individual can hold a position as leader or top manager, no single style or personality is best for all situations. Nevertheless, regardless of the style adopted, it is widely accepted that leadership is an indispensable perspective which top management needs to understand to promote organisational learning.

Heskett and Kotter[41] were among the first to demonstrate that the single most important driver in successful organisational change is competent leadership. Leaders offer the highest leverage point for change because they are critical in establishing the strategic directions of the organisation, as well as in creating and maintaining their culture [41]. More importantly, scholars have emphasised that leadership and performance are two important and interrelated variables contributing to organisational performance, and thus there is a critical need to examine this relationship[18, 42-47]. It appears that leadership is an important quality of top management in their role to encourage learning, share knowledge with and transfer it to employees by means of appropriate styles in different situations for the purpose of achieving organisational goals.

To date, a number of studies have investigated leadership style to find ways to increase organisational performance. For example, in highlighting the importance of knowledge-based diversity for Research and Development Divisions, Shin and Zhou[44] found that transformational leadership and educational specialisation heterogeneity interact, which may greatly improve teams’ creativeness; the two variables are strongly correlated with a team’s creativeness. In particular, the team’s creative efficiency mediates in the relationship between educational specialisation and heterogeneity, transformational leadership and teams’ creativeness.

Rowold and Heinitz[45] studied the relationship between transactional and transformational leadership and their impact on performance. 220 employees were asked to evaluate their top management. Hierarchical multiple regression methods were used to analyse the data. First, they found that transformational leadership was correlated with organisational performance. Secondly, transformational leadership had a stronger correlation with organisational performance than transactional leadership. They also found that transformational leadership improved organisational performance.

The effects of transformational leadership on organisational performance were also studied by Colbert et al. [46], who showed that transformational leadership was positively interconnected to within-team goal importance congruence, which in turn was positively related to organisational performance. Similarly, Howell et al. [48] found that transformational leadership was positively related to organisational performance, while transactional leadership was not significantly associated with it.

These findings suggest that physical distance between top management and employees negatively affects the relationship between transformational leadership and organisational performance but has a positive influence on the relationship between transactional leadership and organisational performance.

Several studies found that gender is significantly correlated with leadership styles: female managers are likely to adopt more transformational styles [49]. However, Oshagbemi[50] and Bass et al. [51] found that gender is not significantly correlated with leadership style, although they did find that age is.

Leadership theory has also been applied in studies of the relationship between human resource management (HRM) and leadership style. Zhu et al. [52] studied 170 Singaporean organisations and found that HRM fully mediates the relationship between transformational leadership and subjective assessment of organisational performance. It also partially mediates the relationship between transformational leadership and absenteeism.

In a different context, Walumbwa et al. [53] studied the nature of the relationship between transformational leadership and two work-related
attitudes: organisational commitment and job satisfaction. They compared Kenya and the United States, obtaining a response rate of 82% from Kenya and 86% from the USA (158 and 189 respondents respectively). They established that transformational leadership has a strong and positive significant correlation with organisational commitment and job satisfaction in both cultures. The results suggest a strong connection between learning and leadership. Specifically, they found that the active use of a variety of strategies for learning from experience has a significant, positive relationship with transformational leadership. Learning through action was found to be a significant predictor of transformational leadership. They further suggested that future research should expand the scope of their analysis to include the demographics of top management, such as gender, age, experience in management, level of formal education, as well as personality factors, to explain additional variance in transformational leadership.

In relation to cultural differences, Hofstede[54, p.81] emphasised that ‘there is no such thing as universal management theories’. He explained that in the American sense, top management are not the proprietors of the organisations but contribute their skills to perform on behalf of the owners; and they do not produce personally but are essential in motivating others to produce. They also hold a high status, as cultural heroes, and many American men and women aspire to the role of top management. Hofstede[54] also proposed that among the champions of economic development over the previous thirty years were three countries mainly populated by Chinese living outside the Chinese mainland: Taiwan, Hong Kong and Singapore.

House et al. [55] acknowledged that Thailand is a developing country, the majority of whose people are Buddhist; they suggested that in such countries, particularly in the rural areas, the normal way of life is that children take care of their parents and provide material help in their old age. This shows that respondents in Thailand, who attain the highest rate of self-protective (closely linked to transformational) leadership, are likely to inspire, to motivate, and to expect high performance outcomes, and are relatively attached to the teaching of Buddhism which encourages people to be kind to others.

House et al. [55] also found that Thailand scores highest on the future-oriented value scales, the degree to which individuals in organisations or societies engage in behaviours such as planning, investing in the future, and delaying individual or collective gratification. They proposed that this may be because Thailand has a distinct emphasis on Buddhism. In contrast, they found that the industrialised or developed countries attained a lower score on the future-oriented value scales. They explained that these higher-income nations may appreciate the present more because they have already accumulated substantial wealth and material resources. The lower-income nations may see a stronger need for taking a long-term perspective and sacrificing for the future because they must cope with scarce and limited resources. As culture may influence Thai perception, the style of leadership appropriate in other cultures may not be appropriate in Thailand.

3.3 The relationship between PKM, Leadership Styles and Organisational Performance

In considering leadership style, Kouzes and Posner [56] stated that role experience is strongly connected to the way top management learns how to lead. Experience would allow top management to effectively learn from their own and others’ experience. Brown and Posner [57] found that how people learn is significantly correlated with how they act as top managers. The results also indicated that management who frequently engaged in PKM also employed a greater variety of leadership styles, such as challenging, inspiring, enabling, modelling and encouraging. PKM, and that transformational leadership styles are significantly correlated.

Marquardt and Waddill[58] asserted that what management learn and how they learn cannot be unconnected, because how individuals learn influences what they learn. This suggests that PKM, which helps top management to understand how they learn, may also help them to learn more effectively. Ellinger et al. [59] found that the majority of people in the workplace learned in an informal manner. Similarly, Fox [60] proposed that much of what is learned by top management is learned informally.

In contrast, McCall et al. [61] found that the factors that have an impact on the development of leadership are job assignments that the top management had experienced; critical situations that they had gone through; relationships and interactions with others; and formal training and education. Posner [62] also proposed that people learn from their experience, whether formal or informal, structured or naturally occurring [63]. This leaves room to investigate to what extent PKM has a positive correlation with leadership styles, and facilitates top management to apply their experience more effectively in practice.

In addition, current academic researchers have proposed that it is indispensable for any organisation to measure an intangible asset [64-66]. Existing academic
research has proved that 85.5% of top management are aware that qualitative benefits are as important as financial aspects [8]. However, the objective measures such as financial term dependent upon financial annual report may be insufficient to gauge organisational performance, since the knowledge assets are hidden; nevertheless, management’s perceptions to evaluate the level of organisational performance based on financial perspective remains useful [67, 68]. Understandably, the careful development of top management can have a positive impact on organisational performance [69-71]. More specifically, in the healthcare industry, top management who know how to learn and utilise their leadership styles effectively will be able to sustain the unique capabilities of their employees through increased competitive advantage [72]. In the long term, this would enhance organisational performance. However, it is not easy to measure organisational performance in healthcare industry, so researchers usually apply a wide variety of techniques[73-76]. Hence, in this research, the respondents were asked to evaluate their financial performance compared with their competitors in the same business sector.

4 Sample and Data Collection

According to the Ministry of Public Health of Thailand (MOPH)’s statistical data for 2006, there were 1,468 hospitals in Thailand. Samples were classified by the Stratified Random Sampling method ensuring that they were equitably selected with different locations in various provinces. Prior to conducting the questionnaire, postal letters, e-mails, and telephone calls were made to arrange times and to ascertain that managers were willing to participate in the survey. Respondents were assured of the confidentiality of their answers, and were also notified that a copy of the results would be provided, although no individual names would be identifiable from the published information.

Krejcie and Morgan’s popular formula was used to determine sample size [77]: for a population of 1,500, a sample of no less than 306 is recommended. Ames [78] suggests that mail surveys are expected to have response rates of 11 to 15%. In this research, questionnaires were therefore sent to 1,000 of the 1,468 organisations. A total of 539 completed questionnaires were received, a response rate of 53.90%. This is an extremely positive response rate which should improve the validity of the research and generalisability of the findings.

4.1 Validity

Internal validity refers to the extent to which the research design really allows the researcher to draw conclusions about the relationships among variables. Quantitative statistical techniques have been applied to test the relationships among variables; in support, Burns [79] suggests that the standardised test is helpful in forming an important part of the body of necessary information. Hair et al. [80] recommended that the most common test for normality is Kolmogorov-Smirnov test which determines the level of significance of the differences from a normal distribution. The results indicated 0.227 where the significant levels of the sample are greater than 0.05 (see, Table I). Hence, it can be concluded that the sample has a normal distribution and conforms to acceptable formats.

Table I: Test of Normality

<table>
<thead>
<tr>
<th>Kolmogorov-Smirnov</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational Performance</td>
<td>538</td>
<td>0.227</td>
</tr>
</tbody>
</table>

H₀: the sample is normal distribution.
H₁: the sample is not normal distribution.

The results indicates that P-value is 0.227 which is greater than 0.050. Therefore, the null hypothesis cannot be rejected. This means that the sample is normal distribution.

4.2 Reliability

Reliability refers to the stability, accuracy and dependability of data [79]. Valid questions and consistency result in accurate and reliable data[81]. Foddy[82] recommended that the question must be understood by the respondent in the way proposed by the researcher and the answer given by the respondent must be understood by the researcher in the way answered by the respondent. Saunder et al. [81] suggested that ‘internal consistency’ involves correlating the responses to each question with answers to other questions in the questionnaire. It therefore measures the consistency of responses across either all the questions or a smaller group from the questionnaire.

The most frequently used method for calculating internal consistency is Cronbach’s coefficient alpha [81], which was applied to ensure the level of reliability (see Table II.). The results for the set of questions of PKM and leadership styles suggest that the levels of Cronbach’s coefficient alpha of all variables are greater than 0.7, considered satisfactory level as suggested by Auamnoy[83].
is entered cumulatively in the $R^2$ and partial regression and correlation coefficients are determined when each independent variable joins the others [84]. A full hierarchical procedure for a set of independent variables consists of a series of regression analyses, each with one more variable than its predecessor. The choice of a particular cumulative sequence of independent variables is made in advance, as emphasised by the purpose of the research. Moreover, the researcher should be guided by the theoretical foundation that originally led to the research question [85]. The higher the correlation between the independent and dependent variable, the better prediction equation they can provide [85]. This research framework has three main groups of independent variables: demographics of respondents and number of employees, PKM, and leadership styles. Consequently, the relationship between independent and dependent variables was tested to attain the results precisely, and hierarchical regression analysis was applied.

5.1 Hypothesis

$H_1$: The relationship between demographics, PKM, and organisational performance may be mediated by leadership styles.

### 5.2 Mediation testing

Table III: Coefficient (Standardised Coefficients of 1st and 2nd Equations)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Standardised Coefficients (1st Equation)</th>
<th>Standardised Coefficients (2nd Equation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sig</td>
<td>$R^2$</td>
</tr>
<tr>
<td>Gender</td>
<td>0.000</td>
<td>0.534</td>
</tr>
<tr>
<td>Age</td>
<td>-0.016</td>
<td>0.980</td>
</tr>
<tr>
<td>Education</td>
<td>-0.005</td>
<td>0.919</td>
</tr>
<tr>
<td>Experience</td>
<td>-0.008</td>
<td>0.924</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>0.075</td>
<td>0.965</td>
</tr>
<tr>
<td>Retrieving</td>
<td>-0.017</td>
<td>0.894</td>
</tr>
<tr>
<td>Evaluating</td>
<td>0.445</td>
<td>0.848</td>
</tr>
<tr>
<td>Organising</td>
<td>0.052</td>
<td>0.971</td>
</tr>
<tr>
<td>Analysing</td>
<td>0.192</td>
<td>0.830</td>
</tr>
<tr>
<td>Collaborating</td>
<td>-0.055</td>
<td>0.832</td>
</tr>
<tr>
<td>Presenting</td>
<td>0.082</td>
<td>0.946</td>
</tr>
<tr>
<td>Securing</td>
<td>0.026</td>
<td>0.963</td>
</tr>
<tr>
<td>Transformational</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transactional</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Laissez-faire</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependent Variable: Organisational Performance

$$1^{st} \text{ Equation: Organisational Performance} = \alpha \text{ Number of Employees and Demographics of Respondents} + \alpha \text{ PKM}$$
2nd Equation: Organisational Performance = α Number of Employees and Demographics of Respondents + α PKM + α Leadership Styles

Hair et al. [86] strongly suggest the adjusted $R^2$ in comparing models with different numbers of independent variables. The adjusted $R^2$ is also useful in comparing models between different data sets because it will compensate for the different sample size (p. 234). Hence, in this research, the adjusted $R^2$ was considered for comparing two equations. The adjusted $R^2$ for the second equation was 0.774, which is greater than the adjusted $R^2$ of the first equation, 0.534. This indicates that the set of independent variables in the second equation explains the dependent variables more fully than the set of independent variables in the first equation. In addition, when adding the leadership variables into the equations, the Beta Coefficient values of the PKM variables change. This suggests that the effect of PKM on organisational performance was mediated by leadership styles. Hence, Hypothesis I was accepted. It can be concluded that the relationship between the demographics of respondents, PKM, and organisational performance are mediated by leadership styles.

6 Implications of Research Findings

Several researchers have demonstrated that PKM provides top management with more insight by assisting them to generate a learning environment for their organisational members and developing their learning experiences effectively to transfer knowledge to their employees [15-17], [19-20].

In this research, it was also found that PKM has a positive correlation with organisational performance, consistent with the findings of Lincoln and Guba[87]. Therefore, it would be helpful for management to encourage learning in the organisation by applying effective PKM[88], to transfer knowledge and skills to the organisational members. Furthermore, management may need to encourage organisational members to share ideas and then try them out in practice. At the same time, top management may need to take some time to reflect on and gather the information.

To be effective, top management needs to be active in developing their PKM and leadership styles by attending relevant training programmes, as provided by both academic and private institutions [89].

In conclusion, it is necessary for top management to apply effective PKM and leadership styles to encourage learning in the organisation. They may need to consider improving organisational performance through PKM and leadership styles. Different PKM may create different levels of organisational performance, and only certain PKM and leadership styles may be suitable in some situations. Therefore, top management may need to consider applying appropriate PKM and leadership styles to different situations in order to sustain learning in the organisation and to improve organisational performance as a result.

7 Limitations and Recommendations

This research specifically investigated the healthcare industry in the Thai context; future studies are expected to be extended to take account of different geographical regions at both local and international levels, to widen understanding [90]. As already stated[54], ‘there are no such things as universal management theories’, and perceptions considered as ‘appropriate’ in some cultures may be ‘inappropriate’ in others; in particular, Thailand’s Buddhist religion also plays a vital role in shaping the national culture [55]. Hence, future research might investigate different contexts, cultures and religions. This could also involve classifying the different approaches with a more diverse sample on a larger scale, with different business sectors and business strategies.

For example, researchers may specifically investigate the approaches to PKM and leadership styles in organisations such as hospitals in different areas and cultures, to acquire a deeper understanding of how each management contributes to its organisation, allowing the researchers to identify particular techniques for transferring knowledge and encouraging organisational members.

This research concentrated on the relationship between top managements’ PKM and leadership styles, and organisational performance; this still leaves room to broaden the scope of research to account for other potential variables which may be associated with top management characteristics and organisational performance, such as the personalities of managers or organisational [55, 91-94]. It also concentrated on a cross-sectional sample of one specific business type, limiting the degree to which causal references regarding hypothesised relationships can be made. Alternative causes and effects may occur; for example, whether or not findings show that a greater number of employees may be correlated with organisational performance. Nonetheless, an organisation with a greater level of organisational performance may at the same time persuade skilledemployees to collaborate with it.

Dependence on a self-reporting questionnaire suggests that the magnitude of relationships between...
variables may require further research, to facilitate the process of cross-checking the responses given and improve validity. Additionally, for this research, only the respondents’ perceptions of PKM and leadership styles and organisational performance were measured.

It is also recommended that future studies consider other groups relevant to the organisation, apart from top management, as top management’s perceptions may not be sufficiently comprehensive in understanding the contributions of PKM and leadership styles to organisational performance. As professionals in the healthcare industry have advanced training and specialised knowledge, so organisational performance may be realised in different ways from other industries [95]. It is thus strongly recommended to take into consideration the views of other potentially useful respondents from different positions for cross-checking purposes[68].

Although this research is the first of its kind in the Thai context, replication may be valuable to gain a better understanding of this industry and its prospects in the economy. The researchers may consider conducting a longitudinal study to assess and confirm the relationships identified between independent and dependent variables.

8 Conclusion

This research investigated the relationship between demographics, PKM and leadership styles and organisational performance. It aimed to provide greater understanding of the attributes of PKM and leadership styles useful for top management and to consider which of these PKM and leadership styles contribute towards organisational performance. Although the findings represent the implications of the relationship between top managements’ PKM and leadership styles and organisational performance, there may be other variables, such as culture [54, p.92] which influence their translation into organisational performance.

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References:


[44] S. J. Shin and J. Zhou, "When is educational specialization heterogeneity related to creativity in research and development teams?"
[68] P. Tamkin, "Leadership and Management in the UK – The key to sustainable growth: A summary of the evidence for the value of investing in leadership and management development Department for Business,


