Factors related to public health laboratory management in northern Thailand

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Abstract
Purpose – The purpose of this paper is to examine organizational-related factors of a public health laboratory in northern Thailand through the perspectives of staff.
Design/methodology/approach – A quantitative research on organizational factors that affected management. Staff at the public health laboratory provided their perceptions and facts existing within the organization with regards to the following factors that could affect management performance; leadership, organizational culture, work environment, and organizational commitment.
Findings – It was found that leadership, work environment, and organizational commitment had a significant impact on management performance while organizational culture did not.
Practical implications – The research on management could be applied to enhance leadership, work environment, and organizational commitment to achieve management performance.
Originality/value – The quantitative research on organizational factors could help determine management performance. Moreover, leadership, work environment, and organizational commitment can significantly predict the organization’s management performance.
Keywords Thailand, Management, Organizational factor, Public health laboratory
Paper type Case study

Introduction
Nakhon Sawan is a province located in the north of Thailand. A public health laboratory is located in the province and is known as a regional medical sciences center. It works with health care service offices in various local public health institutes, hospitals, and other health providers. Nakhon Sawan Regional Medical Sciences Center (NSRMSC) provides clinical testing for local health providers that cannot perform the tests themselves, and other kinds of special or rare clinical testing. NSRMSC is one of 14 regional public health laboratory centers in the region under the authority of the Department of Medical Sciences and Ministry of Public Health in Thailand.

The main missions of the center are: first to develop and improve medical laboratory analysis of medical products and clinical testing provided to the public; second, to perform research in order to protect public health and safety by quality control of medical products in clinical laboratories within its jurisdiction; third, to become a regional reference laboratory on the same level as the Thai National Institute of Health; additionally, to academically support and transfer medical technology to local clinical laboratories of both public and private health providers; lastly, to collaborate with other concerned organizations or offices regarding health issues in the region including outbreak or disaster mitigation (Nakhon Sawan Regional Medical Sciences Center (NSRMSC), 2012).
The center or the organization is similar to other health organizations under the Ministry. It receives a budget from the central government in addition to income it receives from services it provides to the public in the local area. The center has rarely employed a comprehensive approach to analyze the organizational environment from its staff’s point of view. Furthermore, organizational factors were examined to assess its management performance. The center desired to learn about its current situation and how to deal with organizational problems. These problems include: appropriate decision making from top management, communication and coordination among staff members (Koontz et al., 1984).

Individual staff leadership along with their motivations and considerations were studied at the center. The study also focussed on how individual staff treated and communicated with other staff. One important concern of top management is organizational functions, which are becoming increasingly complex because the center is involved in various health tasks.

Organizational factors related to management
Previously, there was not sufficient data to understand the organizational environment with regards to the perspective of the staff. The researchers discussed existing and up-to-date information while carrying out this research study with particular hypotheses. The paper used case studies (Simons, 2009) to establish constructs and statistically tested hypotheses.

The researchers looked into organizational factors relating to management performance in the public health laboratory and identified four factors: leadership, organizational culture, commitment and work environment that could affect management performance of this center. These factors were used as independent variables in the study and management performance as a dependent variable. Nevertheless, the study did not focus on relationship or connection among independent variables but between each independent variable and management performance. The variables were tested and expanded upon in the following paragraphs.

Organizational management involves fundamental relationships using many approaches, techniques for planning, organizing, staffing and controlling the activities of an organization. There has never been a specific theory or clear concept available to recommend what should be done within an organization in order to improve it. Theories are intended to be applied in order for effective management to exist, which is usually situational or contingency. People in top management always try to use the best possible practices in order to get excellent outcomes or at least acceptable results. There are always various underlying principles, theories, fundamentals, concepts or techniques for management practice. Therefore, management is about applying the aforementioned in order to obtain desired results (Koontz et al., 1984).

This research study focussed on management performance. The research had various measures of performance and the term is generally broad. To evaluate management performance, researchers used review management, training and the famous PDCA (plan, do check, act) of Demming (Summers, 2009). The researchers looked at processes and output at this center by measuring existing evidence or practices.

The first of the four independent variables mentioned in the framework (Figure 1) was leadership. In this study, leadership referred to the attributes of individual staff who work at the center that stimulate or motivate changes to occur in the way of working at the organization. This is similar to transformational leadership (Bass and Riggio, 2006; Northhouse, 2013). It is a process whereby staff apply their knowledge
and ability to convince or persuade others to successfully reach their desired task, make them aware of ethical issues, inspire them to generate enthusiasm and commitment toward organizational goals or mobilize resources to reform or make changes in organizations (Brown and Keeping, 2005). Transformative staff do not start with a written document, but by behavior they select and expect the results to be changed or actual behavior they value everyday (Vroom, 1964).

Leadership theories that Northhouse (2013) focussed on were practice and application. He defined leadership as a process whereby an individual influences collective individuals to accomplish common goals in an organization. He conceptualized leadership on personality aspects through a combination of characteristics or special traits that each individual possess. Leadership characteristics would enable or persuade other people to achieve a goal or bring changes to group or team.

Individual leadership by a person who does not hold a leadership position is called self-management or self-control, and is a method of encouraging or motivating oneself to achieve an individual goal (Manz et al., 2011). All followers are also leaders, and to be competent in both roles, it is crucial to find an approach to integrate them. Furthermore, it is important to find appropriate ways to share leadership functions within a group or team in an organization (Gooty et al., 2010; Yulk, 2010).

Organizational culture was the second factor studied relating to management within the organization. It is a set of norms, beliefs attitudes, values and understandings which are shared among members of the organization. It is the experiences and expectations of members within an organization (Daft, 2010). Organizational culture dictates the norms that personnel in an organization use to carry out their tasks. Since culture already exists, remains or grows with an organization, it could affect the organization’s management performance and its productivity. According to Sleutel’s (2000) study, it is one important factor that is influential in a shaping management.

Culture was a collective construct variable at the organization level (Ashkanasy et al., 2011). A meta-analysis of research studies published between 2000 and 2009, found that 55 studies investigated organizational culture and performance (Chow and Liu, 2007; Berson et al., 2008; Gregory et al., 2009; Beugelsdijk et al., 2009). The analysis made the following observations concerning culture:

- culture and performance have become specialized and globalized;
- methodologies have become more complex;
- a few research study programs and streams of research have been developed; and
- culture and performance measurements remain problematic and diverse.

![Figure 1. Framework of the research on organizational factors](image-url)
It is believed that organizational culture is constantly reinforced through staff behavior. Fasting (2004) mentioned in his study of culture in an organization that staff have shared values in relation with organizational commitment, self-confidence and staff behavior. There were also many other cultural concepts and approaches (totaling with over 100 in the last decade) within an organization (Jung et al., 2008; Scott et al., 2003) which could help this organization’s management performance.

Another factor the researchers studied was commitment. Commitment is one of the most widely researched factors which has been shown to highly affect organizational effectiveness (Anapaitussapong, 2013). Numerous research papers have based their propositions on Allen and Meyers’ organizational commitment model (Allen and Meyer, 1990) which was comprised of three forms: affective, continuance and formative commitments. Affective commitment involves the staff’s emotional attachment to an organization. It reflects staff attitudes toward the organization’s goals and values. It exhibits willingness and the desire to achieve objectives.

Continuance commitment refers to perceptions associated with staying or leaving an organization as well as rewards, awards or benefits received from the organization. It concerns the feelings of staff members who have stakes in the organization through their employment at the end of their career. Formative commitment is defined as a staff member’s feeling to remain working in the organization because they value their work while working at the organization or because of their loyalty to the organization (Summers, 2009). Perryer et al. (2010) noted commitment was a strong indicator of staff turnover and was also related to work performance in various private sector organizations (Rose et al., 2009; Imran et al., 2014).

The last factor studied was work environment, which refers to facilities or any aspects that help facilitate tasks within an organization and affect management performance. Work environment is a key implementation tool that significantly influences the outcome of an organization's performance. It is fundamental to a member of staff's ability to reach to their full potential (Ashkanasy and Hartel, 2014). This study mentions workplace setting, tools or utilities, technical or personnel assistance, relationship among other organizations and resource adequacy. In addition, support from a supervisor, the physical conditions, job aids, workload and climate were also considered as work environment within this study.

Various studies showed supervisor support buffered negative effects on staff and is essential for organization production. This support also provides physical and mental resources that influence the psychological condition of staff who can then perform better in the workplace (Chen et al., 2009; Dysvik and Kuvaas, 2012; Kiani and Khodabakhsh, 2013). In addition, physical conditions, tools and job aids at the workplace have profound direct and indirect effects on organization management and sustainability (Pfeffer, 2010). Furthermore, a reduced workload increased performance of staff at an organization (DiDomenico and Nussbaum, 2011). Climate is also considered as work environment through the staff’s perception or defined as the collective perception (Ashkanasy and Hartel, 2014). A positive climate is inclusive, emphasizes constructive conflict management, supports learning and sharing, and promotes accurate information. All staff are accountable and responsible to ensure a positive work environment. This research study also provides empirical evidence that work environment influences an organization’s performance.

Methodology and hypotheses
The researchers distributed questionnaires to all 50 staff at the laboratory center. The questionnaires yielded data about the above factors. In total, 45 (90 percent) staff
members responded to the questionnaires. The response rate was relatively high which could be due to the familiarity of the Likert scale on the questionnaires and it was a small number of staff at the center.

The researchers devised the questionnaire by self-developing and modifying previous questions from various papers and articles. The questionnaire was self-administered and content validity was calculated through three organizational management scholars. Cronbach’s $\alpha$ coefficient (reliability) was used to test the result. The $\alpha$ value was determined to be 0.94. The collected data were analyzed using multiple regression. The framework is shown on Figure 1.

This study has two hypotheses:

**H1.** The organizational factors; leadership of individual staff, culture, commitment and work environment at the center are significantly related to management performance.

**H2.** The four independent variables or factors can predict or explain the organization’s management performance.

**Result and discussion**

The four factors were statistically tested and were significantly related to organizational management performance. The correlation coefficient value ($r$) of the four factors were: leadership $r = 0.6$ ($p$-value = 0.001), culture $r = 0.5$ ($p$-value = 0.001), commitment $r = 0.7$ ($p$-value = 0.001), and work environment $r = 0.6$ ($p$-value = 0.001). These results supported the first hypothesis ($H1$).

As the study focussed on individuals who exhibit leadership qualities without being in an official leadership position but behave in different ways with different motivations. A person would use a disciplined approach to self-accomplish tasks or daily target. There are a number of papers on self-leadership which have grown in popularity among researchers and administrative officers (Manz, 2011). Moreover, personnel who hold leadership positions have the ability to exert social influence on other staff members in order to help achieve a common task. Transformational leadership is an essential instrument to support or encourage staff to think critically and independently (Bass *et al.*, 2003). At NSRMSC staff have a lot of freedom to express their views, which is essential for any learning or developing organization. Each individual brings different perspectives and a sense of social unison, which helps to create a dynamic and innovative team. This leadership character could be used as a springboard for progress in the organization.

The demographic data of the organization is shown in Table I.

As shown in Table II, three organizational factors: commitment, leadership and work environment have a significant predictive value with regards to management performance. They were analyzed and given a prediction value to the study (Ho, 2006). Even though organizational culture did not have a significant predictive value on management performance ($p$-value = 0.458, data not show here), many research studies have shown it has. Culture is considered to be the shared values, attitudes and the feelings staff members have toward the organization (Sleutel, 2000). Culture usually goes unnoticed and has underlying values within the organization (Daft, 2010). However, because the center is a small public organization and located far from central government, it is possible the bureaucratic system has more power than culture itself as staff have to strictly observe rules and regulations regardless of their feelings, beliefs or attitudes toward management.
In addition, there are more women than men (Table I) at the center, which could influence management regardless of culture. However, it is too intricate and complicated to elaborate on culture which cannot significantly predict the organization management here. Perhaps national culture plays a more profound role than organizational culture as Hofstede noted (Bryman et al., 2012) or it could be that the organizational culture questionnaires were not detailed enough to predict between culture and management. This may have been caused by the fact that only a content validity test was performed instead of a construct validity test, which may have yielded better results. However, the reliability of the culture items was well tested (culture Cronbach’s α 0.73, data not show here).

A multiple linear regression model was used to calculate and identify the variables significant to organizational management (Sarantakos, 2007). In Model 3 (Table II), the
adjusted $R^2$ showed that around 60 percent ($R^2_{adj}$ 0.594) of variance can be explained by this regression model. In other words, we can use commitment, leadership and work environment to predict 60 percent of management performance at the center, regardless of culture, which explains the second hypothesis (H2). However, the regression analysis only explained 60 percent of variance and further research could be undertaken to explain the remaining 40 percent of variance in management performance. From this model (Table II), the researchers came up with the following regression equation:

$$\text{Management Performance} = -0.034 + 0.377 \text{ Commitment} + 0.319 \text{ Leadership} + 0.364 \text{ Work Environment}$$

From the above equation it can be concluded that if there are positive changes or an increase in either commitment, leadership or work environment, management performance will be significantly improved. Moreover, among the three related factors, commitment has a stronger impact on management performance than the other two factors; leadership and work environment (0.383 vs 0.333 and 0.316 by standardized $\beta$ coefficients). Furthermore on Table II, the $B$-values (unstandardized coefficients) inform us that if commitment is increased by one unit, management performance will increase by 0.377 units; if leadership is increased by one unit, management performance will increase by 0.319 units; and if work environment is increased by one unit, management performance will increase by 0.364 units (Ho, 2006).

Commitment also has the strongest relationship with management performance in this organization ($r = 0.7$, data not show here). The center desires the staff to go beyond their own duties and engage in additional responsibilities. When staff are committed, their attitude enables them to contribute significantly toward their task (Lesabe and Nkosi, 2007). The study also supports the fact that the three commitment components have an effect on the organizational management. This corresponds with what researchers have found at the organization. Staff who have an emotional attachment to the organization (affective commitment), are committed to remain (continuance commitment), and feel obligated to work at this organization (Mayer et al., 2006). Committed staff are innovative and active toward their roles and responsibilities.

Leadership is another variable that could be used to predict the organization’s management performance. This leadership resides in each individual staff member and has the ability to encourage oneself to think independently or develop one’s own idea when working toward organizational goals. Furthermore, leadership is related to group members who contribute to management performance. Nevertheless, leaders at this organization who hold formal positions feel that they are more separated from other group members and have less face-to-face interaction. However, the leadership represented here is also dependent on visual work structure and organizational context.

At this center, the staff have accepted that power and authority are distributed unequally. Nevertheless, an egalitarian approach seems to have been adopted resulting in staff having a greater say and who are more likely to participate with top management. Staff members who possess leadership skills recognize their own capabilities and are more likely to regard things positively and work in sync with others.

Work environment in the organization could explain the organization’s management performance in this research paper. The researchers looked at the workload that individuals were assigned to on a daily basis and other tasks that each staff member contributed to in order to achieve his/her work. In addition, physical conditions, tools and job aids were studied as well as the level of support from supervisors and the
climate in the work place. The researchers found that these elements were related and supervisors value and care about their staff. However, the staff desired that attention to be paid to job delegation which could help staff evolve their own skills to fit with their work. Furthermore, supervisors should strive to improve the organizational climate through stronger mutual governance, and expand training to raise the center’s productivity. Supervisors should also promote a work environment that values staff input and encourage good decision making, even during times of change that may occur at the center.

Conclusion
While the center works independently, the departments or the central government ministry often acquire and analyze information produced by the center. While the center does share information, generally it would prefer not to. Having information is having power. Sharing information is losing power and losing power is losing control. The center does not usually get external support from the central government but instead supports itself physically, technically and professionally. The center can operate continuously on its own, while disregarding the military controlled central government. However, it must be noted that the study did not receive all viewpoints from all staff but obtained subjectively scored results. Therefore various important issues in the organization could have been missed.

A self-administered questionnaire survey on organizational factors related to management could over or underestimate in the importance of the various factors. Although, the study was mostly based on empirically based measurements from staff members, in-depth interviews could be conducted for a prospective study. In addition, the center chosen for this organization study was not randomly selected. Despite the center’s relatively small size, various thoughts, variables and factors were identified, and so the study might be generalized to other organizations.

This study found commitment is the most powerful predictor and top management should find strategies to enhance the commitment of their staff. Top management could encourage staff involvement and participation in tasks other than the expected routine duties. It was also found that the center can create a calm, efficient and effective working environment that may lead to a better motivated workforce, a healthy mindset, generate useful health information and increase medical research. These beneficial consequences can ultimately succeed in helping other health care institutes to curb health problems or public health issues in the region. Furthermore, leadership and work environment were similar in predicting the management performance of the Center. Finally, leadership could tailor work environment in order to improve organization’s management performance.

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