

Contents lists available at [ScienceDirect](#)

Kasetsart Journal of Social Sciences

journal homepage: <http://www.elsevier.com/locate/kjss>

Structural equation modeling of organizational health in the marine fisheries management section under the fisheries management bureau

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ARTICLE INFO

Article history:

Received 23 February 2016

Received in revised form 6 October 2016

Accepted 11 October 2016

Available online 17 July 2018

Keywords:

job characteristics,
organizational climate,
organizational health,
transformational leadership

ABSTRACT

The purpose of this study was to develop structural equation modeling of organizational health in the Marine Fisheries Management Section under the Fisheries Management Bureau. The study was conducted with 330 subjects using confirmatory factor analysis. Four latent variables were measured from 22 observed variables. The exogenous latent variable was transformational leadership. The endogenous latent variables were: 1) organizational health 2) organizational climate, and 3) job characteristics. The results showed that the hypothetical causal model was consistent with the empirical data with $\chi^2/df = 1.60$, CFI = 0.99, GFI = 0.93, AGFI = 0.90, RMR = 0.04, and RMSEA = 0.04. The transformational leadership variables that had a direct effect were organizational health, job characteristics, and organizational climate, with standardized path coefficients of 0.72, 0.69, and 0.37, respectively. There was an indirect effect from organizational climate and organizational health, with their standardized path coefficients being 0.35 and 0.15, respectively. There was a total effect from organizational health, organizational climate, and job characteristics, with their standardized path coefficients being 0.87, 0.72, and 0.69, respectively. The job characteristics variable had an indirect effect on organizational climate, with a standardized path coefficient of 0.50. There was an indirect effect from organizational health, with a standardized path coefficient of 0.10. There was a total effect from organizational climate and job characteristics, with their standardized path coefficients being 0.50 and 0.10, respectively. Organizational climate had a direct effect on organizational health, with a standardized path coefficient of 0.21. The total effect from organizational health had a standardized path coefficient of 0.21. Organizational health, organizational climate, and job characteristics explained the variance of organizational health variables at 0.85, 0.67, and 0.54, respectively.

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Introduction

Organizational health is occurring amidst the wave of changes in social and economic conditions which is beyond

the frontier and has become a challenging phenomenon requiring adaptation by all organizations in the government and private sectors and also in state enterprises so as to keep up with the conditions of the changing times and to be able to lead their organizations to prosperity and to sustain their growth. This requires the ability of each organization to adapt efficiently and effectively (Santiwong, 1995). Hence, leaders in each organization are essential in

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Peer review under responsibility of Kasetsart University.

specifying their organization's vision and expected directions via efficient adaptation resulting from good organizational health. This is in accord with Miles (1973) who attached much importance to the improvement of an organization to be pleasant, comfortable to work in, inviting for more learning, and having systematic work practices. Hoy and Forsyth (1986) divided organizational health into seven elements: 1) institutional integrity—the ability of organizations to adapt to the environment, 2) principal influence—the ability of leaders to persuade their personnel to accept their views and the ability to choose appropriate strategies in administration, 3) consideration—the leaders' ability to listen to and respect the opinions of other personnel and to have trust in each other, 4) initiating structure—leaders putting emphasis on intertwined work quality and success, 5) resource support—organizations' appropriate allocation of resources to their personnel's needs, 6) morale—organizations encouraging their personnel to work and achieve organizational aims effectively and by persevering; and 7) academic emphasis—organizations attempting to reach academic excellence via the specification of high-reaching aims.

Organization administration in a constantly changing environment may result in imbalanced administration, so it is necessary to have a system or regulation in management which can cater for the multi-dimensional changes in the environment. Hoy and Miskel (1978) and Plunkett and Attner (1994) stated that organizational climate is the handing down of management patterns which are influential to the efficiency and effectiveness of the organization. Litwin and Stringer (1968) divided the organizational climate into six components: 1) organizational structure—knowing about organizational structure, and directions of development, 2) warmth and support—personnel's realization about how to be good colleagues, 3) reward and punishment—personnel's realization about the importance of rewards and punishment, 4) conflict—personnel's realization about obstacles or problems as well as solutions within the organization, 5) performance standard and expectation—personnel's realization about the importance of their work results or the work their organization has created, and 6) risk taking—personnel's realization about challenges and risks existing in the organization. This is in line with Bourland (1988) who said that organizational health has an effect on organizational efficiency and effectiveness. Organizational structure can be controlled by human relationships, flexibility, and social needs. It can be concluded that organizational climate is directly related to organizational health (Hellirige & Slocum, 1974; Thongkaew, 2002). It can be seen that administration achievement is related to the influence on changes in terms of support, promotion, development, and improvement of work so as to achieve the goals. This is all due to the effective administration of the leaders. Bass (1985) explained that transformational leadership must comprise 1) charisma leadership to motivate people to work as well as to build respect and trust in the leader which will lead to loyalty to the quest to achieve the organizational goals specified in the mission, 2) intellectual stimulation to persuade personnel to cultivate concepts and understanding which are in line with

those of their organization, 3) individualized consideration to respond to the needs of personnel by bringing individual differences into consideration; and 4) inspirational motivation to verbally inspire or motivate personnel to become enthusiastic and devote themselves to common interests. Achinsamachan (2000) further stated that transformational leadership includes the ability to coerce personnel to think and do beyond expectations. This is in line with Hiranyakon (2003) who said that transformational leadership is related to organizational health and leaders' behavior which can induce cooperation in work including characteristics such as good posture, personality, trustworthiness, and attitude, and by being transparent by having a clear work plan, policy, organizational direction, and by being open to opinions and participation. These all depend on communication (Chaihan, 1990; Santiwong, 1995). The task is to help people understand that the scope of the framework is linked to the planning process to success and is driven to achieve the vision of the organization. This is in accord with Muttakarn (2000) who considered that the job characteristics of each individual within the organization affected absenteeism and job satisfaction. Hackman and Oldham (1976) considered that the influence, attitudes, and types of behavior of individuals who have contributed significantly to the design work and divided job characteristics into five elements: 1) skill variety ability, knowledge, with skills including how to perform various combinations, 2) task identity ability to undertake operational processes from start to finish in the process leading to the final results of the work, 3) task significance ability to identify the results of a major impact on the organization, 4) autonomy ability to undertake job opportunities and for individual practitioners to be free to determine the scope of work patterns, including: how to determine the scope of work; defining the boundaries free from being operational; given the opportunity to decide on the scope of work; and the scope to set the standard in new trials; and 5) feedback from the job itself involving the ability to practice which makes people aware of worker productivity. This is in line with Changmunkongchep (2004) who discussed the freedom of workers to have control over their work and in their relationships with each other. Beitman (1983) stressed that professional psychologists must recognize the characteristics in the same daily stress that affect work outcomes and the responsibility and authority to support a person working in the same direction, Coordinating both people and goods, and including other resources into a unified, common sense approach leads to the ability to work effectively and to have positive relationships with each other.

Organizations play important roles in a country's development. The Thai economy is based on agricultural products and the Department of Fisheries is one of the organizations playing an important role in terms of industrial business in which export growth booms quickly to the point of imbalance, creating a tendency for a natural resources deterioration crisis which can eventually affect commercial and local fisheries. Hence, it is important that involved agencies set up systematic and effective measures in management for organizational efficiency. The

Marine Fisheries Management Division under the Fisheries Management Commission is a government agency responsible for fisheries development, maintaining the multi-diversity of natural resources, and researching the development of technology in fisheries for sustainable occupations, which is one way of promoting domestic agriculture via the effective production of value added products. It also enhances the competitive capacity while at the same time developing a body of knowledge to strengthen the grassroots of the economy. This involves checking, monitoring, and controlling production quality for hygiene and universal standards as well as managing fisheries resources under legally sanctioned responsibilities for sustainability and abundance. This is in line with the [Fisheries Technology Development and Dissemination Commission \(2013\)](#) whose mission is to develop and support its personnel to be knowledgeable in the work they are responsible for and the improvement of organizational structure and strategies to suit the changes in its missions in order to improve the organization's administration.

These phenomena have prompted the need for an organization to adapt to changes in its mission so that it can maintain its growth. An organization needs to be efficient in adapting itself and its efficiency in doing this results from good organizational health. Existing research on the factors affecting organizational health has focused mostly on major factors and has been undertaken using direct effect models which sometimes did not accord with actual happenings. This has made the researcher interested in the analysis of structural equation modeling of organizational health in the Marine Fisheries Management Section under the Fisheries Management Bureau. The literature review indicated that organizational climate, transformational leadership, and job characteristics have effects on organizational health. The concepts of [Hoy and Forsyth \(1986\)](#) were used in the study as this provides complete coverage of the components and is a widely accepted approach. The results of the study are expected to be applicable in setting up policy and an organizational health plan for the organization and to provide guidelines in planning for the development of the organizational health of the Marine Fisheries Management Division via work efficiency enhancement so as to achieve its aims.

Research Objectives

To develop a structural equation model of organizational health in the Marine Fisheries Management Section under the Fisheries Management Bureau.

Scope of the Study

Subjects were personnel in the Marine Fisheries Management Division under the Fisheries Management Commission in six provinces of Thailand, being the Inner Gulf of Thailand Marine Fisheries Management Center, Samutprakarn province; the Gulf of Thailand Marine Fisheries Management Center (East Coast), Rayong province; the Marine Fisheries Management Center (Southern Region), Chumphon province; the Marine Fisheries Management

Center (Andaman Coast), Krabi province; the Marine Fisheries Management Center (Lower Southern Region), Songkhla province and the Marine Fisheries Management Center, Pattani province. Variables in this research included endogenous latent variables of organizational climate (OC), job characteristics (JC), and organizational health (OH), and the exogenous latent variable of transformational leadership (TL).

Method

This research involved a causal relationship study. An appropriate subject group size was determined using confirmatory factor analysis with at least 15 times the observed variables in the model ([Angsuchot, Wichitwanna, & Ohinyophanuwat, 2011](#)). The population total of 399 people in this study consisted of personnel from six provinces in the Marine Fisheries Management Division under the Fisheries Management Commission. This research consisted of 22 observed variables, the size of the sample used in this study was calculated from the formula 22×15 to require a sample of 330 people. The six provinces were then taken as strata and the stratified random sampling method was applied with the size of the subject group from each stratum being proportionately calculated for a balanced distribution. Then, a simple random sampling method was used to identify 330 subjects from the population frame by way of sampling without replacement.

Research Instrument

A questionnaire in the form of a 5-point rating scale was used as an instrument in this research. It consisted of four parts.

Part 1: Organizational health—the researcher developed this part of the questionnaire based on concepts from [Hoy and Forsyth \(1986\)](#). It included organizational strength, leaders' influence, consideration leadership, initiating structure leadership, resource support, work morale, and instructional leadership, totaling 37 items ([Priprem, 2012; Setkit, 2006; Sopha, 2011](#)).

Part 2: Transformational leadership—was based on concepts from [Bass \(1985\)](#) including charisma building, activating intelligence, focusing on individual, and inspiration cultivation, totaling 33 items ([Charitphan, 2003; Norasan, 2010; Panyawachira, 2002; Phlubphibun, 2005; Rakchuchuen, 1997; Rotchanaphitthayakun, 2005](#)).

Part 3: Organizational climate—was based on the concepts of [Litwin and Stringer \(1968\)](#) including organizational internal structure, closeness and support, reward and punishment, conflicts, work standard and expectations, and awareness of risks, totaling 36 items ([Charoenwiangwetchakit, 2008; Watthanakit & Kabmali, 1998](#)).

Part 4: Job characteristics—were based on the concepts of [Hackman and Oldham \(1976\)](#) including skill variety, task identity, task significance, autonomy, and feedback from job itself, totaling 27 items ([Jaruenvingvadkit, 2008; Krungkaw, 2005; Nakton, 2008](#)).

Instrument Testing

Content validity and language clearness were checked using three experts in psychology. A content validity index (CVI) was used to measure the validity of the content and it was found that three parts of the questionnaire (organizational health, transformational leadership, and organizational climate) had CVI values between 0.67 and 1.00. The S-CVI/Ave values were 0.98, 0.99, and 1.00, respectively, and the S-CVI/UA values were 0.95, 0.97, and 1.00, respectively. The Reliability Cronbach's Coefficient of Alpha was used to calculate the reliability value of the questionnaire and it was found that the three parts of the questionnaire: organizational health, transformational leadership and organizational climate had reliability values of 0.89, 0.88, 0.83, respectively. Confirmatory factor analysis involved a structural validation of the model and each latent variable to analyze the relationship of observable variables using Pearson's Product–Moment Correlation Coefficient in a statistical package to test the concordance between the designed model and the empirical data with the presumption that the value of chi-squared: χ^2 , df or χ^2/df should be less than 3.00, as well as determining GFI, AGFI, RMR, and RMSEA (Diamantopoulos & Siguaw, 2000).

Results

The results showed that the model was in concordance with the empirical data after error adjustment according to the condition of variables appearing to have a relationship by considering the values of the statistics used to examine

the concordance. The chi-squared value of 289.75, for the degrees of freedom (df) of 180 and the level of significance of .001 ($p = .000$) did not comply with the criteria. However, when considering the proportion of χ^2/df of 1.60, GFI of 0.93, AGFI of 0.90, RMR of 0.04, and RMSEA of 0.04, it can be concluded that the developed model was in accord with the empirical data. When considering the value for R^2 of the structural equation of endogenous latent variables, it was found that the variables in the model could explain the errors in organizational climate at 85 percent and errors in organizational health at 67 percent and the variable pair with the highest value was job characteristics (0.54) The details of the analysis are shown in Figure 1.

The analysis path coefficient results of the direct effect variable, indirect effects, and total effects on organizational health, organizational climate, and job characteristics could be divided into five elements: 1) transformational leadership variable direct effects on organizational health, job characteristics, and organizational climate were 0.72, 0.69, and 0.37, respectively. Indirect effects on organizational climate and organizational health were 0.35 and 0.15, respectively. Total effects on organizational health, organizational climate, and job characteristics were 0.87, 0.72, and 0.69, respectively; 2) job characteristics variable direct effect on organizational climate was 0.50. Indirect effect on organizational health was 0.10; 3) total effects on organizational climate and organizational health were 0.50, and 0.10, respectively; 4) organizational climate variable direct effect on organizational health was 0.21; and 5) total effect on organizational health was 0.21. The details of the analysis are shown in Table 1.

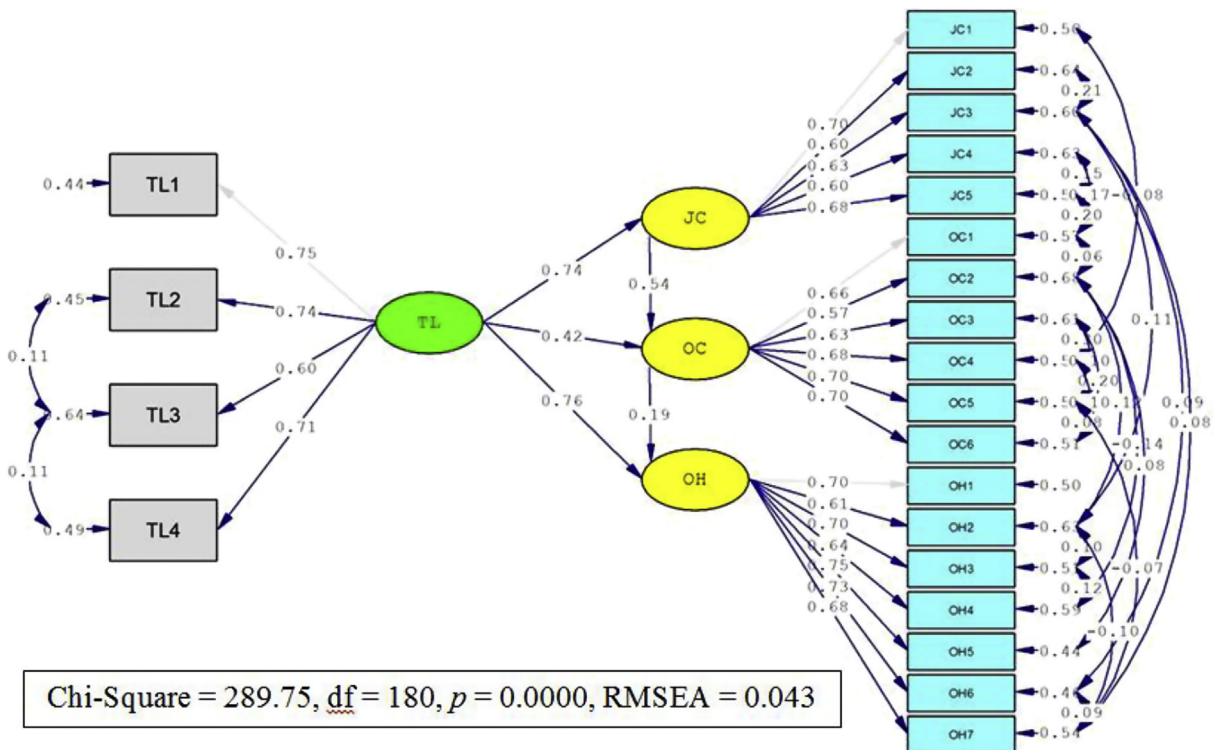


Figure 1 Results of analysis of direct and indirect effects of the Marine Fisheries Management Division under the Fisheries Management Commission

Table 1

Standard direct effect (DE) indirect (IE), including total influence (TE) between the variables with variable results

Exogenous latent variable	TL			JC			OC			R ²
	DE	IE	TE	DE	IE	TE	DE	IE	TE	
OH	0.72	0.15	0.87	–	0.10	0.10	0.21	–	0.21	0.85
OC	0.37	0.35	0.72	0.50	–	0.50	–	–	–	0.67
JC	0.69	–	0.69	–	–	–	–	–	–	0.54

Discussion

1. Management organization in a choppy, volatile environment results in a lack of balance regarding resources; consequently, a system or method of administration is required. Adaptation to changing environments in the HR management of an organization requires diversity. This is in accord with [Plunkett and Attner \(1994\)](#), [Hoy and Miskel \(1978\)](#), [Hellirige and Slocum \(1974\)](#) and [Vonganurutto \(2005\)](#) where the organizational climate was characterized by the influence passed down by a person working for the organization. The recognition of a person working on the model of management (formal and informal as well as other factors that are important) leads to results that influence the efficiency and effectiveness of the organization. This is in accord with [Pratumtone \(2002\)](#) regarding the organizational climate and its relationship to organizational health. [Bourland \(1988\)](#) stated that organizational health encourages productivity. Effective management organization of a control structure involving humans requires streamlining roles and the ability to understand social needs, while including the ability to satisfy (in part) social events. This can involve social activity with colleagues, so that the off-duty behavior can be induced by reinforcing the structure of the organization, including cooperation in the operation ([Suttavatin, 2005](#)).
2. The organization serves as a comprehensive process of operations that can be associated with support of administrative decisions as a clear way to make the plan successful and to illustrate the flow of work. The workers help individuals understand that the scope of the framework is linked to the planning process to success and the drive to achieve the vision of the organization. This is in accord with [Muttakarn \(2000\)](#) who concluded that features of each individual within the organization affect absenteeism and job satisfaction. The challenge is complex, consisting of a variety of freedoms, responsibilities, knowledge, expertise and social needs as alternatives. This key aspect is likely to affect the functioning of humans as individuals have different responses to different aspects of the job. The defining feature is the important work to make it successful. This is in accord with [Hackman and Oldham \(1976\)](#) who concluded that the manner of influencing the attitudes and behavior of individuals contributed significantly to the design work of skill variety, task identity, task significance, autonomy, and feedback from the job itself. This is also in accord with [Beitman \(1983\)](#) who stressed professional psychologists must recognize the characteristics in play in daily stress also affect work. The

challenge is to allow a flexibility for people working in the same direction by coordinating the resources so that all workers can have a sense of working for the organization and so they can work closely and effectively together.

3. Successful interaction with relevant administrative organizations involves having the power to influence changes to promote development and to improve operational support to achieve the goals of the vision. This requires good leader management. This is in accord with [Sompamit \(1995\)](#) who considered that effectiveness in the work of the organization depends on the leadership of the executive. Leadership behavior is the demonstrated ability to lead a group of people who work in organizations conducting activities towards the target and to achieve organizational solutions. It includes the ability to console a person working for the organization, the ability to support a group of people working in the organization, the ability to show leadership or the actions of a leader to influence a person working for the organization, and the ability to utilize resources efficiently to achieve the goals of the operation. This is in accord with [Bass \(1985\)](#) who divided transformational leadership into charisma leadership, intellectual stimulation, individualized consideration, and inspirational motivation. This is also supported by [Hirunyakorn \(2003\)](#) who concluded that leadership for change has a healthy relationship with the organization and by [Chaihan \(1990\)](#) who identified organizational health as the management structure within the organization that affected the performance of the individual worker. Leadership must take into account the individual in operations that affect organizational health ([Suntiwong, 1995](#)).

Conclusion and Recommendations

From the study, job characteristics had the greatest direct effect on the organizational climate (0.50). Organizational health was indirectly influenced by job characteristics (0.10), and the total effect on organizational climate was 0.50 and for organizational health was 0.10. Organizational health was directly influenced by organizational climate (0.21). Variables affecting organizational health were positively correlated. The R² values of organizational health, organizational climate, and job characteristics were 0.85, 0.67, and 0.54, respectively. It was found that the variables in the model could explain the errors in organizational health at 0.85, organizational climate at 0.67, and job characteristics at 0.54.

Recommendations

1. The results should be used in the development of policies in the government and private sectors and also in state enterprises.
2. Protection supervision in the government and private sectors and also state enterprises should be a part of the develop procedures.
3. Future research should be undertaken using the 22 observed variables. This study tested structural equation modeling of organizational health in the Marine Fisheries Management Section under the Fisheries Management Bureau. There should be further studies with the causal factors of this research as a guide to the further development of structural equation modeling of organizational health.
4. Further research should study factors having direct, indirect and total effects in other organizations to determine any differences due to that context.

Conflict of interest

None.

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