

THE EFFECT OF ENVIRONMENTAL LEADERSHIP AND HEAD OF VILLAGES' KNOWLEDGE ABOUT CONSERVATION ON THEIR ABILITY IN MANAGING ENVIRONMENT: An Ex Post Facto Study in Nusa Tenggara Timur Province

Siprianus Radho Toly

Faculty of Sciences and Technique, University of Nusa Cendana Kupang

ABSTRACT

The research is aimed at finding out information about the effect of environmental leadership and the heads of villages' knowledge about conservation on their ability in a managing environment. An ex post facto method was applied by involving n = 250 heads of villages in Nusa Tenggara Timur Province. The research design was 2 x 2 factorial. Data were analyzed by applying two-way ANOVA. The research results revealed that there was environmental management ability difference between the heads of village with transformational leadership style and transactional leadership style. There was high ability in the managing environment in the group of heads of villages who had high knowledge about conservation and transformational leadership style rather than transactional leadership style. There was low ability in the managing environment in the group of heads of villages who had low knowledge about conservation and transactional leadership style rather than transformational leadership style. A significant interaction effect was found between environmental leadership and the heads of villages' knowledge about conservation on their ability in a managing environment. It could be concluded that if ability in a managing environment could be improved, environmental leadership could be enhanced by considering knowledge about conservation. This, however, does not guarantee that the transformational leadership style would be able to improve the heads of villages' ability in a managing environment; as it also depends on their knowledge about conservation.

Key words : *Environmental leadership, conservation knowledge, environment management ability*

The impact of human activities on Earth contributes to widespread environmental problems. In order to alleviate these problems, collaborative supports and actions from various stakeholders are necessary. The most important factor that needs to be considered is the role of governmental leaders in various levels of organizations as the main actors that can take into account environmental issues in their programs; the so-called “environmental leaders”. In profit organizations and businesses, managing the staff members to reduce the activities that imperil nature is relatively unchallenging than managing citizens in a society.

The head of a village is one member of the local authority that interacts directly with citizens, hence, he or she has a strategic role in managing the environment. The head of village has the power in formulating environmental strategies, allocating budgets, and creating citizen awareness about environmental health and conservation through workshops and training programs. Given the important role of the head of a village, there is the need to continually enhance their competences in environmental issues and, accordingly, promote such issues in their programs. The ability of the head of a village in governing and motivating their subordinates and the community, as well as be concerned about the environment is certainly only achieved by having high competencies about environmental issues. The headman that possesses such competencies can be regarded as an “Environmental Leader”.

LITERATURE REVIEW

Ability is the capacity of an individual to perform a variety of tasks in one work. In general, ability comprises two dimensions, intellectual and physical ability. Intellectual ability are when an individual has the abilities needed in order to perform mental activities: thinking, reasoning, and problem solving. While physical ability is the capacity to do tasks that demand stamina, dexterity, strength, and similar characteristics (Robins and Judge, 2005). According to Glinow (2010), abilities are the natural aptitudes and learned capabilities that are required to successfully complete a task. Glinow further more explained that aptitudes are the natural talents that help employees learn specific tasks more quickly and perform them better. Learned capabilities are the skills and knowledge that are currently processed.

Management has been viewed in different perspectives in various disciplines, but in general management, is defined as the process of planning, controlling, influencing, and evaluating. Certo and Certo (2012) stated that term management can be, and often is, used in different ways. For instance, it can refer simply to the process that managers follow in order to accomplish organizational goals. They are also told that there are four basic functions of management: they are planning, organizing, influencing, and controlling.

In the context of environment management, Smith (2006) stated that environmental governance is inevitably associated with institution,

the organizations in which official authority often resides. He also mentioned that these commonly include government departments of the environment, agriculture, mining, and environmental regulatory agencies. More implemented, Barrow (2006) argued that most environmental managers aim for an optimum balance of natural resource uses and must decide where that lies, using planning and administrative skills to reach it. Environmental management must do three things: 1) identify goals; 2) establish whether they can be met; and 3) develop and implement the means to do what it deems possible. To pursue (2) and (3), requires the environmental manager to interface with ecology and economics. In law and politics, people seek sustainable development.

Environment is one part of the physical environment which includes living organisms, both animals and plants, and socio-cultural interaction among them. Wali *et al.* (2010) stated that the environment is a physical and biological condition in a particular space and time which supports the development, differentiation, and reproduction of a certain species or a group of species. Smith (2006) reported that environmental management is frequently linked with an institution that has many authorities in it. Environmental management defined above is likely to be described as the management of a nature environment that is well-organized in an institution in which there are many governmental leaders who are responsible in controlling and protecting the environment from human activities.

Leadership is defined as a process involving the leverage of leaders that can influence people and obtain the expected results. The influence of leaders includes the ability to change people's perceptions, beliefs, motivation, and behavior in a particular organization. Colquitt *et al.* (2013) suggested that leaders have authority and power to influence and control their subordinates for accomplishing set targets. Leadership is divided into two categories based on their knowledge and conception, namely transformational and transactional leadership. Transformational leadership is a leadership style where leaders can extend and enhance the interest of their subordinates and lead them to reach general targets rather than personal ones. Whereas Robbins and Judge (2011) assumed that transformational leadership includes idealized influence, individualized consideration, inspirational motivation, and intellectual stimulation, in which leaders' behavior must have ideal impact, strong individual consideration, give inspiring motivation and high intellectual stimulation, so that subordinates can be directed toward the targets.

On the other hand, transactional leadership is defined as a leadership style in which the leaders control and motivate the subordinates in order to achieve organization goals by justifying the approved role and duties of each subordinate. Yulk (2010) argued that leaders who pay their attention to interpersonal transaction between the leaders and subordinates involve an interchange system.

The development of the concept of Environmental Leadership, as stated by Rigling (2012), was prominent in the 19th century and became the primary goal of environmental protection and conservation.

Leaders are encouraged to perform a process of leveraging subordinates and other stakeholders as well as incorporate environmental aspects into their daily activities, decision-making process, and policies (Yulk, 2010).

Conservation has been developed in line with concerns about the interaction between humans and the environment on Earth. Levin (2001) and Groom (2006) in Primack (2006) contend that biological conservation is a newly integrated discipline that has been developed as an answer for the challenge. Naganna (2001) argued that conservation and the environment along with exploration are essential components of sustainable development. In order to maintain the sustainability of natural resources, there are three principles of conservation that need to be considered: 1) Protection, as a means to protect ecological processes and living systems; 2) Conservation, as an effort to preserve natural resources and biodiversity; and 3) Utility, in the context of using natural resources and the environment wisely and proportionally as its function.

RESEARCH METHODS

The objectives of this study were to find out information regarding the effect of environmental leadership (superior leadership style) and the heads of villages'

knowledge about conservation on their ability in managing the environment. Three variables were used in this study: environment management ability as the dependent variable, while the independent variables were environmental leadership (A) and conservation knowledge (B). An ex post facto method was applied by involving 250 heads of villages as respondents who were derived from seven regencies in Nusa Tenggara Timur Province and who were randomly selected using a simple random sampling technique. An instrument of ability in managing the environment and conservation knowledge were given to all the heads of villages. Whereas, an environmental leadership instrument collected each head of village's subordinate (head of villages' secretary) assessment to evaluate the performance of their superordinate. Means of superior leadership style were measured by an instrument which was related to the subordinate (head of villages' secretary) perceptions towards how their superior lead the subordinate, in this case, the direction could be transformational leadership (A1) or transactional leadership (A2). Those were then ranked and selected in the 27% upper group for transformational leadership style and 27% lower for transactional leadership style. High and low conservation knowledge were also derived from the ranking. While conservation knowledge was categorized into high (B1) and low (B2). The design of this study was 2 x 2 factorial, therefore, each cell consisted of 19 samples which were randomly selected, whilst the n total was 68.

Table 1. Factorial Design 2 x 2

Leadership Style (A)	Transformational (A ₁)	Transactional (A ₂)
Conservation Knowledge (B)		
Highest Conservation Knowledge (B ₁)	A ₁ B ₁	A ₂ B ₁
Lowest Conservation Knowledge (B ₂)	A ₁ B ₂	A ₂ B ₂

Pearson Product Moment was used to evaluate the validity of each item of the three instruments. An item was considered valid if $r_{count} > r_{Table}$; others were held to be invalid and, on the other hand, item reliability was calculated using *Alpha Cronbach*. The environment management ability instrument had 21 items. Item validity was 0.361 and reliability was 0.932. The environmental leadership instrument had 23 items, with item validity at 0.361 and reliability at 0.932. Finally, the conservation knowledge instrument had 24 items, with item validity at 0.361 and reliability was 0.886.

To test the normality and homogeneity of the data, *Liliefors* and *Barlet* tests were used respectively. All of the data statistically permitted the assumption of normal and homogenous hypotheses which were tested by applying a two-way ANOVA. Tukey post hoc test was run to evaluate further any differences among the variables. All the statistical tests were performed using SPSS at $\alpha = 0.05$.

RESEARCH RESULTS

Table 2. Summary results of the two-Way ANOVA

Source of Variances	DF	Sum Square (SS)	Mean of SS	F _{cal}	F _{tab}	
					$\alpha = 0.05$	$\alpha = 0.01$
Between groups	3	457.105	152.368	6,029 **	2,732	4,066
Within groups	72	1,819.526	25.271			
Environmental leadership (A)	1	229.263	229.263	9,072**	3,968	6,985
Conservation knowledge (B)	1	121.263	121.263	4,798**		
Interaction A x B	1	106.579	106.579	4,217**		
Total	75	1,857.53				

** $p < 0.01$

Two-Way ANOVA calculations (Table 2) indicated that there were highly significant differences of environmental management ability between the heads of villages transformational leadership and transactional leadership ($F_{cal} = 9,072 > F_{tab} = 6,985$). Moreover, based on two-way ANOVA calculations, it could be interpreted that there was a highly

significant interaction effect between environmental leadership and the heads of villages' knowledge about conservation on their ability in managing the environment ($F_{cal} = 4,217 > F_{tab} = 6,985$). Illustration of the interaction effect between leadership style and conservation knowledge on the heads of villages ability in managing the environment can be seen in Figure 1.

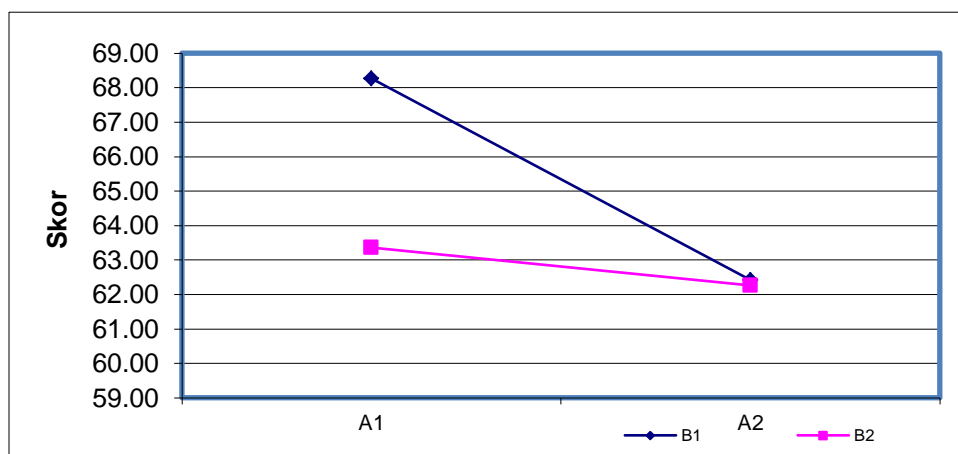


Figure 1. Interaction effect of leadership style and conservation knowledge on head of villages' ability in managing environment.

This research also found that there was a highly significant difference of environmental management ability among the four groups. These were transformational leadership and high conservation knowledge, transformational leadership and low conservation knowledge, transactional leadership and high conservation knowledge, and transactional leadership and low conservation knowledge ($F_{cal} = 6,029 > F_{tab} = 4,066$). This means that both environmental leadership and conservation knowledge (independent variables) affected the heads of villages' ability in managing the environment.

Research findings showed that for high conservation knowledge of the heads of villages, their ability in managing the environment would be higher when their leadership style was transformational. For low conservation knowledge of the heads of villages, their ability in managing the environment would be higher when their leadership style was transformational as well (Table 3). However, the heads of villages with low conservation knowledge and transactional leadership style could improve their ability in managing the environment.

Table 3. Means of the head of villages’ ability in managing the environment (M) for each Cell (Leadership style x Conservation knowledge).

Leadership style \ Conservation knowledge	Transformational	Transactional
	High	n = 19 M = 68.263
Low	n = 19 M = 63.368	n = 19 M = 62.263

Tukey test was run to test the significant differences among simple effects. The simple effects were the difference of ability to manage the environment between transformational and

transactional leadership both in high level of conservation knowledge and the same difference in a low level of conservation knowledge. Table 4 below summarizes the results of the Tukey test.

Table 4. Summary result of Tukey test.

Hypothesis	Source of Variances	Df	Q_{cal}	$Q_{tab} (\alpha = 0.05)$	Description
2	$A_1 B_1 - A_2 B_1$	4	4,635**	4,110	Highly significant
3	$A_1 B_2 - A_2 B_2$	4	9,319**	4,110	Highly significant

Description:

$A_1 B_1$: Head of villages’ ability in managing the environment with transformational leadership style and high conservation knowledge

$A_2 B_1$: Head of villages’ ability in managing the environment with transactional leadership style and high conservation knowledge

$A_1 B_2$: Head of villages’ ability in managing the environment with transformational leadership style and low conservation knowledge

$A_2 B_2$: Head of villages’ ability in managing the environment with transactional leadership style and low conservation knowledge

The results of the Tukey test illustrated that there was high ability in managing the environment in the group of the heads of villages who had high knowledge about conservation and transformational leadership style rather than transactional leadership style ($Q_{cal} = 4,635 > Q_{tab} = 4.110$ at the level of significance of $\alpha = 0.05$). On the other hand, there was low ability in managing the environment in the group of heads of villages who had low knowledge about conservation and transactional leadership style rather than transformational leadership style ($Q_{cal} = 9.319 > Q_{tab} = 4.110$ at the level of significance of $\alpha = 0.05$).

DISCUSSION

The differences in leadership styles affected the ability of the heads of villages in managing the environment. Such differences will impact the perspectives of heads of villages in Nusa Tenggara Timur in their efforts to preserve and protect the environment. As a leader, the pro-environmental head of a village can influence his/her subordinates and the public to achieve the vision of long-term ecological sustainability. For transformational leadership style, Egri and Herman (2000: 572) stated that the characteristics of environmental leadership are more similar to the transformational leadership style than traditional or transactional leaders. Similarly, Gladwin (1993: 61) argued that environmental leaders need to adopt a transformational leadership style in order to achieve the goal of sustainability.

More implementable, Robertson and Barlin (2013: 178) reported that each of the four transformational leadership behaviors (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) can be used to reach environmental sustainability within an organization.

Transactional leadership style, according to Glinow (2010: 414), is the leadership that helps organizations to achieve organizational goals more efficiently, such as linking job performance with awards and ensuring that employees have the resources needed in order to carry out their work. Robbins and Judge (2011:453) argued that transactional leadership is type of leadership that motivates subordinates towards their goals by justifying the roles and tasks that have been set. So, it is clear that environmental leadership is transformational in which a transformational leader can also be perceived as an Environmental Leader or Eco-leader; these kinds of leaders do not orient their management merely on profit but also consider the protection of natural resources and the environment.

The research findings also indicated that high ability in managing the environment in the group of heads of villages was high knowledge about conservation and transformational leadership style rather than transactional leadership style. This research finding is related to transformational leadership as reported by Schermerhon *et al.* (2005: 257), in that transformational leadership occurs when a leader can extend and improve the followers' enthusiasm and instruct them to be make account of the attainment of a target rather than private interest.

Hasil Penelitian

In the context of environmental leadership, Robertson and Barling (2013: 176–194) stated that transformational leadership includes four behaviors: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, each of which can be applied to influencing environmental sustainability within organizations. In doing so, environmentally-specific transformational leaders serve as role models for subordinates, who then become more likely to engage in these behaviors themselves.

Another finding of the research also indicated that there is low ability in managing the environment in the group of heads of villages who have low knowledge about conservation and transactional leadership style rather than transformational leadership style. Concerning about environmental transformational leadership, Graves *et al.* (2013: 81-91) stated that transformational leadership can be equalized with environmental leadership. Graves *et al.* (2013) also reported that extending with the notion of transformational leadership to leadership on environmental issues, we would expect managers who exhibit environmental transformational leadership to communicate a clear and coherent environmental vision for their area of responsibility. This, therefore, means that the ability of leaders in managing the environment is very much influenced by the leadership style of environmental transformational.

In the context of the heads of villages' ability in managing the environment, the research findings showed that there is low ability in the group of heads of villages who have low knowledge

about conservation and transactional leadership style rather than transformational leadership style. This means that for the leaders with low conservation knowledge, his/her ability in managing the environment would be higher than when his/her leadership style is transformational.

CONCLUSION

Based on these research findings and discussions, some conclusions can be formulated that the heads of villages who have been perceived by their subordinate to be transformational are not always more effective to affect their ability in managing the environment instead of transactional, but this depends on the level of the head of villages' knowledge about conservation. Therefore, the heads of villages could implement either transformational or transactional, and their knowledge about conservation could not be neglected.

REFERENCES

- Akiyama Tomohiro, Kyoungjin, J, Hiroaki, Furumai, and Hiroyuki, Katayama. 2013. *Environmental Leadership Capacity Building in Higher Education*. Springer, Editors
- Barrow, C.J. 2007. *Environmental Management for Sustainable development*. Second Edition. New York: Routledge.
- Bechtel Robert B. and Arza Churchman. 2002. *Handbook of Environmental Psychology*. New York: John Wiley & Sons, Inc.

- Berry, J.K., and Gordon, J.C. 1993. *Environmental leadership: Developing Effective Skills and Styles*. Island Press Washington, DC.
- Certo, Samuel C. dan Certo, S. Trevis. 2012. *Modern Management: Concepts and Skills*, London: Pearson Education.
- Cohen, Tom. 2012. *Can participatory Emissions Budgeting Help Local Authorities to Tackle Climate Change?* ELSEVIER Environmental Development 12.
- Colquitt, Jason, A., Lepine, Jeffery, A. and Wesson. Michael, J. 2015. *Organizational Behavior: Improving Performance and Commitment in the Workplace*. McGraw-Hill Education. New York.
- Egri, Carolyn P. and Susan Herman. 2000. "Leadership in the North American Environmental Sector: Values, Leadership Styles, and Contexts of Environmental Leaders and Their Organizations," *Acad. Manag. J.* 43, no. 4: hh. 571–604.
- Gallagher, Deborah Rigling. 2012. *Environmental Leadership: a reference handbook*, (editor), SAGE Publication, Inc.
- Gibson, James L., John M. Ivancevich, James H. Donnelly, Jr., dan Robert Konopaske. 2012. *Organization: Behavior, Structure, Processes*. New York: Mc-Graw Hill.
- Glinow McShane I Von. 2010. *Organizational Behavior: emerging knowledge and practice for the real world. Fifth Edition*. McGraw Hill. New York.
- Graves, Laura M., Joseph Sarkis, and Qinghua Zhu. 2013. *How transformational leadership and employee motivation combine to predict employee pro-environmental behaviors in China*. ELSEVIER.
- Moorhead, Gregory dan Ricky W. Griffin. 2010. *Organizational Behavior: Managing people and organizations*, South-Western, Cengage Learning.
- Naganna, N. 2001. *Conservation & Environment: Implications in Theory, Practice and Policy*. Indian Institute of Management (IIMB), Bangalore. January 30, 2001. Diakses, 1 Maret 2016.
- Primack, R. B. 2006. *Essential of Conservation Biology*. Fourth Edition: Sinauer Associates, Inc., Publishers, Sunderland-Massachusetts.
- Robbins, Stephen P. dan Timothy A. Judge. 2011. *Organizational Behavior*. New Jersey: Pearson Education, Inc.
- Robertson Jennifer L. and Julian Barling. 2013. *Greening Organizations Through Leaders' Influence on Employees' Pro-Environmental Behaviors*. *Journal of Organizational Behavior* 34. 2013.
- Schermerhorn, et al. 2005. *Organizational Behavior*, New Jersey: John Willey & Son, Inc.
- Smith Enger I. 2006. *Environmental Scienc; A Study of Interrelationship. Tenth Edition*. New York: McGraw-Hill International Education.

- Wali, Mohan K., Falih Evrendilek dan M. Siobhan Fennesy. 2010. *The Environment: Science, Issues, and Solutions*. New York: CRC Press Taylor & Francis Group, LLC.
- Yulk, Garry.2010. *Leadership in Organizations*. Seventh Edition. Pearson Education, Inc. New Jersey.