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RESEARCH ARTICLE

THE EFFECT OF ENVIRONMENTAL LEADERSHIP AND COGNITIVE ABILITY ABOUT MARINE & FISHERIES ON EMPLOYEES' DECISION MAKING.

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Abstract

Is there any differences of employees Decision Making which is brought about the effect of Environmental Leadership and employee's Cognitive ability about marine and fisheries is a research problem. An ex post facto method with 2 x 2 factorial designs has been applied which each cell consisted of 11 samples. All instruments measured by 5-scale and test (for cognitive ability) which its reliability was .91, .89, and .88 for Environmental Leadership, Cognitive ability, and Decision Making, respectively. Data has been analyzed by two-way ANOVA. Research results showed that there was significant differences of employee's decision making between those employees who perceived their leaders have transformational style compared to others who perceived transactional style. There was a significant interaction effect between Environmental Leadership and cognitive ability on employee's decision making. It means that these findings, in this case, support McGregor X & Y in term of situational leadership styles theories, therefore transformational environmental leadership styles was not always more effective than transactional, but it was mostly depended on employees knowledge in affecting their ability making a decision related to marine & fisheries as well.

Introduction:-

Sustainable development in marine and fisheries sectors includes three main aspects, namely: ecological, economic, and social. Without ecological sustainability, such as the use of destructive or inhospitable technologies, will lead to the decline of fish resources and even extinction, so that fishery economic activities will be halted and will have an impact on the economic and social life of the communities involved in fisheries activities (Charles, 2001).

Based on data from FAO (2016), Indonesia would be able to become the second largest country for world fishery production after China, in 2014 China's capture fishery production reached 14.8 million/ton and Indonesia reached only 6 million/ton and followed by United States whose production reached 4,9 million / ton. China's cultivated aquaculture production reached 58.8 million in 2014 and Indonesia reached 14.3 million (for a total of 10.50 billion) and in the third place of India whose production reached 4.9 million (including seaweed). In 2014 the number of fish cultivators in Indonesia increased to 3.34 million people compared to 2005 of 2.50 million people. Seaweed cultivation production in Indonesia increased more than 10 times in 2014, compared to 2005 so that Indonesia became the largest contributor to the growth of seaweed production in the world.
Central Bureau of Statistics (2015), said the export of Indonesian fishery products was recorded at US $ 244.6 million in 2015, while imports only reached 12.5 million US dollars (implying a trade surplus of 232.04 million US

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dollars). The fishery sector in Indonesia grew 8.37% on a year-on-year basis in the third quarter of 2015, much higher than the country's overall economic growth (at 4.73% y/y) in the same quarter.

Ministry of Marine Affairs and Fisheries (2016), on Decree of the Minister of Marine Affairs and Fisheries number 47 of 20116 states the potential of capture fisheries of 9.9 million tons, with an allowable catch amount of 7.9 million tons or 80% of the total number of capture fisheries in This type of large pelagic fish is not meant tuna and skipjack, while the new utilization rate of 96 thousand tons. The magnitude of potential fisheries and the still small utilization of the attraction for other countries to participate to exploit the fishery resources of Indonesia. The level of consumption of Indonesian fish is also not balanced with the production of fisheries, which in 2011 became the fourth rank in ASEAN countries in the level of fish consumption.

The amount of marine potential of Indonesia becomes important to be utilized as much as possible for the welfare of the whole society. However, the wealth is not only used as a means of transportation, recreation media, or a source of increased revenue for the state, but on the one hand must also pay attention to the sustainability of the potential.

The problem of utilization of marine biodiversity and fishery in Indonesia has been at an alarming stage. Illegal, Unreported and Unregulated Fishing (IUUF) activities in Indonesia have experienced an economic loss of up to US $ 20 billion per year due to IUUF, this also threatens 65% of Indonesia's coral reefs, which accounts for more than 85% of global fish stocks at risk, And adversely affect the economics of small-scale fishermen. The IUUF generally contributes to 10% to 22% of the world's total fishery production. Negative impacts on marine ecosystems and marine life are enormous. Several fishing areas in the Indonesian sea have been dredged and IUUF activities have damaged the marine ecosystem, FAO (2016).

The issues of IUUF activities and the destruction of marine and fishery ecosystems are the joint responsibility of government, local and community managers. Environmental Leadership becomes an important factor in handling various environmental issues both at international, national, regional and local government level. Where the role of government leaders as the state supervisor has responsibility for sustainable fisheries management. At the national level the strategy of the Ministry of Marine Affairs and Fisheries of Indonesia has a vision of "Creating an independent, advanced, strong and national-based marine and fisheries sector" with the mission of making Sovereignty State, sustainability and improving the prosperity of Indonesian society in general.

The concept of sustainable fisheries arises from environmental awareness. Sustainable fisheries are developed because of anxiety about the declining ability of the aquatic environment to support the availability of fish resources. Sustainable fisheries are activities of capturing or harvesting fish resources at a sustainable level, so that fish populations and production are not decreased or available from time to time. So that the implementation of marine and fishery policies nationally becomes important. The government's environmentally-minded leadership and personality will be prime moves and benchmarks for reducing environmental damage and creating sustainable development. According to Clark, (2010), the regional leader's apparatus is a tool for development or development with tangible results.

Related to this case, Colquitt, Lepine, and Wesson (2009) define decision-making. "Decision-making is choosing the best alternative from the multiple available alternatives of the problem linked to the achievement of the goal. Decision-making refers to the process of outcomes and options from a range of alternatives for problem solving.

Richard L. Daft and Dorothy Marcic explains, "Decision making is the process of identifying problems and opportunities and they are resolving them. Decision making involves effort both before and after the actual choice ". Decision-making is the process of identifying problems and opportunities and solutions, in which case decision-making involves prior and actual efforts.

Decision-making is the process of making a choice from a number of alternatives to achieve the desired outcome. Based on these definitions, there are three key elements in decision making: First, decision-making involves determining the choices taken from several options available; Secondly, decision-making is a process that involves several alternative choices to determine the final choice of decisions to be taken; Third, the desired result involves an activity to get the goal or target generated by the decision making in reaching the final decision.

According to Colquitt, Lepine, and Wesson (2011) the indicators or steps in decision-making are: a) Identify the problem; B) develop an exhaustive list of alterative to consider as solutions; C) evaluate all the alterative simultaneously; D) use accurate information to evaluate alterative; E) pick the alterative that maximizes value.

Leadership can be defined as activities to influence people who are directed towards achievement Goals Company. According to Yukl (2010: 22) leadership is the process of influencing a person or group of people in a group or an organization.

Based on leadership behavior then Yukl (2010: 169) divided by 4 aspects, namely: 1) Supportive Leadership, 2) Leadership Directive, 3) Leadership Participation, 4) Leadership-oriented achievement.

Managing comes from the word "management", Certo and Certo (2012) stated that term management can be, and often is, used in different way. For example, it can follow in order to accomplish organizational goals, which means that the notion of management can and is often used in different ways. For example, management as a process undertaken by managers in order to achieve organizational goals. Certo and Certo further said that there are four basic functions of management, they are planning, organizing, influencing, and controlling, which means that there are four basic functions of management, namely planning, setting, influencing, and controlling.

Understanding of managing according to Certo and Certo above illustrates that managing as a process done by manager or leader to reach the purpose of organization or institution through activity planning, arrangement, influence, and supervision. General understanding of the above management can be implemented in an effort to protect and manage the environment, which today has become a global concern, as a result of human greed in exploiting natural resources and environment for economic interests without any efforts to maintain the sustainability of natural resources and the environment.

According to Robbins and Judge (2013), transactional leadership is based on Fidlers and Path Goal theories, which helps their employees achieve their goals by explaining their roles and tasks. Transformational leadership is to inspire employees to achieve self-desire for positive things for the organization and to give a strong effect on employees.

On the other hand, McShane et al, (2013), transformational leadership is a leadership perspective explaining how leaders change members and organizations through creating, communicating and portraying the vision of an organization or work unit and inspiring employees to achieve that vision.

In general ability can be grouped into three general groups, namely "cognitive ability", "emotional ability", and "physical ability". Cognitive ability is the ability to relate to the taking and application of knowledge in solving problems. Cognitive ability is highly relevant in the work performed by employees within the institution under study, such as work that uses information to make decisions and solve problems, Colquitt, Lepine and Wesson (2009: 337: 343).

A Fishery System Approach can also help broaden the perspective on sustainability in fisheries. We can see the long-term well-being of fishery systems as requiring a reasonable balance among a number of sustainability components (Charles 1994, 2001). Ecological Sustainability includes the need to maintain fish stocks at ‘sustainable yields’, but also the need for suitable ecosystem capacity and quality. Similarly, Socioeconomic Sustainability deals with economic performance of fishers but also involves a broader consideration of overall social and economic welfare, aggregated across the fishery and including sustainable net benefits and distributional equity. These components are complemented by Community Sustainability (maintaining or enhancing the well-being, cohesiveness, and long-term health of human communities in the fishery) and Institutional Sustainability (maintaining financial, administrative and organizational capability over the long-term).

The focus of fisheries policy and management is directed to the biological and economic dimensions of efforts to bring back inventories to sustainable levels and to protect the marine environment. However, in the broad global context, social and cultural issues in fisheries policy and management have largely been ignored. However, ignoring socio-cultural goals has consequences for many fishing communities that are currently struggling to overcome the implications of such decisions (Symes and Phillipson, 2009; Urquhart et al., 2011).

Examples might include increased unemployment, outmigration, weak community structures and economic hardships, especially felt by fishery-dependent communities (Scottish Government 2009). These examples have a strong socio-cultural dimension while biological and economic factors are important supporting factors. As a result, it is increasingly recognized that sustainable fisheries will only be achieved by integrating biological, social and economic management and policy across (FCR, 2009).

Research Methodology:-

The purpose of this study is to find out information about the influence of environmental leadership, overall, between employees who judge their bosses to have transformational leadership styles rather than transactional. To know the difference of Cognitive Ability of high and low fishery and fisherman towards decision making in sustainable fisheries management. Three variables used in this research, namely decision making as dependent variable, while the independent variable is environmental leadership (A) and cognitive ability (B).

The ex post facto method has been carried out by involving 250 people as respondents who came from the Ministry of Marine and fisheries employees who were randomly selected using a simple random sampling technique. Instruments in environmental leadership, cognitive knowledge and decision-making are collected for each head of staff as an assessment to evaluate the performance of their superiors. Means that the style of environmental leadership is measured by instruments related to the perception of subordinates (employees) to how their superior, in this case his direction can be transformational leadership (A1) or transactional leadership (A2). They were then ranked and voted for the top 27% of the group for transformational leadership styles and 27% lower for transactional leadership styles. High and low cognitive abilities are also derived from rank. While cognitive abilities are categorized high (B1) and low (B2). The design of this study was a 2 x 2 factorial design; therefore, each cell consisted of 14 randomly selected samples with the number n being 200.

Table 1:- Research Design.

		Environmental Leadership (A)	
		Transformational (A1)	Transactional (A2)
Cognitive Ability (B)	High (B1)	n =14	n =14
	Low (B2)	n =14	n =14

Research Findings:-

The hypothesis testing of the research was conducted by analysis of 2-way variance (two path ANAVA) for first, second and third hypothesis. For the fourth hypothesis, two groups were tested using Tukey test. Two-way ANAVA calculation results are presented in the following table:

Table 3:- *Two-Way ANOVA*

Source of Variances	**df**	**SS**	**MS**	**F_{-cal}**	**F_{-t}**		
					α= 0.05	**0.01**	**0.001**
Between Group	3	6593.714	2197.905	306.293**	2.95	4.57	7.19
Within Group	52	301351.143	301351.143				
Environmental Leadership (A)	1	391.143	391.143	54.508**	4.16	7.53	13.29
Cognitive Ability (B)	1	28.571	28.571	13.982**			
Interaction A * B	1	6174.000	6174.000	86.389**			
Total	**55**	**6966.857**					

**p< .01

The first result of this research by two-way ANOVA revealed that F-cal = 54.508> Ft = 13.29 at significance level α = .01. It was concluded that the hypothesis proposed by the researcher can be accepted that there is a difference in sustain fisheries decision making between employees who value the leader has transformational leadership compared with transactional.

Another finding of this research that based on calculation found that mean group score A_1B_1 = 85.79 and mean score A_2B_1 = 59.50, it can be seen that there is difference of pro environmental behavior score. Then after tested the level of significance difference using the Tukey test with the testing criterion reject Ho if the value of $Q_{cal} > Q_t$ at the

level of significance $\alpha = 0.05$, note that the value of $Q_{cal} = 6.62$ while the value of $Q_t = 3.77$. Thus H_1 is accepted and it can be concluded that there is a significant difference between the scores in the group of employees who have high cognitive abilities of marine and high fisheries, sustain fisheries decision-making employee who has his attributes have a transformational leadership environment better than those who have leaders have transactional leadership.

Third, from result of calculation data of mean group score $A_1B_2 = 81.93$ and mean score $A_2B_2 = 66.21$, can be seen that there is difference of pro environmental behavior score. Then after tested the level of significance difference using Tukey test with the criterion reject Ho if the calculation value $Q_{cal} > Q_t$ at significance level $\alpha = 0.05$, note that the value of $Q_{cal} = 15.41$ while the value $Q_t = 3.77$. Thus H0 is accepted and it can be concluded that there is a significant difference between the scores In the group of employees who have cognitive abilities about marine and fisheries are low, sustain fisheries decision-making employees who judge their superiors have transformational leadership worse than those who have leaders have transactional leadership.

Fourth of the results of this study is the result of ANOVA that $F_{cal} = 86.389 > F_t = 13.29$ at significance level $\alpha = 0.01$, thus H_0 is rejected and H_1 accepted. Based on this matter, it can be concluded that there was an interaction effect between environmental leadership and cognitive ability about marine and fisheries on employees decision making.

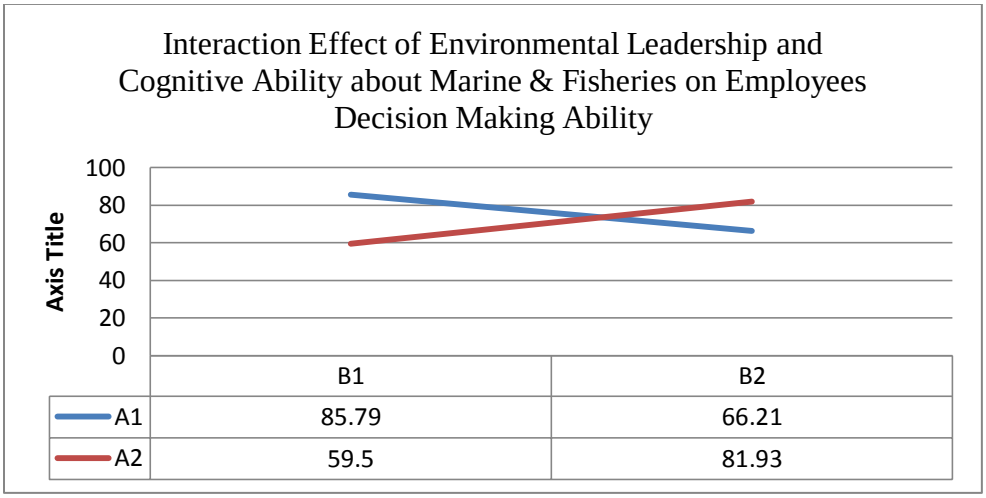

Figure 1:- Interaction Chart A X B (Environmental Leadership And Cognitive Ability variable About Marine And Fisheries To Decision Making Ability In Managing Sustainable Fisheries

Discussions:-

In the model of integration of organizational or institutional behavior, according to (Colquitt, et al 2011), leaders and employees as individuals can be assessed from individual outcomes that is job performance or behavior that contributes good or bad and organizational performance is strong or weak individual desire in the organization or institution.

Transactional leadership is the opposite of transformational leadership. Leaders use rewards and coercive power in achieving employee performance. Gary Yukl (2010) takes a more positive approach that leadership is relational and incorporates routine influences; it's all focused on creating a shared commitment to getting things done. So the process of influencing others to understand and agree on what needs to be done and how to do it, and the process of facilitating individual and collective efforts to achieve common goals.

Sustainability as a leadership principle is where leaders must have a framework for action that recognizes long-term goals, complexity and interconnected environments and the interrelationship of social issues. So that environment-oriented leadership is the ability to influence individuals and run organizations to realize the long-term vision of ecological sustainability (Gallagher, 2012).

So that can be linked leadership and decision-making manage Sustainable Fisheries is an ability to influence individuals and mobilize institutions to realize the vision of long-term ecological sustainability. Therefore,

environmentally-oriented leadership must be enforced across a wide spectrum in a variety of settings. In governmental governance, which is practiced by government officials and individuals' administration and government agencies at city/district level to State level

Capacity or cognitive ability is usually defined as intelligence. cognitive ability can also be interpreted as an understanding of knowledge or ability to gain knowledge (as what has been stated by Putrawan, 2017).

While Elliot Aronson also defined that cognitive ability is the ability to feel, think, believe and knowledgeable. A person feels, thinks and uses his knowledge to understand about themselves and the social world, as well as believers choosing, interpreting, remembering and using social infoimasi to apply in the matter of his life.

When people think about what they know about the social world, people consider the kinds of knowledge they have from their own experiences and experiences from those around them.

With that knowledge people do a habit, an action for what and how knowledge is used as a basis for processing problems, so that can be known and solved. And with a feeling, one can identify the problems it faces, depending on the knowledge that he has.

One of the factors that research has had on leadership is the personality traits that are symbolized as the identity and reputation of the leader. Environmental leadership is generally associated with a variety of managerial practices with long-term, ecologically oriented vision.

Thus, environmental leadership is generally regarded as a prerequisite for Sustainable Fisheries (Boiral et al 2009), some empirical studies have focused on styling systems and leadership abilities may affect sustainability commitments.

Transformational leadership theories are strongly influenced by McGregor Burns (1978) and it is explained that transformational leadership entices employees with moral values in trying to raise awareness of ethical issues and encourage their energy and resources to improve institutions.

According to Cognitive Psychology means that cognitive ability through observation is related to mental activity and information processing, memory and application of knowledge.

Knowing with the use of senses (through observation) is a deliberate activity that is influenced by motivation and emotion. While mental activity is reasoning, problem solving and the formation of concepts of knowledge about what is being studied.

Dworetzky (1990) in his theoretical study of cognitive abilities said that cognitive abilities were mental activities that include feeling, thinking and problem solving. Thinking was the same as the mind. Because the mind was an organic reaction as a whole a coherent unit forms a system.

According to Robbins and Judge, 2013, transactional leadership is based on Fidlers and Path Goal theories, which helps their employees achieve their goals by explaining their roles and tasks. Transformational leadership is to inspire employees to achieve self-desire for positive things for the organization and to give a strong effect on employees.

Arnold Lewis Glass also explains that cognitive ability is a mental talent such as feeling, remembering and thinking ability. Cognitive ability here is seen as an action or activity to know something in the form of conscious action, intelligent, personal intuition, rote, intellectual skill (intellectual skill) and understanding. This understanding is the basis of cognitive ability that will evolve into ability for decision-making, rational and comprehensive decisions.

Ivancevich, Konopaske and Matteson (2014) explained that defining decision-making as "the process of choosing a particular action that deals with a problem or opportunity (an alternative selection process deemed best by a person according to the problem and opportunity).

Hackman and Oldham (1980) say there are five work characteristics that can motivate employees in getting job satisfaction, one of which is; Variety is the level of variation of activities and skills required by a work holder in completing the task. Employees tend to be more satisfied with doing various jobs for work activities, including various skills and talents.

Thus, it is assumed that there is a positive direct effect of decision making on job satisfaction. In other words, the quality of decision making, affect the quality of employee job satisfaction

Conclusions:-

Based on this research, it has been found that there was a difference of employees decision making in managing sustainability fisheries between employees who perceived its management implemented a transformational environmental leadership compared to transactional. Moreover, there was also a highly significant of interaction effect between environmental leadership and employees cognitive ability on employees decision making.
Therefore, it could be concluded that employee's decision-making in managing sustainability fisheries was not simply affected by environmental leadership, but cognitive abilities about marine and fishery should be taken into account as well.

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