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State Polytechnic of Sriwijaya – Indonesia

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REMARKS FROM DIRECTOR



AssalamualaikumWaRahmatullahiWaBrakaturuh,
In the Name of Allah, the Most Beneficent, the Most Merciful
May the peace, the mercy, and the blessing of Allah be upon you.

Distinguished Participants, Ladies and Gentlemen,
On the behalf of State Polytechnic of Sriwijaya, I would like to welcome you all to the
International Conference FIRST 2016 on Renewable Energy for Sustainable
Development

Forum in Research, Science, and Technology(FIRST)is a meeting organised to accomodate researchers, academics, businessman, and government to follow up research results, to identify industry needs and to keep updated with the government policies. This forum has moved from national scale into an international conference which is conducted annually by State Polytechnic of Sriwijaya. This year, FIRST brings a theme “Renewable Energy for Sustainable Development”. It is realised that efforts to solve environmental problems that we are facing today need long term potential actions for sustainable development; And renewable energy resources is one of the most appropriate solutions. Therefore discussing about renewable energy automatically deals with sustainable development.

All papers presented in the conference are documented in proceedings. The proceeding features 71 papers divided into several fields including Environment, Biomass to Energy, Renewable Energy, Audit Energy, Technology for Energy, Design/Modelling, Economic Sustainability and Management. In brief, the relations between renewable energy and sustainable development are described with practical cases and several issues relating to renewable energy, environment and sustainable development from both current and future perspectives.

Our thanks are conveyed to the Governor of South Sumaterafor providing us direction and views related to the importance of renewable energy resources. Also appreciation and gratitude to the keynote speakers, H. Alex Nurdin, Governor of South Sumatera Province, Prof. TjandraSetiadi, Ph.D., ITB, Indonesia, and Prof. Dr. Werner Rammensee, Cologne University, Germany. Also to invited speakers,Prof. Dr. ErryYulianTriblasAdesta, International Islamic University, Malaysia, Christian Overfeld, Lucas Nuelle, Germany, Dr. Sonny Zuhuda, International Islamic University, Malaysia,Ir. Tri Mumpuni, Kementerian ESDM dan IBEKA, Indonesia, Ir. Fahrurrozi, M.Si., Business Head Chemicals Group, PT. BASF Indonesia and Head of Business Development, FederasiIndustri Kimia Indonesia ontheirpresentation related to renewable energy for sustainable development.

Further we extend deepest gratitude and high appreciation to all presenters and contributors to make this conference possible and these proceedings published. It is realised that publication of these proceedings are still far from being perfect; however, hopefully it will be useful for energy scientist, engineers, policy makers and any other readers as references for enriching their knowledge .

May God bless us all with the health to make this event a successful and enjoyable one!

Thank you.

Dr. Ing. Ahmad Taqwa, M.T.
Director of State Polytechnic of Sriwijaya

MESSAGE FROM THE CHAIRMAN

BISMILLAHIROHMANIRROHIM,
ASSALAMUALAIKUM WW.,

Good Morning Everyone

May the peace, the mercy, and the blessing of Allah be upon you.

The honorable governor of South Sumatra Province, Bapak H. Alex Noerdin
The honorable Director of State Polytechnic of Sriwijaya, Bapak Dr. Ahmad
Taqwa

Distinguishedspeakers, Presenter, Guests, and Participants,

It is my great pleasure to welcome and thank you very much for your contributions to this renewable energy conference. This conference which will take place on 18 up to 19 of October 2016, is conducted firstly this year through the initiation of Chemical Engineering Department, State Polytechnic of Sriwijaya, aims to exchange the ideas from governments, non-governmental organizations, research and academic institutions, international organizations, and industries, to learn from each other and build on successes that advance renewable energy for sustainable development.

I am very happy to inform that the committee is very lucky to have 3 keynote speakers, i.e Bapak H. Alex Noerdin, the governor of SS province, Prof. Chandra Setiady from ITB Bandung and Prof Werner Ramensee from Cologne University of Germany, who supported us from the very beginning with their capabilities to present, sharing knowledge and experiences with us here as well as the invited speaker i.e Prof. Dr. Erry Yulian Triblas Adesta, International Islamic University, Malaysia, Christian Overfeld, Lucas Nuelle, Germany, Dr. Sonny Zuhuda, International Islamic University, Malaysia, Ir. Tri Mumpuni, Kementerian ESDM dan IBEKA, Indonesia, Ir. Fahrurrozi, M.Si., Business Head Chemicals Group, PT. BASF Indonesia and Head of Business Development, Federasi Industri Kimia Indonesia.

Distinguished Guests, Presenter, and Participants,

On this special occasion, I would like to report that the conference manage to succesfully attract more than 71 academician to present their abstract, i.e from Kuwait, Germany, Algeria, Malaysia, Cambodia and of course Indonesia. Amongst others there 69 abstract to be presented in this seminar under professional selective review. And for that reason, I personally would congratulate you all as distinguished speaker to this event.

This conference has collaborated with two international journal i.e Journal of Engineering and Technological Science, ITB and Gadjah Mada International Journal of Business. All selected papers are then peer-reviewed to meet the publication standard. The peer reviewer of each manuscript is rigorous and concentrates on objective and technical concern to determine whether the research has been sufficiently well conceived, executed and described.

Excellencies, Distinguished Guests, Ladies And Gentlemen

I would also like to give special welcome to Lucas Nuelle, PT. Merck Chemicals and Life Sciences, CV. BestariSetiaAbadi, PT. BangunEnergi, PT. Ditek Jaya, PT. Bank MandiriTbk., PT. Indofood SuksesMakmur and individual who support this conference through sponsorship. I believe that we could never thank you enough for that.

Finally, I expect all participants have memorable moment through this conference and enjoy your stay in Palembang, South Sumatra Province, Indonesia. Thank you.

Sincerely
Chairman of Organizing Committee
H. Firdaus

KEYNOTE SPEAKER



H. Alex Noerdin
Governor of South Sumatera



Prof. Tjandra Setiady, Ph.D
ITB, Indonesia



Prof. Dr. Werner Rammense
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INVITED SPEAKER



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DETERMINANTS OF JOB SATISFACTION AND ITS IMPLICATION ON THE PERFORMANCE OF LECTURERS IN STATE UNIVERSITIES IN SOUTH SUMATRA

Periansya¹⁾

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Abstract. This research was motivated by researchers' intention to see how good the performance of lecturers in state universities in South Sumatra. The purposes of this research were to determine 1) the effect of competence, motivation, organizational commitment partially or simultaneously to job satisfaction, and 2) to determine the effect of competence, motivation, organizational commitment and job satisfaction partially or simultaneously and its implications to the performance of lecturers in state universities in South Sumatra. This research employed descriptive quantitative approach, using questionnaire as the instrument of data collection as well as an explanatory approach in obtaining a full picture of the phenomenon in depth. This study used sample of 355 respondents from four state universities in South Sumatra. It employed Structural Equation/Structural Equation Modeling (SEM) in the modeling analysis. The result of this research showed that the result of the whole construct exogenous significantly affect endogenous construct either partially or simultaneously. Simultaneously competence, motivation and organizational commitment had influence on job satisfaction with $R^2 = 0.63$ or 63%. Furthermore, competence, motivation, organizational commitment and job satisfaction simultaneously had effect on the performance of lecturers with $R^2 = 0.83$, or by 83%. From the contribution of each exogenous construct, factor that needed close attention in order to improve the performance of lecturers of state universities in South Sumatra was job satisfaction in the dimension of functional position promotion. The conclusion of this research was that competence, motivation and commitment were necessary to improve the performance of lecturers in state universities in South Sumatra by taking into account factors of job satisfaction as an intervening variable dimension, especially in functional position promotion.

Keywords: Competence, Work Motivation, Organizational Commitment, Job Satisfaction, and Performance of Lecturers

I. INTRODUCTION

The era of globalization and openness demand educational institution to be more innovative and creative in generating superior quality and competitive human resources. The intense competition among universities at the domestic level and foreign universities can not be avoided. Indonesia needs a good education in order to develop. In human development index at ASEAN level by UNDP, Indonesia is currently at No. 6 out of 10 ASEAN countries under the Singapore, Brunei, Malaysia and Thailand and over Myanmar, Laos, Cambodia, Timor Leste, Vietnam and the Philippines (Reuters, July 25, 2014). The indicator development index like success of health, access to knowledge and a decent standard of living are quite behind in comparison with other countries of this region and colleges in South Sumatra in anticipation to keep up with other institutions both foreign and domestic must be competitive in term of human resources, facilities and other supporting infrastructure. One of the efforts to improve the quality of university education is to provide resources in the form of faculty teaching staff as a source of student learning. The availability of

lecturers, educational staff and other support facilities will determine the success of the universities and colleges expected by public besides the role of government to provide the widest access to the public. The role of the faculty for educational success will encourage universities to make efforts to produce qualified graduates. Act No. 13/2005 on national education system and Law No. 14 in 2005 about teachers only describes education from primary education to higher education. The issuance of Law No. 12 /2012 about Higher education includes more specific about vision and mission of higher education in Indonesia. Higher Education Act No. 12/2012 article 1, paragraph 1 states:

Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners are actively developing their potential to have spiritual power of religion, self-control, personality, intelligence, character, and skills that are important for themselves, society, and nation.

Referring to the Regulation of the Minister of Education and Culture No. 49/2014 about National Education Standards of Higher Education article 1, paragraph 1 states that National Standards of Higher Education is the standard unit

includes the National Education Standards, National Standards for Research, and National Standards for Community Service. This means that central government recognizes the importance of education and this rule indicates that a lecturer should have a qualification in teaching, doing research and conducting community service.

Government Regulation (PP) No. 19/2005 about National Education Standards, article 28 states that "teachers should have academic qualifications and competence as agents of learning, physical and spiritual health, and have the ability to achieve the goal of national education". Furthermore, paragraph 14 of article 1 of Law No. 12/2012 about higher education states that lecturers are professional educators and scientists with the main task of transforming, develop, and disseminate science and technology through Education, Research and Community Service. This means that the learning process is a process of student interaction with faculty and learning resources in a learning environment so that the lecturer must be a man with certain qualifications in order to achieve a useful learning process for the students.

The presence of lecturers who do not have qualification according to the requirements of laws and the small number of lecturers with doctor title limit the progress of universities or colleges both in teaching, research and community service as well as in producing qualified graduates. The reluctance of lecturers to continue their education to a higher level due to several factors such as funds, foreign language, fear of leaving the family and their thinking that pursue higher degree is a waste of time.

One of the achievements of faculty performance can be seen from the presence in providing courses in the classroom, from the information obtained from the staff personnel at the four universities, the average lecturers reached 92. It meant teaching performance achievement was still lack of 8%. The staff personnel noted that this shortage caused by that the lecturers attended seminars both inside and outside the country, or sick so that the target 100% of teaching could not be met. In addition to lack discipline on the presence was there were many lecturers who had not got certification. Certification not only increased the level of welfare but also increased sense of pride of lecturer. From the data obtained the number of lecturers at the four state universities that did not yet have the certificate of professional educators was about 25% meanwhile the rest had already had theirs.

Realizing that there are sufficient number of lecturers who hadn't got their certification and (1) the demand of universities accountability in the era of autonomy in higher education; (2) The general public needed to know how big the quality

already achieved by the university or college; and (3) the impact of globalization required state universities to create competitive advantage with quality assurance orientation. Then university or college had to be able to create qualified lecturers as well as lecturer with the ability to do research.

Lack of performance in the field of research and dedication will affect the performance of lecturers itself so that lecturers feel dissatisfied with what he had done. Robbins (2015: 46) states that job satisfaction is defined as a positive feeling about the work of someone as the result of characteristic evaluation. Furthermore, Robbins (2015: 97) states that the people who have jobs that are congruent with the personality should be more satisfied and less risky comparee to people who have jobs that are not congruent with their personality.

This lack of work motivation and low organizational commitment has implications for educational purposes. Organizational commitment is a condition or the degree to which an employee is in favor of a particular organization and its goals, as well as the intention and maintain membership in the organization. From the description above, the researcher wanted to know whether the competence, motivation and organizational commitment effect job satisfaction and performance of lecturers.

Based on the background of above, the author was interested in conducting research entitled "Determinants of Job Satisfaction and Its Implication on Lecturer Performance in State Universities in South Sumatra.

PROBLEMS

Based on the identification and restrictions on research problems as mentioned above, the researcher formulated research problems as follows: Did competence, work motivation, organizational commitment effect job satisfaction and performance of lecturers in state universities in South Sumatra?

PURPOSES

In accordance to the formulated problems, the objectives of this study were as follows: To analyze and find empirical evidence of the effect of competence, motivation, organizational commitment on job satisfaction and performance of lecturers.

II. THEORETICAL FRAMEWORK

Great Challenges and the competition in higher education should be anticipated as early as possible in order to create young generation that is capable of competing nationally and internationally. Universities as the place of study before plunging in the world of work must create structured and continuous learning in such a way to

achieve educational goals. Achieving these objectives requires human resources as a source of learning for students. Learning resources are lecturers who are able to carry out their duties in their respective fields. Universities should be aware that competition and challenge not only in terms of facilities but how to manage the resources of the faculty. In addition to the challenges of global society, it is proper for universities and colleges in South Sumatra to be on the top 10 best universities in Indonesia. One determining factor of the success of an educational institution is in the lecturers who provide instruction to students. Lecturer as learning resource should be prepared in order to have sufficient competence in addition to factors that are not less important for increasing faculty performance like motivation of lecturers. Qualified competencies must be accompanied with motivation in order to transform knowledge to students. Lecturers should be able to produce research at national and international level. Commitment of the lecturers can hinder their performance improvement since commitment a promise to yourself in implementing the tasks. Another aspect that is also important in improving the performance of the lecturer is the job satisfaction of the lecturers such as working conditions, and wages. Working conditions need to get the most attention because lecturers devote themselves to the success of the students.

The Effect of Competence on Job Satisfaction

Paloniemi (2006: 439) in Latunani (2014) defines competency as increasingly being highlighted in working life. Furthermore, he believes that competence is crucial resource for individual, organization, and community. While Dharma (2005: 177) states that competence in the form of knowledge, skills and abilities and personal characteristics can affect one's satisfaction.

Spensers and Spensers in Nur'aini (2011: 105), suggests that the individual competencies are the characters of attitude and behavior, or the ability of individuals who are relatively stable when face situations in workplace. The concept of competence raised by Spenser and Spenser is in line with the concept in this research.

Lecturers' competence has powerful effect on job satisfaction because lecturers' competence is one important factor in higher education organization. The lecturers' competence becomes a benchmark for the success of the learning process. Thus, a teacher should have vision and qualified knowledge, skills and abilities.

This implication has the meaning that the active contribution of all stakeholders in the organization, such as students and employees as human resources also need to be taken into account. Management of large organizations that require great supporting competence so that the

university or college will be more appreciated. Another opinion Jakson *et.al* (2010: 205) states that competence is the pattern of knowledge, skills, abilities, attitudes and other characteristics that can be measured needed by somebody to do job or function properly.

Lecturers who have high competence will work in accordance with the standards of certification expertise they have so that when they get, they are able to assess the standard that has been determined in accordance with the guidelines.

Competence that suit the need of lecturers' work will create job satisfaction, high work motivation, commitment and active participation in various activities, thus it is probable that competence effect lecturers' job satisfaction.

The Effects of Work Motivation on Job Satisfaction

Motivation is the stimulation of lecturers to work better in accordance to the standards. Stimulation or encouragement can be both internal and external that provide benefits to change the attitude of lecturers in carrying out their duties and responsibilities. Ahmed Isfaq (2010) conducted a study on the motivation and satisfaction in relation to the performance and found that there were two factors that influence motivation, intrinsic factors-motivation and extrinsic motivation factors-hygiene.

Khawaja Jehanzeb (2012) examined the impact of rewards and motivation on job satisfaction in banking sector in Saudi Arabia. The study showed that (1) the remuneration had a positive effect on motivation, (2) motivation affected job satisfaction positively (3) benefits affected job satisfaction significantly and positively.

Based on the above it could be concluded that motivation played an important role in achieving job satisfaction, both in the review of the expectations and of the achievements. Thus it was suspected the motivation had effect on job satisfaction.

The Effect of Commitment on Job Satisfaction

Newstrom (2007) in Shia Tjun Han (2012) said that the Organizational Commitment could also be regarded as employee loyalty, a degree where an employee identified himself to the organization and wanted to continue to participate actively in the organization.

Affective commitment, continuous commitment and normative commitment where these three commitments related to the extent to which the lecturers involved in the organization in achieving the goals. Affective commitment is closely related to the psychological condition against organizations like how loyal lecturer for the

institution. Affection means lecturer will continue to improve competencesince he/she loves of the institution, while the continuous commitment/rational is part of the lecturers whether to survive or leave the organization.

Lecturers with high commitment would produce a performance that fit the purpose of university or college. The maximum results achieved by lecturer as a manifestation of its commitment to higher education would lead to job. Thus it was suspected that presumably commitment effected job satisfaction.

The Effect of competence, Work Motivation and Organizational Commitmentsimultaneously on job satisfaction.

Job satisfaction is basically something individual and not tied to the other. Each individual has varius level of satisfaction. The greater the expectation level is reached the more satisfied the individual will be. Lecturer in achieving the level of work satisfaction is influenced by several factors like competence, motivation and commitment.

Job satisfaction was a positive emotional attitude, enjoy and love job. As stated by Umam (2010: 192) job satisfaction were the elements of work that created or affected job satisfaction. (Robin, 2015: 132), (Gorda, 2004) Blum (in As'ad, 1998) dimensions that influenced job satisfaction consisting of: (1) the work itself, (2) wages (3) promotions (4) working conditions (5) co-workers and (6) fit between work and personality. Job satisfaction was the result of a wide variety of work-related attitudes and specific factors such as salary, promotion, job stability, tranquility work, opportunity to move forward, the assessment of fair labor, social relations at work, and superior treatment. Research conducted by Sangongu (2012), Lotunani (2009) and Azeem (2014) stated that there were influences of competence, motivation and commitment on job satisfaction.

From the opinion of the experts above and research results, it can be concluded that lecturer would feel the level of job satisfaction if six dimensions as described above could be fulfill. If any of the dimension could not be met, then work satisfaction would reduce. Thus competence, motivation and commitment were suspected to affect job satisfaction.

The Effect of Competence on Performanceof Lecturers

Competence is defined as the knowledge and skills mastered by someone and has been a part of him/her, so he/she can perform cognitive, affective and psychomotor behaviors as well as possible.

Tati Setiawati (2009) in his research titled Influence of Competence on LecturersPerformance showed that competence of lecturers affected their

performance. This suggested that if the competence affected the performance of lecturers in good category, the lecturers' performance was good.

Competence was seen as lecturer characteristic to carry out activities in the areas of teaching, research and community service. While the performance of lecturers was process in carrying out the work. Thus to achieve good performance, the faculty had to achieve optimum performance by improving the education, research and dedication.

This was in line with several studies conducted by Nur'ani (2011), Maryadi (2009) which stated that there was a positive and significant impact on the performance of lecturers' competence. Performance impacted on the competence or otherwise if it met all of the indicators. Based on the explanation above it was suspected that competence had effect on performance of lecturers.

The Effect of Work motivation on Performance of Lecturers

Research conducted by Mc.Clelland developed by David McClelland (Robbins 2015:132) and his colleagues looked at three needs: the need for achievement (nach) was the drive to achieve, for the achievement of related standards, the need for power (nPow) was the need to make others behave in a way that would not do without him and the need for affiliation (Naff) was the desire to be connected with full friendship and close interpersonal.

Work motivation could be influenced by several reasons such as awards, work atmosphere and job competencies and therefore the motivation of lecturers influenced by self-interest against the hope to achieve. Achievement of the expectations and desires of lecturers generally triggered because of the intrinsic and extrinsic trigger of the lecturers.

Research conducted by Afriani (2009), Rahman (2012), stated that there was influence of work motivation on the performance of lecturers. Work motivation of lecturer caused more by the individual in perceiving their work, the grace and the mandate given to them. Lecturers who had high motivation to continue to work hard to overcome any problems and hope of achieving better working results. The study found that motivation tended to be individual. For that itwas suspected that performance effected work motivation of lecturers.

The Effect of Organizational Commitment onPerformance of Lecturers

Griffin (2006: 211) stated that an individual who had a high commitment was likely to see himself as a true member of the organization. Robbins (2015: 46) A review of 27 studies claimed that the relationship between commitment and most powerful performance in new workers and weaker

in experienced workers. The theoretical model stated that lecturers who had high commitment would less involve in resignation, even if they were not satisfied, because they had the sense of loyalty to the organization.

Results of research conducted Sadozai (2013) stated that the work ethic would moderate the relationship between organizational commitment. Furthermore, the results of research Nur'aini (2011) on the commitment of lecturers PTS in Southern Sumatra showed the commitment of lecturers were good and had influence on the performance of lecturers. Variable commitment directly contributed to the performance of lecturers.

High commitment of the lecturers could improve competitive advantage in university or college both at nasioanl and in global competition. Commitment of the lecturers and other academic community would be a force in achieving strategic plan that had they planned. Thus, the work commitments were suspected to have effect on the performance of lecturers of the state universities in South Sumatra.

The Effect of Job Satisfaction on the Performance of Lecturers

Robbins (2015: 49) stated that job satisfaction was a positive feeling towards work that results from the evaluation of wide range of characteristics. Job required interaction with colleagues and bosses, pursuance to the rules and policies of the organization. Robins (2015) stated that some researchers used to believe that the relationship between job satisfaction and performance was a myth. But a review of 300 studies said the correlation was strong enough. When we moved from the individual level to the organization we found support for job satisfaction relationship. It was found that organizations with more employees were more satisfied and tended to be more effective compared to organizations with fewer employees.

While job satisfaction itself was actually a reflection of the attitude of employees towards work and its environment that could be measured by looking at aspects of employment using satisfaction Minnesita Questionnaire (MSQ). The study of various aspects of work activities, independence, diversity, social status, human relationships of superiors, technical capabilities superiors, moral values, security, social services, authority, usability capabilities, reward, institutional policy, promotion, responsibility, creativity, working conditions, coworkers, recognition and pride could find out how much the level of satisfaction a lecturer. Research conducted by Desamen (2013) revealed that motivational variable directly effected Thus it was suspected that job satisfaction affected performance of lecturers.

researched, as proposed by sekaran (2003:

The Effect of Organizational Commitment and job satisfaction Lecturer Simultaneously on the Performance of Lecturers

Motivation and lecturers' performance could be interpreted as a measure of success or achievement over the job that had been implemented. This was in accordance with the opinion of Umam (2010: 16) who stated that the performance was a record of the effects produced on a job function or activity for a certain period associated with organizational objectives Employee performance was defined as the work of someone's employee, a management process or an organization as a whole, where the results of the work had to be shown concrete and measurable evidence (compared to the standard that has been determined according to the results of the work).

Lecturers' performance in an institution would be a benchmark for the success of the institution, the higher the level of competence of the faculty, the higher faculty performance in carrying out its core functions, such as teaching, research and community service. Their high competence had to be balanced with a strong motivation or encouragement from lecturers to continue to serve the institution.

HYPOTHESIS

Hypothesis in this research were the temporary answer of problems 1 to 9. Based on the above theoretical framework, the hypothesis of this research were as follows: Competence, motivation, organizational commitment and job satisfaction partial and simulteneously effected the performance lecturers in state universities in South Sumatra?

III. METHOD

This research employed quantitative research approach. This meant that the data and analysis were based on figures which were then calculated statistically, so that the meaning and result inference were also based on the results of statistical analysis. The method was explanatory research method. Explanatory research is a research method used to obtain the description, a systematic picture, factual and accurate facts, as well as the nature of the meticulous relationship among variables (Sekaran and Bougie, 2011: 123).

The unit of analysis of this research was the individual of the lecturers of state universities in South Sumatra. Viewed from time horizon, this research was cross sectional meaning that information on the part of the population (respondent sample) was collected at the scene empirically, in order to know the opinion of the majority of the population to the object being

161).

Operational variables

Operational variable definition was intended to clarify the variables to be studied. The subjects of this study were:

1. Competence (1) as independent variable
2. Motivation (2) as the independent variable
3. Organizational Commitment (3) as independent variable.
4. Job satisfaction (1) as intervening variable.
5. Performance lecturer (2) as the dependent variable.

Population refers to the entire group of people, events, or objects that interest researchers to

examine (have now, 2010: 262). The population (unit of analysis) of this research was lecturers of University of Sriwijaya, Raden Fatah State Islamic University, State Polytechnic of Sriwijaya and Sriwijaya Health Polytechnic.

So in this study the number of lecturers used as sample were 335 respondents consisted of four state universities by dividing proportional random sampling.

The modeling approach and techniques used as tools of analysis in this dissertation was Structural Equation Model (SEM) and Software LISREL. The reason of the use of this method was the ability to measure the construct indirectly, i.e. through the indicators and simultaneously analyze the indicator variables and latent variables.

FINDING

Full model equations using the SEM program LISREL 8.70 trajectory diagram obtained two

models, ie standardized models and models of t-values, each model as shown in the following figures:

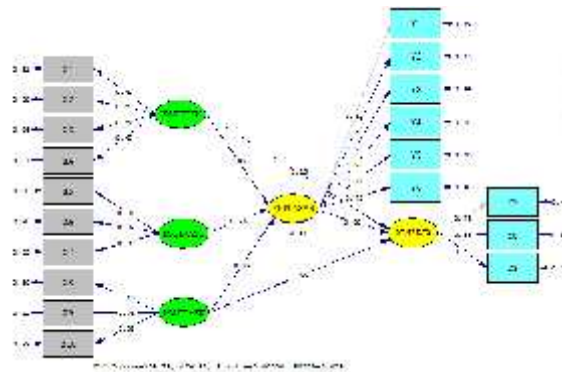


Figure 1 Structural Model (Standardized Model)

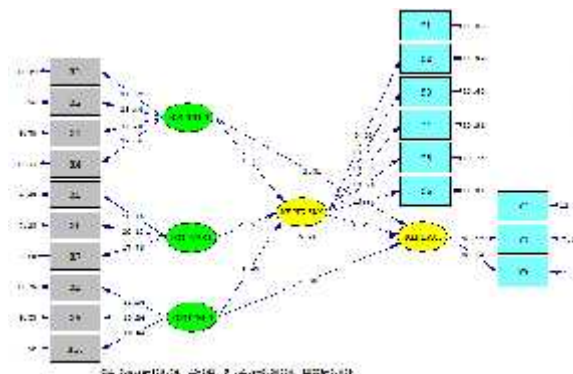


Figure 2 Structural Model (t-value Model)

Based on Figure 1 and Figure 2, the calculation was presented on the next test parameter (loading factor / coefficient dimensional) structural model of exogenous and endogenous. This test was intended to determine the causal relationship or influence the latent variables to other latent variables, a strong indicator of whether or not each of the latent

variables (constructs).

IV. DISCUSSION

The Effect of Competence on Job Satisfaction

This section tested hypotheses about the influence of exogenous variables Competence (1) against endogenous variable Job Satisfaction (1).

Based on Figure 1 and Figure 1 above, it turned out tcount of competence effect on job satisfaction was $4.62 > 1.96$, so it could be said to be significant, thus competence had positive and significant effect on job satisfaction of lecturers in state universities in South Sumatra. The effect was 0.35, meaning that the better the faculty competence of lecturers, the higher job satisfaction would be, thus the first hypothesis was accepted. Results of testing the first hypothesis of this study was in line with the results of Nur'aini (2011), who proved through researches that the level of competence of lecturers significantly effected job satisfaction.

The dominant indicators were professional competence (X2), while the dominant indicator of job satisfaction was the satisfaction of a promotion (Y3). This was the findings in this study that the competency of the lecturers, especially in the dimension of professional competence was able to increase job satisfaction, especially in the dimension of satisfaction with the promotions they had.

Professional competence was the mastery of broad and deep subject matter, design, implement and conduct research, and community service. For example, a lecturer mastered the competencies and were able to carry out continuous research and community service and were able to actualize knowledge to students and the wider community.

The Effect of Work Motivation on Job Satisfaction

This section tested hypotheses about the influence of exogenous variables Motivation (2) against endogenous variable Job Satisfaction (1).

Based on Figure 2 and Figure 3 above, the tcount of influence on Job Satisfaction Motivation was $2.97 > 1.96$, so it was said to be significant, thus the motivation positively and significantly affected job satisfaction of lecturers in state universities in Sumatra South.

The major direct influence work motivation on job satisfaction was 0.26, meaning that when lecturers working motivation increased, job satisfaction would increase, thus the second hypothesis was accepted. Results of testing the hypothesis 2 were consistent with the results of Lotunani (2014), Dhermawan (2012) who proved through his research that motivation positively related to job satisfaction. The workers would increase their satisfaction if the working conditions also rose.

Likewise, the results of testing this hypothesis was consistent with the results from Ahmed (2010) who argued that intrinsic motivation had positive influence job satisfaction. The indicators that made up the predominant motivation was the need for power (need achievement power)

(X6), while the indicator of the dominant form of job satisfaction was the satisfaction of a promotion (Y3). This resulted in a finding that motivation of lecturers, especially in the dimension of the power needs (need achievement power) could improve job satisfaction, especially in the dimension of satisfaction with the promotions they had.

The Effect of Organizational Commitment on Job Satisfaction

This section tested hypotheses of the effect of exogenous variables Commitment (3) against endogenous variable job satisfaction (1).

Based on Figure 1 and Figure 2 above, the tcount of the effect of organizational commitment on job satisfaction was $3.48 > 1.96$, so it was said to be significant, thus the organizational commitment had significant and positive effect on job satisfaction of lecturers. The major direct effect of organizational commitment on job satisfaction was 0.32, meaning that the higher organizational commitment, the higher the job satisfaction would be, thus Hypothesis 3 was accepted (see Table 5.24). Results of testing the hypothesis 3 were consistent with the opinion of walton cited by Brown, Hithcock and Willard (2004) that the strategy of the organizational commitment as an approach that was rewards in managing resources. The high organizational commitment to the job would make lecturers work optimum. The previous study conducted by Ariyasa (2004) stated that organizational commitment affected job satisfaction of high school teachers in the district of Karang Asem. Variable of teacher professional development became the dominant factor affecting job satisfaction of teachers.

The dominant dimensions of variable organizational commitment was normative commitment (X10), while the dominant dimension of Job satisfaction was on promotion (Y3). It became the finding in this study that organizational commitment of lecturers especially in the dimension of normative commitment would increase job satisfaction especially in the dimension of satisfaction on promotion.

The Effect of Competence, Work Motivation and Organizational Commitment Simultaneously on Job Satisfaction

This section tested the hypothesis about the effect of exogenous variables Competence (1), Motivation (2) and organizational commitment (3) simultaneously on endogenous variable job satisfaction (1). Results obtained by using 8.70 lisrel program for structural equation models, according to the proposed hypothesis could be seen in structural equation 1 below.

$$\text{KEPUASAN} = 0.35 \cdot \text{KOMPETEN} + 0.26 \cdot \text{MOTIVASI} + 0.32 \cdot \text{KOMITMEN}, \text{Errorvar.} = 0.37, R^2 = 0.63$$

(0.075)	(0.087)	(0.090)	(0.081)	(0.003)
4.62	2.97	3.48	5.40	185.26

Based on structural equation 1 above, the magnitude of loading factor (coefficient lines) variable Competence on Job Satisfaction was 0.35, the amount of loading factor (coefficient lines) variable Motivation on Job Satisfaction was 0.26 and the magnitude of loading factor (coefficient lines) variable Commitment on Job Satisfaction was 0.32.

Based on the equation 1, Figure 2 above, the value of F_{account} of Competence, Motivation and Organisational Commitment simultaneously on Job Satisfaction was $185.26 > 3.84$ ($F_{\text{account}} > 3.84$), so it was said to be significant, thus competence, work motivation and organizational commitment simultaneously had positive and significant effect on job satisfaction, thus the fourth hypothesis was accepted. The contribution of competence, motivation and organisational commitment on job satisfaction was 63%, the remaining 37% was influenced by other factors, such as organizational culture, career development, leadership, and many other factors for further research to find out. Thus we could conclude that job satisfaction, especially in the dimensions of job satisfaction on promotion (Y3) was positively effected by competence, especially in the dimensions of professional competence (X2), Motivation especially in the dimension of the power need (X6) and commitment especially the dimension of normative commitment (X10). But partially competence had the most dominant influence on Job Satisfaction. This result showed that in performing job, lecturers were dominated by competence variable.

The Effect of Competence on Performance of Lecturers

This tested hypothesis of the effect of exogenous variable competence (1) against endogenous variable lecturers' performance (η_2).

Based on Figure 1 and Figure 2 above, t_{count} of competence on performance of lecturers was of $2.51 > 1.96$, so it was said to be significant, thus competence positively and significantly effected on the performance of state university lecturers in South Sumatra. The major direct effect of competence on performance of lecturers was 0.15, meaning that when the competence of the lecturers increased, job satisfaction increased too. Thus Hypothesis 5 was accepted. The testing result of the hypothesis 5 was in line with the results of research conducted by Mochammad D Munir Rahman (2012) which stated that there were positive direct effect on the performance of the lecturers on intellectual, individual lessons and internal focus of control. Likewise, the result of

testing was in line with the results of Nur'aini (2011) which stated that motivation, competence and commitment had significant effect on the performance of lecturers. The dominant indicator was dimension of professional competence (X2), while the dominant indicator of lecturers' performance was the dimension of service to the community (Y9). It became the findings in this study that the competence of lecturers, especially in the dimension of professional competence improved the performance of lecturers especially in the dimension of community service.

The Effect of Motivation on Performance of Lecturers

Based on Figure 1 and Figure 1 above, t_{count} of motivation effect on lecturers' performance was $3.34 > 1.96$, so it was said to be significant, thus Motivation positively and significantly effect on performance of lecturers. The major direct effect of motivation on performance of lecturers was 0.31, meaning that the more motivated the lecturers, the high the performance would be. Thus Hypothesis 6 was accepted. Testing result of hypothesis 6 were consistent with the results of Lumaknulhakim, (2011) that the two independent variables, namely the competence and motivation had significant positive effect on the performance of lecturers. The results of this study found that motivation was built through power need (X6) could improve the performance of lecturers built by community service (Y9). Power need encouraged lecturer to continue working in the state universities, and tended to improve community service.

The Effect of Organizational Commitment on Performance of Lecturers

This section tested hypotheses about the effect of exogenous variables of organizational commitment (3) against endogenous variable performance of lecturer (η_2). Based on Figure 1 and Figure 2 above, the value of t_{account} of the effect of organizational commitment to performance was $2.90 > 1.96$ so it was significant. Thus the organizational commitment significantly effected performance. This meant that the higher the organizational commitment of lecturers, the higher the performance would be. Thus hypothesis 7 was accepted. This finding was line with Etta, et al (2009) who conducted study on the influence of organizational culture and organizational commitment that led to job satisfaction and its impact on performance.

The high organizational commitment

would make lecturers university or college regulation. This would make lecturers work optimal so that the performance was also high.

The Effect of Job Satisfaction on Performance of Lecturers

Based on Figure 1 and Figure 2 above, the value t of the effect of job satisfaction on lecturers' performance was $5.20 > 1.96$, so it was significant. The major direct effect of lecturers' performance on job satisfaction was 0.39, meaning that the higher job satisfaction, the higher performance of lecturers. Thus hypothesis 8 was accepted. Testing results of hypothesis 8 were consistent with the results of Maryadi (2009) who explained that the significant effect of job satisfaction on the performance of private university lecturers in Surabaya. The results of the above analysis resulted

$$\text{KINERJA} = 0.39 \cdot \text{KEPUASAN} + 0.15 \cdot \text{KOMPETEN} + 0.31 \cdot \text{MOTIVASI} + 0.22 \cdot \text{KOMITMEN}, \text{Errorvar.} = 0.17, R^2 = 0.83$$

(0.083)	(0.070)	(0.067)	(0.083)	(0.051)	(0.002)
	5.20	2.513.34	2.90	6.43	392.40

Based on structural equation 1 above, the magnitude of path coefficient of competence on performance of lecturers was 0.15, the path coefficients of motivation on performance of lecturers was 0.31, the coefficient lines of commitment on performance of lecturers was 0.22 and the magnitude of path coefficients Job satisfaction on the performance of lecturers was 0.39.

Based on the equation 2, Figure 1 and 2 above, the value of F of the effect of competence, motivation, commitment and job satisfaction simultaneously on performance of lecturer was $392.40 > 3.84$ ($F_{\text{account}} > 3.84$), so it was significant, thus competence, motivation, organizational commitment and job satisfaction simultaneously positive and significant impact on the performance of lecturers of state universities in South Sumatra. Thus hypothesis 9 was accepted. The major contribution of competence, work motivation, organizational commitment and job satisfaction on performance of lecturers was 83%, the rest of 17% influenced by other factors such as organizational culture, career development, leadership, and other factors for further research to find out.

Thus we concluded performance of lecturer was positively affected by competence, motivation, commitment and job satisfaction. But organizational commitment partially had the most dominant effect on the performance of lecturers. Testing result of the hypothesis 9 this study was consistent with the results Maryadi (2009), Nur'aini (2011) which stated that motivation and job satisfaction effected performance of lecturers. Likewise, results of this test complements the results of research Argensia (2014), which stated that motivation, job satisfaction and employee performance with

in a finding that job satisfaction established by the satisfaction of a promotion (Y3) could improve the performance lecturer built by Community Service (Y9). This meant that if lecturer satisfied mainly in satisfaction with the promotion, then the lecturers' performance would increase too, especially in carrying out community service.

The Effect of Competence, Motivation, Commitment and Job Satisfaction Simultaneously on Performance of Lecturers

Results obtained by using 8.70 lisrel program for structural equation models, according to the proposed hypothesis was in structural equation 2 below.

moderation of commitments had positive and significant effect.

Direct and Indirect Effect

The indirect effect of competence on performance of lecturers by job satisfaction was $0.35 \times 0.39 = 0.1365$, but direct influence of performance of lecturers on competence was $0.15 \times 0.15 = 0.0225$, or had contribution of 2.25% so that competence could improve performance of lecturers when the satisfaction employment was 13.65% (partial mediating).

Indirect effect of work motivation on the performance of lecturers by job satisfaction as a mediating variable was $0.26 \times 0.39 = 0.1014$ or indirect effect of motivation on performance of lecturers by job satisfaction was 10.14%, while the direct effect of work motivation on performance of lecturers was $0.31 \times 0.31 = 0.0961$ or having a contribution of 9.61% so motivation improved performance of lecturers when job satisfaction was 10.14% (partial mediating).

The indirect effect of organizational commitment on the performance of lecturers through job satisfaction was $0.22 \times 0.39 = 0.0858$ or contributed 8.58%, while the direct effect of organizational commitment on faculty performance of 0.22² was 0.0484 or had a contribution of 4.84%, so organizational commitment improved the performance of lecturers by 8.58% by job satisfaction (partial mediating).

V. Conclusions

Based on the analysis of testing and discussion, the managerial implications of the research are as follows:

1. Research findings showed that competence, motivation and organizational commitment of lecturers in state universities in South Sumatra had significant and positive impact on job satisfaction. So that the dimensions of the third variable need to be considered and enhanced to improve it. To improve job satisfaction, empirical evidence showed that it was necessary to increase the competence, motivation and organizational commitment. Job satisfaction lecturers of the universities in South Sumatra, especially in the dimension of normative commitment would increase if the lecturers in were able to improve their competence, especially in the dimensions of professional competence, capability of improving organizational commitment, especially in the dimension of normative commitment and increase the motivation especially in the dimensions of power needs.
2. Research findings showed that competence, motivation, organizational commitment, and job satisfaction had positive and significant impact on the performance of lecturers. So that the dimensions of the four variables need to be considered and improved in order to improve the performance of lecturers. To improve the performance, empirical evidence showed that it was necessary to increase the competence, motivation, commitment, and job satisfaction Lecturer. Performance especially in the dimension of community service would be able to be increased if lecturers were able to increase job satisfaction, especially in the dimension of satisfaction with the promotion. Then job satisfaction would increase if lecturers were capable of increasing competence, especially in the dimensions of professional competence, capable of improving organizational commitment, especially in the dimension of normative commitment and increasing the motivation especially in the dimensions of the power needs.

Suggestions

1. To improve the performance of lecturers in carrying out their work, it is 17% comprising other factors like organizational culture, career development, career path, leadership, or there may be other factors other than the ones discussed in this research have the dominant influence to improve the performance of lecturers.
2. In this study the variable of job satisfaction as mediating variables of competence, motivation and commitment variables to the performance of lecturer. Next researcher can have additional intervening variables on performance like variables of trust or work

discipline. So that the results will be different and more comprehensive.

3. The results of this research can also be applied to other institutions, such as private colleges and public service sector. It is also expected that this research will be continued with different objects, so that the benefits of this research will be more.

REFERENCES

- [1] Ahmed isfaq, Effects of Motivational Factors on Employees Job Satisfaction a Case Study of University of the Punjab, Pakistan, *ijbm*, vol 5 No.3 March 2010.
- [2] As'ad, M. *Psikologi industri :Seri ilmu Sumber Daya Manusia*, Yogyakarta : Liberty. 2003.
- [3] Afriani Fajar, Pengaruh Kompetensi, Motivasi, dan Kepemimpinan terhadap Efektivitas Kerja. *Bisnis & Birokrasi, Jurnal Ilmu Administrasi dan Organisasi*, Jan—Apr 2009, Volume 16, Nomor 1, 2009.
- [4] Azeem Mohammad syed, Job Satisfaction and Organizational Commitment among Public Sector Employees in Saudi Arabia. *International Journal of Business and Social Science*. Vol.5, No. 7; June 2014.
- [5] Dharma, S. *Manajemen Kinerja*, Jakarta, Pustaka Pelajar, 2005.
- [6] Dhermawan, A.A. *Motivasi, Lingkungan Kerja, Kompetensi terhadap kepuasan kerja dan kinerja pegawai di Lingkungan Kantor Dnas Pekerjaan Umum Bali*, *Jurnal Manajemen, Strategi Bisnis dan Kewirausahaan* Vol.6, No.2, Agustus 2012.
- [7] Fajar Maya Sari, Pengaruh Kompetensi Dan Lingkungan Kerja Terhadap Kepuasan Kerja Dan Kinerja Guru Di Sd Negeri Kecamatan Gondang Mojokerto, *DIE, Jurnal Ilmu Ekonomi & Manajemen*, April 2013, Vol. 9 No.2. hal. 137–153, 2013.
- [8] Griffin. R.W, Ronald J Ebert, *Bisnis, Edisi kedelapan*, Penerjemah: Sita Wardani, Jakarta, PT. Gelora Aksara Pratama, 2007.
- [9] Lotunani, A, M.S Idrus, The Effect of Competence on Commitment, Performance and Satisfaction with Reward as a Moderating Variable (A Study on Designing Work plans in Kendari City), *International Journal of Business and Management Invention*, Volume 3 Issue 2 February. 2014 PP.18-25, 2014.
- [10] Jackson, Schuler, Werner, *Pengelolaan Sumber Daya manusia*, Edisi 10, Penerjemah Benny Prihartanto, Jakarta, Salemba Empat, 2010.
- [11] Kemdiknas, Permendikbud, Pedoman tentang jabatan fungsional, download www.polsri.ac.id, 2014
- [12] Khawaja J, *Impact of Rewards and Motivation on Job Satisfaction in Banking Sector of Saudi Arabia*, *International Journal of Business and Social Science*, Vol.3 No. 21 November 2012.
- [13] Rahman M. Munir, *Pengaruh Kemampuan Intelektual Pembelajaran Individual dan Internal Locus of Control Terhadap Kompetensi dan Kinerja Dosen (Studi Prodi Manajemen Terakreditasi B pada Universitas Swasta di Surabaya)*, *Majalah ekonomi Universitas Airlangga*. Tahun XXII, No. 1 April 2012. 2012.
- [14] Robbins, Stephen P. and Timothy A. Judge, *Organizational behavior*. Singapore: Parson international, 2009.
- [15] Robbins, Stephen P. and Timothy A. Judge, *Prilaku organisasi*, Edisi 16, Penerjemah Ratna Saraswati dan F. Sirait Jakarta, Salemba Empat, 2015.
- [16] Sekaran, U., dan C.R. Snodgrass, *A model for Examining Organizational Effectiveness Cross-Culturally*, *Advances in International Comparative Management*, Vol. 2, 211-232. 2011.
- [17] Sadozai A.M, M and Yusuf K.M, *Moderating Role of Islamic Work Ethics between the Relationship of Organizational Commitment and Turnover Intentions: A*

- Study of Public Sector of Pakistan*.Mediterranean Journal of Social Sciences Vol 4 No 2, Published by MCSER-CEMAS-Sapienza University of Rome, 2013.
- [18] Sia Tjun Han, *Komitmen Afektif dalam Organisasi yang dipengaruhi Perceived Organizational Support dan Kepuasan Kerja*, Jurnal Manajemen dan Kewirausahaan Vol 14 No.2 September 2012.2012
- [19] Maryadi, *Pengaruh Motivasi,Diklat, Iklim Organisasi, Kompetensi, Kepuasan Kerja Terhadap Kinerja Dosen Perguruan Tinggi Swasta Kopertis Wilayah VI Jawa Tengah*, Jurnal Ilmu PendidikanVol.16 No.1, 2009, Universitas Negeri Malang, 2009.
- [20] Nur'aeni, *Pengaruh Motivasi, Kompetensi dan Komitmen Terhadap Kinerja Dosen Perguruan Tinggi Swasta di Kopertis Wilayah II Palembang*, Jurnal Manajemen dan Bisnis Vol.I No.2 April 2011 :101-129, 2011.
- [21] Nongo E.S and Darius N.I, *The Influence of Corporate Culture on Employee Commitment to the Organization*, *International Journal of Business and Management*, dx.doi.org /10.5539/ijbm.v7n22p21..2012.
- [22] Umam, Khaerul, *Perilaku Organisasi*. Bandung: Pustaka Setia. 2010.
- [23] Tati Setiwati, *Pengaruh Kompetensi Kerja Terhadap Kinerja Dosen (Studi Kasus di FPTK UPI)* Jurnal Teknologi Pendidikan, Vol 10 No.2,Oktober 2009.
- [24] -----, UU No.12 Tahun 2012, *Pendidikan Tinggi Indonesia*, download, www.Dikti, go.id.2012
- [25] -----, UU No.14 Tahun 2005, *Guru dan Dosen*, download, www.Polsri.ac.id.2005.
- [26] -----,UU No.13 Tahun 2003,Sisdiknas. 2003.
- [27] -----,Permendikbud No.19 Tahun 2005,Standard Nasional Pendidikan. 2005



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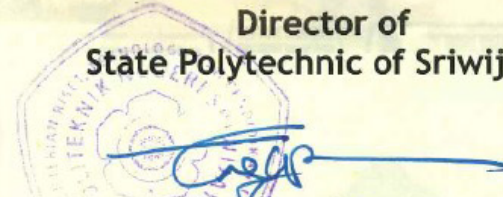
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