FACTORS AFFECTING SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES: A CASE OF UNIVERSITIES IN VIETNAM

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ABSTRACT

Nowadays, Vietnam universities have identified scientific and technological activities as the foundation and motivation of all activities. Vietnam universities make well-implemented scientific. And university needs to apply technological activities to improve the qualifications, quality of lecturers, and scientists. The development of scientific and technological activities is the motivation and means to improve the quality of training. Therefore, the main objective of this paper was to find out the key factors affecting the scientific and technological activities of universities in Vietnam. The researchers surveyed 500 scientists who are working for Vietnam universities. The researchers applied a simple random sampling technique. The researchers had tested Cronbach's Alpha, the exploratory factor analysis, and Structural Equation Modelling (SEM). The paper used a questionnaire on a 5-point Likert scale. Finally, five key factors were affecting the scientific and technological activities of universities in Vietnam with a significance level of 0.01.

Keywords: Science, Technology, Scientific Research, University, Vietnam.

INTRODUCTION

In recent years, scientific and technological activities of universities in Vietnam have been increasingly focused on investment, contributing to improving the quality of training. Vietnam universities have been facing the requirements of the radical and comprehensive renovation of education and training. Scientific and technological activities of universities changed to better stick to the practical situation. Besides, this activity contributes to improving the quality of training and fostering talents for innovation (Bozeman, 2011). At the same time, it creates intellectual products to contribute to promoting production, technological innovation, improving productivity and product quality of industries, and localities. Besides, the training objective is from providing the primary knowledge to help students to promote their capacity and quality. Scientific and technological activities in universities play an even more critical role. Students need to experience scientific research activities to practice thinking methods and practical problem-solving skills (Lee, 2008). Science and technology activities have contributed to training a large number of qualified and human resources who are working in different industries and fields. The contingent of domestic technicians has been able to master technology, implement many large and complex technical works that are contributing to the socio-economic development of the country. Above

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mentioned things the main objective of this article is to find out various factors affecting scientific and technological activities of universities in Vietnam.

LITERATURE REVIEW

Scientific and Technological Activities (STA)

Science understood as something that has been thoroughly researched and verified by the process of applying scientific ideas, principles, and methods to find new knowledge to model. Description, explanation, or prediction of objects and phenomena in the objective world are enriching scientific knowledge (Kendagor, 2012).

Technology is a collection of methods, processes of skills, know-how, tools, and means that change the state for nature and appearance of raw materials. Materials are in the production process to create a finished product. Therefore, it should be associated with the technology we often hear of phrases such as chains, technological processes, technological equipment (Kraut, 2010). Based on an overview of the concept of science and technology, we can see that two separate areas are incredibly intimate and mutually supportive. It said that scientific and technological activities are a collection of systematic and creative activities aimed at developing a treasure of knowledge related to people, nature, and society to use such knowledge. It is to create new applications that support life and living (Print, 2012). In Vietnam, the activities of science and technology include scientific research, technological research and development, scientific and technological services, activities of promoting innovations, technical innovations and integrations for production chemistry and other activities to develop science and technology.

Perception of Facilities and Working Environment (PFE)

Facilities and working environments evaluated critical factors for research activities and the application of research results: facilities and working environments considered as motivational factors for conducting the projects and studies. Facilities and working environments need to meet for researchers such as documents, databases, equipment, laboratories, and working rooms (Ramsden, 2016). Besides, the equipment, including laboratories, laboratory instruments for essential research activities, inadequate equipment, limit the implementation of the research (Ramsden, 2016). Finally, the researchers need to support the coordination of unit leaders, colleagues, and people who are always crucial things because these are the supportive actors, providing information and the subject of applying the research results serving the development of new areas in scientific and technological activities (Richard, 1985). Therefore, the following hypothesis built.

> *Hypothesis H1: Facilities and working environment have a positive impact on the scientific and technological activities of universities in Vietnam.*

Perception of the Research Capacity of Scientists (PRC)

The scientific research capacity of scientists is the ability to create, discover new knowledge, new technologies, and provide effective and practical solutions. Scientists have high professional qualifications that have broad knowledge about the field they are studying. Scientists have combined with the experience and skills accumulated during the research (Reskin, 2013).

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Scientists can shorten the time to orient the topic. Besides, the research capacity of scientists is research skills, computer skills, foreign languages (Slaughter, 2013). Therefore, this criterion has always been considered as a foundation to promote scientific research and the importance of criteria for scientific and technological activities of universities (Rouban, 2009). Therefore, the following hypothesis built.

Hypothesis H2: Research capacity of scientists has a positive impact on the scientific and technological activities of universities in Vietnam.

Perception of the Motivation of Scientist (PMS)

Research motivation is one the concept is hard to grasp and define in a convenient way correct. However, this is a topic that appears much in the study of the scientific and technological activities at universities (Whitley & Frost, 2010). Every study has dynamic notions of research force from a separate angle. In this study, the Perception of the motivation of a scientist understood as voluntary, longing, effort work that helps researchers achieve their goals and thus contribute to achieving the organization's goals (Wanner, 2012). Besides, scientists' motivations are to participate in the scientific and technological research activities that evaluated through many criteria such as the goal of improving professional qualifications and developing research capacity, passion, income sources, and reputation enhancement are assessed very differently through scientific researchers. Therefore, the following hypothesis built.

Hypothesis H3: Motivation of scientists has a positive impact on the scientific and technological activities of universities in Vietnam.

Perception of Administrative Procedures (PAP)

Perception of administrative procedures understood as the project/project review and acceptance procedure is a group of factors that determine whether a project implemented and applied to the research results. Complicated and cumbersome procedures for reviewing and accepting projects that prolong the implementation time as well as delay the application of the scientific and technological research activities results (Volkwein, 2014). Besides, the criteria for transparency of the topic/project review process evaluated by scientists. Transparency needs to be done continuously and seamlessly not only from the input process but also through monitoring and inspection steps to minimize risks for broad projects/topics. It is a difficult problem to implement and highly applicable in science (Reskin, 2013). There is a more straightforward administrative procedure; there are scientists to participate more in science and technology activities. Therefore, the following hypothesis built.

Hypothesis H4: Administrative procedures have a positive impact on the scientific and technological activities of universities in Vietnam.

Perception of Income Policy (PFP)

Income policy is one of the groups of factors that play a critical role in the research. Income policy helps scientist’s application of the scientific and technological activities of universities in Vietnam and the application of research results for practicum (Taylor, 2011). Besides, income policy needs to improve policy for the scientific and technological activities of universities in Vietnam, the most difficult and most headache problem for universities as well as universities are

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that the income of a young lecturer is too low, much lower than the income of many other professions (Rowley, 2015). This factor is making them unable to live on their salaries. Reasonable expense norms also encourage scientific research activities, avoid spending a lot on stages in the pre-research stage, and then lack funding for finishing and reporting research results (Upali, 2015). Therefore, the following hypothesis built.

Hypothesis H5: Income policy has a positive impact on the scientific and technological activities of universities in Vietnam.

The authors support the research model for various factors affecting the scientific and technological activities of universities in Vietnam (Figure 1).

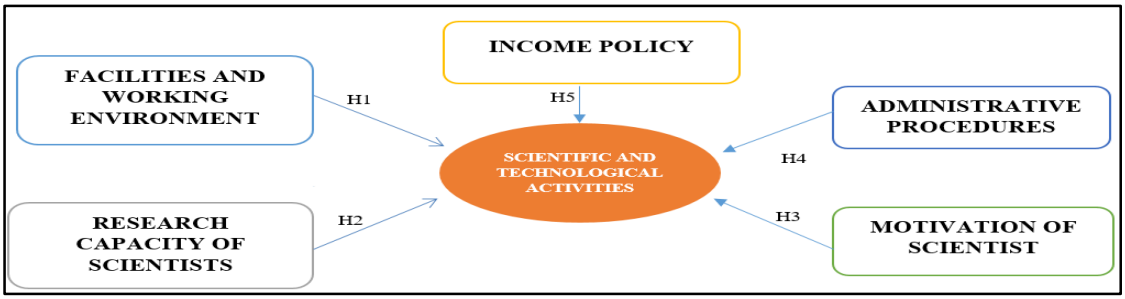

FIGURE 1
RESEARCH MODEL FOR FACTORS AFFECTING THE SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES OF UNIVERSITIES IN VIETNAM

METHODS OF RESEARCH

The authors support the research process for various factors affecting the scientific and technological activities of universities in Vietnam.

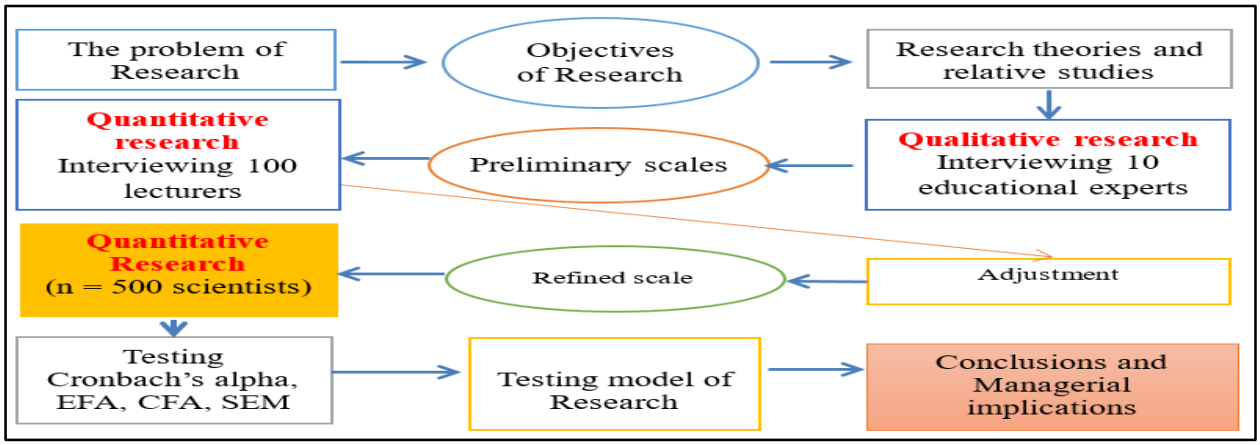

FIGURE 2
RESEARCH PROCESSING FOR FACTORS AFFECTING THE SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES OF UNIVERSITIES IN VIETNAM

Figure 2 showed that various factors affecting the scientific and technological activities of universities in Vietnam having many steps following:

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Step 1: The problem of research: It is one of the first steps in developing a scientific research topic that is to select a topic of scientific and technological activities. The problem of research usually chosen through experience and accumulated knowledge. It is in the context of professional requirements, the management, or the practical needs of society.

Step 2: The researchers identified the objectives of the research. The researchers found the objectives of research that found various factors affecting the scientific and technological activities of universities in Vietnam (Hair et al., 1998).

Step 3: Based on step 2, the researchers identified the research theories and relevant studies.

Step 4: Qualitative research for interviewing 10 educational experts. Based on 10 experts' consultation about education. The researchers built preliminary scales and applied the expert methodology to improve the scale and the questionnaire. The results surveyed 10 experts who showed that all factors affecting the scientific and technological activities of universities in Vietnam.

Step 5: The researchers identified preliminary scales. The researchers had an adjustment and refined scale by testing a reliability scale with Cronbach's Alpha coefficient and exploratory factor analysis (Hair et al., 1998).

Step 6: Based on step 5, the researchers applied quantitative research for interviewing 100 lecturers who are working for 10 universities in Vietnam. Each university in Vietnam surveyed 10 lecturers. The research results built a questionnaire for quantitative research (n = 500 scientists).

Step 7: The researchers had preliminary adjustment scales and tested a reliability scale with Cronbach's Alpha coefficient and exploratory factor analysis for a sample of 100 lecturers.

Step 8: The researchers had a refined scale for step 9.

Step 9: Quantitative Research (n=500 scientists). The researchers surveyed 500 scientists, including 400 lecturers, 100 managers of 10 universities in Vietnam by questionnaires, and tested a reliability scale with Cronbach's Alpha coefficient and exploratory factor analysis. 500 scientists are working for 10 universities in Vietnam. Each university has 40 lecturers, 10 managers surveyed. There are 24 items and 465 samples processed and data collected from June 2019 to January 2020 at 10 universities in Vietnam. The researchers had a simple random sampling technique and spent 25 minutes on a survey. All data collected from the questionnaire coded, processed by SPSS 20.0 and Amos.

Step 10: Based on step 9, the researchers tested Cronbach's alpha, EFA, CFA, SEM. This method based on the eigenvalue, the appropriate factorial analysis, and the observed variables in the whole which are correlated when Average Variance Extracted is>50%, the KMO coefficient is within 0.5 to 1, Sig coefficient ≤ 5%, the loading factors of all observed variables are>0.5. Also, the researchers tested exploratory factor analyses (EFA) were performed (Hair et al., 1998).

Step 11: The researchers tested the model of research: the researchers specified the number of factors required in the data and which measured variable is related to which latent variable. Confirmatory factor analysis (CFA) is a tool used to confirm or reject the measurement theory. The purpose of CFA helps to clarify: (1) Unilaterality, (2) Reliability of scale, (3) Convergence value, and (4) Difference value. A research model is considered relevant to market data if Chi-square testing is P-value>5%; CMIN/df ≤ 2, some cases CMIN/df maybe ≤ 3 or<5 (Hair et al., 1998); GFI, TLI, CFI ≥ 0.9. However, according to recent researchers' opinions, GFI is still acceptable when it is greater than 0.8; RMSEA ≤ 0.08. Apart from the above criteria, the test results must also ensure the synthetic reliability>0.6; Average Variance Extracted must be greater than 0.5 (Hair et al., 1998).

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Step 12: Conclusions and managerial implications: based on step 11, the researchers had conclusions of the research, and the researchers had recommendations.

RESEARCH RESULTS AND DISCUSSIONS

The authors support the scale reliability tests for various factors affecting the scientific and technological activities of universities in Vietnam.

Table 1
THE SCALE RELIABILITY TESTS FOR VARIOUS FACTORS AFFECTING THE SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES OF UNIVERSITIES IN VIETNAM

Items	Content	Cronbach's Alpha if Item Deleted
PFE1	The university is fully equipped with documents and databases to serve the scientific and technological activities	0.935
PFE2	The university is fully improved with workplace and research place to serve STA	0.914
PFE3	The university leaders have the attention and positive support serve STA	0.904
PFE4	There is the cumulative work from colleagues to serve STA	0.917
Cronbach's Alpha for facilities and working environment (PFE)		**0.937**
PRC1	University has the qualification and professional competence of the scientist	0.932
PRC2	Scientists have skills and experience in scientific and technological activities	0.958
PRC3	Scientists have computing and foreign language skills of scientists	0.954
PRC4	Scientists have another workload, such as teaching, learning advisor.	0.933
Cronbach's Alpha for research capacity of scientists (PRC)		**0.958**
PMS1	Scientific and technological activities help scientists improve their qualifications	0.818
PMS2	Scientific and technological activities help scientists improve their research skills	0.823
PMS3	STA help scientists improve their reputation and quality of teaching	0.849
PMS4	Scientific and technological activities are obligatory and passionate tasks	0.813
Cronbach's Alpha for the motivation of scientist (PMS)		**0.863**
PAP1	University provides information to transparency in the process of examining topics	0.927
PAP2	University provides information to registration procedure to perform topics	0.950
PAP3	University provides information to procedures for checking the implementation progress of a project	0.951
PAP4	University provides information regarding the admissions process of payment procedures for expenses related to the subject	0.931
Cronbach's Alpha for administrative procedures (PAP)		**0.954**
PFP1	Scientific and technological activities help scientists improve their income	0.925
PFP2	STA help scientists increase rewards at the end of the year	0.950
PFP3	Scientific and technological activities help scientists increase their salary	0.944
PFP4	STA help scientists develop their career opportunities and leadership positions	0.925
Cronbach's Alpha for income policy (PFP)		**0.951**
STA1	Facilities and working environment affecting the scientific and technological activities	0.849
STA2	the capacity of scientists affecting the scientific and technological activities	0.784
STA3	The motivation of scientist affecting the scientific and technological activities	0.853
STA4	Income policy and administrative procedures affecting the scientific and technological activities of universities in Vietnam	0.797
Cronbach's Alpha for scientific and technological activities (STA)		**0.861**

Source: The researchers' collecting data and SPSS 20.0

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Table 1 showed that various factors affecting the scientific and technological activities of universities in Vietnam that had all of 24 variables surveyed corrected item-total correlation greater than 0.3 and Cronbach's Alpha if Item deleted greater than 0.6. Cronbach's Alpha for facilities and working environment (PFE), the research capacity of scientists (PRC), the motivation of scientists (PMS), administrative procedures (PAP), income policy (PFP), and scientific and technological activities (STA) are more significant than 0.6.

Table 2
TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.585	27.438	27.438	6.585	27.438	27.438	3.788
2	3.706	15.444	42.882	3.706	15.444	42.882	4.908
3	3.554	14.810	57.692	3.554	14.810	57.692	3.611
4	2.598	10.824	68.516	2.598	10.824	68.516	4.947
5	1.760	7.335	75.851	1.760	7.335	75.851	4.470
6	1.531	6.380	82.231	1.531	6.380	82.231	3.022
…	…	…	…				
24	0.021	0.089	100.000				

Source: The researchers' collecting data and SPSS 20.0

Table 2 showed that extraction sums of squared loadings of Cumulative % are 82.231% (>60%), and Initial Eigenvalues is 1.531 (>1). This result is suitable for the next step.

Table 3 showed that the KMO coefficient is 0.818, and the level of significance (Sig) is 0.000. The result showed that there are six components. Extraction sums of squared loadings are % of the Variance coefficient is 82.231, with the level of significance (Sig) is 0.000.

Table 4 showed that column *"P"*<0.01 with significance level 0.01 and column *"Conclusion"* following:

H1: supported: Facilities and working environment have a positive impact on the scientific and technological activities of universities in Vietnam with significance level 0.01.

H2: supported: Research capacity of scientists have a positive impact on the scientific and technological activities of universities in Vietnam with significance level 0.01.

H3: supported: Motivation of scientists has a positive impact on the scientific and technological activities of universities in Vietnam with significance level 0.01.

H4: supported: Administrative procedures have a positive impact on the scientific and technological activities of universities in Vietnam with significance level 0.01.

H5: supported: Income policy has a positive impact on the scientific and technological activities of universities in Vietnam with significance level 0.01.

This factor showed that five factors are affecting the scientific and technological activities of universities in Vietnam with a significance level of 0.01 (Figure 3).

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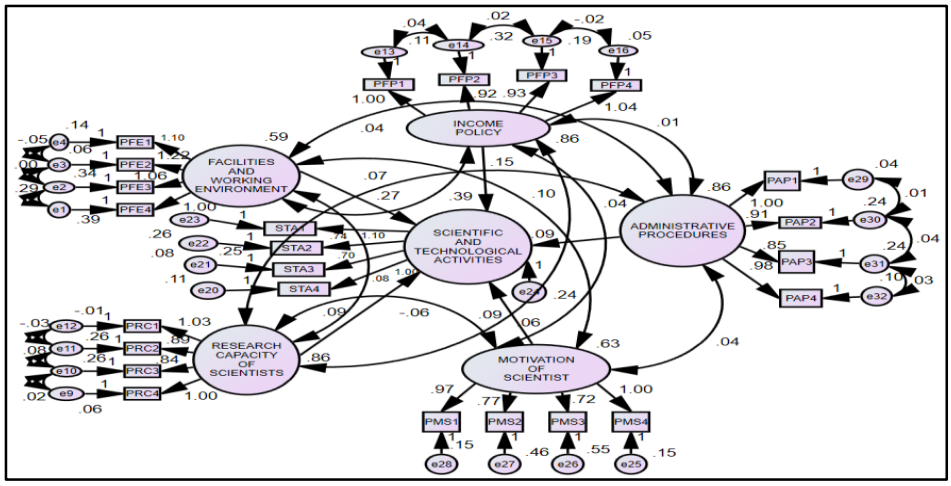
Table 3
KMO AND BARTLETT'S TEST FOR VARIOUS FACTORS AFFECTING THE SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES OF UNIVERSITIES IN VIETNAM

Code	Component					
	1	2	3	4	5	6
PRC1	0.968					
PRC4	0.968					
PRC3	0.923					
PRC2	0.911					
PFP1		0.958				
PFP4		0.948				
PFP2		0.936				
PFP3		0.877				
PAP1			0.957			
PAP4			0.948			
PAP2			0.927			
PAP3			0.921			
PFE3				0.995		
PFE4				0.973		
PFE2				0.877		
PFE1				0.758		
STA4					0.889	
STA2					0.874	
STA1					0.844	
STA3					0.743	
PMS4						0.868
PMS1						0.856
PMS2						0.838
PMS3						0.810
Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.818						
Bartlett's Test of Sphericity; Sig. is 0.000						
Source: The researchers' collecting data and SPSS 20.0						



Source: The researchers' collecting data and Amos

Figure 3
THE STRUCTURAL MODEL SHOWING THE STRUCTURAL LINKAGE BETWEEN COMPONENTS

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Chi-square=733.688; df=225; p=0.000; Chi-square/df=3.261; GFI=0.890; TLI=0.945; CFI=0.955; RMSEA=0.070.

Table 4
COEFFICIENTS FROM STRUCTURAL EQUATION MODELLING (SEM)

Relationships			Coefficient	Standardized Coefficient	S.E	C.R.	P	Conclusion
Scientific and technological activities	←	Income policy	0.150	0.228	0.034	4.408	***	H5: Supported
Scientific and technological activities	←	Administrative procedures	0.088	0.134	0.030	2.983	0.003	H4: Supported
Scientific and technological activities	←	Facilities and working environment	0.272	0.343	0.043	6.377	***	H1: Supported
Scientific and technological activities	←	Motivation of scientist	0.094	0.123	0.034	2.783	0.005	H3: Supported
Scientific and technological activities	←	Research capacity of scientists	0.089	0.136	0.027	3.319	***	H2: Supported

CONCLUSIONS AND MANAGERIAL IMPLICATIONS

Conclusions

The scientific and technological activities of universities are indispensable in supplying high-quality human resources to the labor market in Vietnam. This activity contributes to improving the quality of training and fostering talents for innovation. Besides, it creates intellectual products to contribute to promoting production, technological innovation, improving productivity and product quality of industries, and localities. Research results showed that the researchers surveyed 500 scientists who are working for Vietnam universities. The researchers applied a simple random sampling technique. The researchers had tested Cronbach's Alpha, the exploratory factor analysis, and Structural Equation Modelling (SEM). The paper used a questionnaire on a 5-point Likert scale. Finally, five key factors were affecting the scientific and technological activities of universities in Vietnam with a significance level of 0.01. Five factors including Facilities and working environment (PFE), the research capacity of scientists (PRC), the motivation of scientists (PMS), administrative procedures (PAP), income policy (PFP). Based on the things as mentioned above, the researchers had managerial implications following:

Managerial Implications

The managerial implication for facilities and working environment (β=0.343) had the most substantial impact on the scientific and technological activities of universities in Vietnam with significance level 0.01. Universities need to develop information technology infrastructure as a basis for digitizing sources of documents based on existing facilities, combined with new and

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modern invested equipment. Universities continue building an integrated database for all library activities, using the latest achievements of the information technology industry, especially internet technologies, to improve the quality of documents and developing modern library and information services. Besides, universities continue fostering, training, and retraining librarians to meet the task requirements, especially in information technology, knowledge of information services - libraries and foreign languages.

The managerial implication for income policy (β=0.228) had the other impact on the scientific and technological activities of universities in Vietnam with significance level 0.01. Universities need to have more appropriate priority policies such as income, rewards, and salaries that are needed to encourage researchers. Specifically, universities need to have policies on training, fostering, appreciating, treating, and honoring scientific research staff. Besides, universities continue innovating the recruitment, arrangement, evaluation, and appointment of scientific research staff based on the outstanding contributions in scientific research and technical improvement. Universities need to adopt preferential policies to attract domestic and foreign experts and scientists to participate in activities.

The managerial implication for the research capacity of scientists (β=0.136) had the third impact on the scientific and technological activities of universities in Vietnam with significance level 0.01. Universities should advance to work scientific research capacity for teachers who should be exported the main job in the awareness of each teacher. That is the root cause far and the root of all problems. Each teacher must see his or her responsibilities in participating in scientific research. The scientific and technological activities are not only responsibilities but also contribute to improving professional capacity for specialized science and teaching.

The managerial implication for administrative procedures (β=0.134) had the fourth impact on the scientific and technological activities of universities in Vietnam with significance level 0.01. Scientific research management activities are critical, so it must be regularly and continuously concerned to improve efficiency, focus on accessing and updating the achievements in the scientific management of the country and the world. Universities continue regularly reviewing practices, improving the qualifications and efficiency of scientific research management, contributing to promoting scientific research activities of universities to step by step develop, stabilize, and become more and more orderly. This factor is a positive impact on the completion of the education - training tasks of each university.

The managerial implication for the motivation of scientists (β=0.123) had the least impact on the scientific and technological activities of universities in Vietnam with significance level 0.01. Scientific and technological activities are intellectual activity, requiring extensive and creative expertise. Therefore, the development of scientific research teams and groups is essential in universities. This measure also gives lecturers and young researchers who have the opportunity to learn and train their ability to conduct scientific research through topics together with highly experienced lecturers in science research activities. Finally, the researchers had recommendations for the next study. First of all, our model tested on a sample of 10 universities in Vietnam so that the sample represented in other universities in Vietnam. Secondly, the next study should increase control variables such as organizational culture, leadership capacity, and financial policy. And the next study should compare research results with other foreign studies.

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REFERENCES

Bozeman, B. (2011). Scientists' collaboration strategies: implications for scientific and technical human capital. *Research Policy, 33*(4), 599-616.

Hair, J., Anderson, R., Tatham, R., & Black, W. (1998). *Multivariate data analysis with readings.* US: Prentice-Hall: Upper Saddle River, NJ, USA.

Kendagor, S.T. (2012). Factors affecting Research Productivity in Public Universities of Kenya. *Journal of Emerging Trends in Economics and Management Science, 2*(1), 475-484.

Kraut, R. (2010). Relationships and tasks in scientific research. *Human-Computer Interaction, 3*(1), 31-58.

Lee, S. (2008). The impact of research collaboration on scientific productivity. *Social Studies of Science, 35*(5), 673-702.

Print, M. (2012). Measuring quality in universities: An approach to weighting research activity. *Higher Education, 33*(1), 453-469.

Ramsden, P. (2016). Associations between research and teaching in Australian higher education. *Higher Education, 23*(3), 273-295.

Reskin, B.F. (2013). Scientific productivity and the reward structure of science. *American Sociological Review, 42*(3), 491-504.

Richard, S. (1985). The changing perspective of academic researchers, 1973-1983. *Studies in Higher Education, 10*(3), 69-78.

Rouban, A.M.T. (2009). The Evaluation of Research. *International Journal of Institutional Management in Higher Education, 3*(2), 44-51.

Rowley, J. (2015). Motivation and academic staff in higher education. *Quality Assurance in Education, 4*(3), 11-16.

Slaughter, S. (2013). Renaming the social relations of science: technology transfer. *Educational Policy, 4*(4), 341-361.

Taylor, M.G. (2011). Evaluation of research and resource allocation. *International Journal of Institutional Management in Higher Education, 9*(2), 86-94.

Upali, W.H. (2015). Peer review in the funding of research in higher education: the Australian experience. *Educational Evaluation and Policy Analysis, 23*(4), 343-364.

Volkwein, J. (2014). The impact of departmental research and teaching climates on undergraduate growth and satisfaction. *Journal of Higher Education, 65*(2), 147-167.

Wanner, R.L. (2012). Research productivity in academia: sciences and humanities. *Sociology of Education, 54*(2), 238-253.

Whitley, R.D., & Frost, P.A. (2010). The measurement of performance in research. *Human Relations, 24*(1), 161-178.

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