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Master's Thesis of Public Administration

**A Study on the Factors that Affect Academic
Staff's Research Performance in Vietnam
Universities**

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Abstract

A Study on the Factors that Affect Academic Staff's Research Performance in Vietnam Universities

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This study attempted to answer the research question: which are the main factors that affect academic staff's research performance in Vietnam higher education context. By examining the impacts of three sets of factors – research motivation, research ability, and research environment, the study predicted that those factors will have a positive effect on academic research performance at both domestic and international level. The study used two categories of research performance outputs: 1) the total number of publications in domestic journals, and 2) the total number of publications in international journals from 2013 to 2017.

To answer the research question, the study applied a quantitative research method with an online questionnaire and

reached 207 respondents who are lecturers working at different universities in Vietnam. SAS system was used to conduct both descriptive and inferential statistics. The findings of the thesis suggest that research skills competency was the main factor that affect Vietnamese university teacher's research performance at both domestic and international level, while English proficiency had a significant impact at international level only. In addition, social science's academics were less skillful in term of research skills and less productive in research performance at international level than other science's ones. The study suggests policy-makers and leaders should emphasis on research skills training program as well as academic English skills development for academics in order to improve one's research performance, especially at international level.

Keywords: research performance, research motivation, research ability, research environment, university teacher

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Table of Contents

Abstract	i
Table of Contents.....	iii
List of Tables and Figures	v
Chapter 1: Introduction.....	1
1.1. Background of the study.....	1
1.2. Purpose of the study	2
1.3. Scope of the study	3
1.4. Research Methods	4
1.5. Significance of the study	5
Chapter 2: Overview of Vietnam Higher Education System6	6
2.1. Vietnam higher education system	6
2.2. Academic staffs and research activities.....	7
Chapter 3: Literature Review	14
3.1. Studies on academic research performance (dependent variable).....	14
3.2. Studies on factors that affect research performance (independent variables).....	18
3.3. Research question, hypotheses, and model.....	31
Chapter 4: Research Methodology	33
4.1. Introduction.....	33
4.2. Data collection	33
4.3. Data analysis.....	37
Chapter 5: Results.....	39
5.1. Descriptive analysis.....	39
5.2. Principal Components Analysis (PCA)	43
5.3. Correlation analysis.....	49
5.4. Regression analysis	53
Chapter 6: Discussions	58
6.1. Explanation of the results	58
6.2. Implications	64

Chapter 7: Conclusions.....	68
Bibliography	72
Appendix	77
Acknowledgements	83

List of Tables and Figures

Table 1: General data of Vietnam Universities 2015-2016 and 2016-2017

Table 2: Lecturers data 2015-2016 and 2016-2017

Table 3: International publications from 2011 to 2016

Table 4: Factors associated with intrinsic and extrinsic motivation

Table 5: Summary of variables and its measurements

Table 6: Descriptive analysis

Table 7: Frequency of discipline and gender

Table 8: Weekly research hours

Table 9: Domestic publications (a) and International publications (b)

Table 10: Extracted factors of research motivation

Table 11: Extracted factors of research ability

Table 12: Extracted factors of research environment

Table 13: Descriptive statistics and correlations for variables.

Table 14: Regression analysis for model 1 and model 2

Table 15: Findings summary table

Table 16: Importance of research to professional career

Table 17: Need for research skills training

Table 18: Measured variables of research skills competency

Figure 1: Number of universities by region

Figure 2: Lectures by education

Figure 3: Research model

Chapter 1: Introduction

1.1. Background of the study

Higher education systems and academic staffs are under increasing pressure to become more productive in research; the trend is an international and widely recognized one. Research performance boosts not only the teaching quality but also the university's standing, as it has been used as a key criteria in worldwide university ranking. Emphasis is therefore placed on scholarly productivity and the publication output of academic staff, with less priority being given to teaching and service roles when rewarding performance.

In response to globalization, Vietnam has embarked major reforms in higher education system. The key themes of the reforms often relate to marketisation, privatization, changes in governance, enhanced student access, modern curricula and strong emphasis on science and technology. According to Vietnam's Higher Education Reform Agenda (HERA 2006-2020), a plan approved by the Government of Vietnam in 2005 for the comprehensive reform of the higher education system by 2020, Vietnam aims to develop an advanced research and development culture, with R&D activities accounted for 25% of higher education system's revenue by 2020. The government plans to organize a number of universities into research-oriented institutions which it is expected to be about 30 by 2020. As a result, research productivity has become a priority at both university and national level, aiming to change the culture from teaching-focused into research-oriented one. To achieve those objectives, the Vietnam Ministry of Education and Training (VMET) and university's leaders in Vietnamese universities are

trying a number of different approaches to motivate and improve the capacity of the academics in conducting more valuable scientific research, especially publishing more articles in international journals. Therefore, it is important to define the causes of low research performance in Vietnam universities, such results would be very useful for decision and policy making process.

Some regulations have been put in effect such as giving more fund for research activities (2% GDP for research), requiring all lecturers to spend at least one third of the total working time to conduct research (Circular No.47/2014/TT-BGDDT), etc. However, low research performance remains a critical issue. For instance, among 512 lecturers at Ho Chi Minh city University of Technology and Education, 306 persons did not conduct any research, only 173 achieved the required research performance (report, 2015). At international level, Vietnam was far behind neighboring countries in term of number of international articles (Nature index, 1 August 2017 – 31 July 2018) Vietnam had 73 articles, while Thailand, Singapore had 203, and 1145 articles respectively. For the need of promoting research productivity, this research paper will examine the factors that affect academics' research performance in Vietnam higher education context. This is expected to provide some suggestions for policy-makers and decision-makers at university and national level.

1.2. Purpose of the study

This study aims to answer the research question: what are the factors that affect academic staff's research performance in Vietnam universities. To answer it, the study based on the

concept model of performance as a function of motivation, ability, and environment (Mitchell, 1982; Porter & Lawler, 1968). It investigates the correlation between independent variables (research motivation, research ability and research environment) and dependent variables (research performance at domestic and international scale) in Vietnam higher education context.

To answer the research question, the study will examine six hypotheses :

- H1: Extrinsic motivation factors will have positive impact on academic research performance
- H2: Intrinsic motivation factors will have positive impact on academic research performance
- H3: Research skills competency will have positive impact on academic research performance
- H4: Foreign language proficiency will have positive impact on academic research performance
- H5: Research environment condition will have positive impact on academic research performance
- H6: The number of doctoral students will have positive impact on academic research performance

It is expected that the study result will make significant contribution in the field of research productivity, as well as give valuable suggestions and recommendations for policy and decision makers in Vietnam context.

1.3. Scope of the study

This study will focus on three group factors: research

motivation, research ability and research environment as independent variables to analyze their effects on research performance. The latter focus on quantitative measurement that is the number of publications in domestic and international journals.

The study target participants across six disciplines: Natural Science, Engineering and Technology Science, Medicine and Pharmacy Science, Agriculture Science, Social Sciences, and Humanities Sciences (according to the classification of Vietnamese Ministry of Science and Technology, 2008). However, for the limitation of sampling, the two renamed discipline will be used, one is ‘Social Sciences’ including both Social Science and Humanities; another is ‘others’ including the four remaining domains Nature Science, Engineering and Technology, Medicine and Pharmacy, Agriculture Science.

The time frame for the study is five years from 2013 to 2017. This is mainly for the purpose of measuring research performance - the number of publications in domestic and international journals.

1.4. Research Methods

The study uses quantitative research approach to investigate the factors that affect academic research performance. Data were collected by using Google form – online survey questionnaire, under snowball sampling method, as it is difficult to locate all subjects in the population and also because of the limit of time and finance.

This study used SAS system to analyze data, both descriptive statistics and inferential statistics. For inferential statistics, before running regression analysis, principle

components analysis, correlation analysis were checked to prepare good variables for regression analysis.

Robust regression analysis was used to solve the problem of heteroscedasticity.

1.5. Significance of the study

The study can make several contribution to the fields of research performance, both at the theoretical and practical levels. The conceptual model of performance as a function of motivation, ability and environmental is examined in a higher education context. It will be useful in explaining the meaning and underlying concept of research performance and its influential factors. It is also a useful reference for management of higher institutions and policy makers in reviewing and updating policies and legislation.

Chapter 2: Overview of Vietnam Higher Education System

Before reviewing the relevant literature, it is necessary to introduce briefly the present situation of Vietnam higher education and academic research activities.

2.1. Vietnam higher education system

According to the VMET report, in the 2016-2017 school year, there were about 1.76 million students enrolled in Vietnam’s higher education institutions. The majority (86%) went to public universities, and were full time students (79%). Master programs had 105,801 graduates (increased 12.8% compared to 2015-2016), and PhD programs had 15,112 fellows (increased 21% compared to 2015-2016).

	2015 - 2016	2016 - 2017	Growth (%)
1 Total universities	223	235	5.38
Public universities	163	170	4.29
Non-public universities	60	65	8.33
2 Number of students	1,753,174	1,767,879	0.84
Public universities	1,520,807	1,523,904	0.20
Non-public universities	232,367	243,975	5.00
By education system			
Full time education	1,370,619	1,402,683	2.34
Part-time education	295,261	283,589	-3.95
Distance education	87,294	81,607	-6.51

Table 1: General data of Vietnam Universities 2015-2016 and 2016-2017

For the same period, higher education system has 235 universities and academies, comprising 170 public universities, 60 private universities and 5 foreign-owned universities. Most universities locate in northern part of Vietnam, accounting for 116 institutions or 49%.

(1) Public universities and non-public universities

+ Public universities: the government finances 100% for regular budget that collects from tax

+ Non-public universities: including private institutions and foreign-owned institutions, financed by non-governmental actors (private or foreign investors)

(2) Education system

+ Full-time education: students take full time courses at an education institution.

+ Part-time education: normally designed for employees who have to work and study at the same time.

+ Distance education: is a type of training that there is a difference between learner and teacher in terms of space and time, e.g. online courses

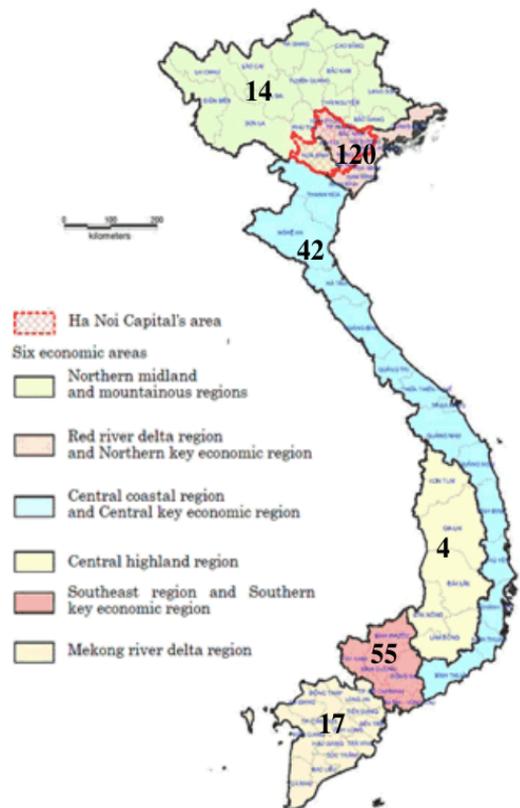


Figure 1: Number of universities by region

2.2. Academic staffs and research activities

In Vietnam, lecturers are ranked into 3 levels (academic rank), mainly based on their education level, seniority, and research performance. This rank will affect an academic's salary and benefits.

Lecturer (rank 3): Bachelor degree is the minimum education level needed to become a lecturer, however, a master degree is generally required. In addition, a lecturer should have a certain level of foreign language, and be able to use that language to read professional articles/books and make normal conversations.

Senior Lecturer (rank 2): Master degree is the minimum education level required to become a senior lecturer. At this rank, good capability of using at least one foreign language (English, Russia, French German, Chinese, and Japanese) is recommendary. That person also needs to fulfill a seniority at rank 3 of at least five years (if Master degree) or at least three years (if PhD degree). Moreover, the research performance is an important criteria: (1) at least two researches at institution level or at least one at ministry level; (2) at least 6 journal articles; (3) main author of at least one book or writing member of at least two books used in teaching and education; and (4) advisor of at least 5 Master candidates or second advisor of at least one PhD candidate.

Superior Lecturer (rank 1): PhD degree is the minimum education level required to become a superior lecturer. He or she has to be fluent at least one foreign language (English, Russia, French German, Chinese, Japanese); seniority at rank 2 for at least two years. In term of research performance: (1) at least two researches at ministry level or at least one at state level; (2) at

least 15 publications; (3) main author of at least two books used in teaching and education, or a professional book; and (4) main advisor of at least one PhD candidate or second advisor of at least two PhD candidates.

In addition to academic rank, Vietnam has professional honor rank: Associate Professor and Full Professor. This is to honor lecturers and researchers who have great contribution in teaching and research. The rank is examined by State Professorship Council and approved by Prime Minister. This is an honor award for a devoted academic career.

First, we can see that there are no requirement for lecturer (rank 3) of having publications before becoming a lecturer, education level and capacity of giving lectures have been the main criterion. However, to move from rank 3 to rank 2 then rank 1, a lecturer needs to fulfill not only seniority, education requirements, but also achieve certain research performance.

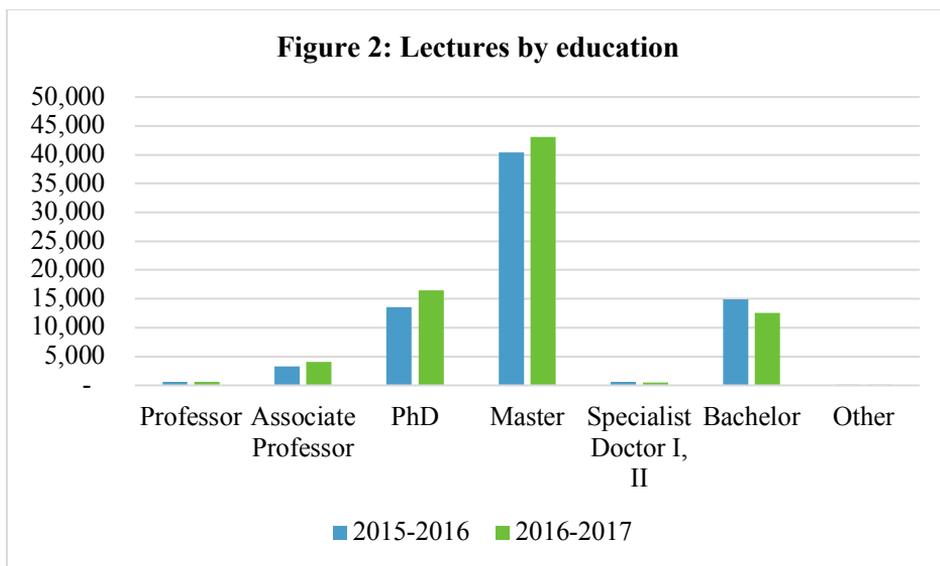
Second, there is no requirement of international publications in promotion process. Minimum requirements are still at domestic level.

Table 2 shows the data on the number of academics over the period 2015-2017. The number of academics increased 4.6% from 69,591 to 72,792 over the period 2015-2017, and they mainly work in public universities. About 48% represented females. Overall, majority of academics got a Master's degree, about 60% in 2016 - 2017, increased 6.68% compared to previous period. And the number of lecturers who got a PhD degree increased significantly at 21.44%. Whereas, Bachelor degree lecturers decreased 15.96%.

	2015 - 2016	2016 - 2017	Growth (%)
Lecturers	69,591	72,792	4.60
Public universities	55,401	57,634	4.03
Non-public universities	14,190	15,158	6.82
Among total			
Female	32,690	35,064	7.26
Full professor	550	574	4.36
Associate professor	3,317	4,113	24.00
PhD degree	13,598	16,514	21.44
Master degree	40,426	43,127	6.68
Doctor Specialist I, II	620	523	-15.65
Bachelor degree	14,897	12,519	-15.96
Others	50	109	118.00

Table 2: Lecturers data 2015-2016 and 2016-2017

These changes showed an improvement in term of education level among academics. This matches with HERA plan 2006 – 2020 in which the Vietnam’s government aimed to achieve 35% of lecturers titled a PhD degree in 2020. However, in 2017, this ratio was just 22.7% (16,514 PhD degree lecturers), the original plan seems to be unable to achieve, and the government has adjusted to the target of 25% of PhD lecturers in 2020.



Regarding to research performance evaluation in Vietnam context, a number of different outputs are eligibly counted as below:

- Number of publications in journals: this study will use this type of output to measure an academic's research performance, it includes domestic publications and international publications.
- Number of research works at institutional level, ministerial level, and state level: State level is valued a higher score and gets a better research funding than ministerial level and then institutional level.
- Number of books published (books used for teaching, and professional books)

According to the regulation on working hour for university lecturers: 40 hours per week, or 1760 hours per year, since 2014, at least 1/3 of the whole working hour of a lecturer needs to locate for research activities, equivalent to nearly 600

hours for research (or 12.5 hours per week). If they do not accomplish the required research hours, they have to compensate by teaching hours. Then their payment will be affected. Therefore, lecturers are putting more efforts to publish some articles to fulfill annual performance. However, many lecturers focus on teaching than research, as teaching brings more income for them. They might conduct a research because of duty, yet not by their enthusiasm. The quality of articles is also limited. This also affects teaching quality, as without professional research, knowledge is often outdated or slow to be updated.

Assoc.Prof.Dr. Pham Dinh Nghiem, from the University of Social Sciences and Humanities in Ho Chi Minh City, said: "Not all lecturers are interested in conducting research. While professors and associate professors annually produce scientific works, many lecturers do not spend much time for research". Dr Ung Thi Minh Le, from Ho Chi Minh City University of Economics, said: "About 2/3 of the 600 full-time lecturers participate in scientific research and meet the time requirement." Prof. Dr. Dao Van Luong, Rector of Saigon Technological University, said: "At present, only 5% of the lecturers actually devote time for research and bring about concrete results."

At international level, according to Web of Science statistics, Vietnam publications has increased three times from 1.461 articles in 2011 to 3.814 articles in 2016 (table 3). However, this is still far behind neighboring countries. Thailand has nearly three times as many publications as Vietnam; Malaysia four times; Singapore is up to five times.

To promote international publications, government has established some mechanism, for instance, since 2017 a PhD

student has to publish at least one article in international journal before defense. Or in 2008, the National Foundation for Science and Technology Development (NAFOSTED) was founded by the government to enhance the quantity and quality of scientific research. The research funded by Nafosted has to publish the results in ISI-covered journals. Also some short-term research fellowship in foreign countries over six-month or one-year period were offered and have contributed to develop the research capacity of scientists.

Year	Vietnam	Thailand	Malaysia	Indonesia	Philippines	Singapore
2011	1461	5973	8077	1313	1019	10182
2012	1816	6273	8440	1423	1051	10932
2013	2309	6789	9555	1648	1172	11975
2014	2596	6999	10913	1795	1267	12508
2015	3052	7671	12341	2976	1523	13631
2016	3814	8847	14129	3748	1695	14120

Table 3: International publications from 2011 to 2016

Chapter 3: Literature Review

This chapter discusses the literature on individual research performance and factors that affect academic staff's research performance in universities. Eventually, it explains which gaps in the literature have led to the research questions and hypotheses.

3.1. Studies on academic research performance (dependent variable)

Scholars agree that when conceptualizing performance one has to differentiate between an action (i.e., behavioral) aspect and an outcome aspect of performance (Campbell, 1990; Campbell, McCloy, Oppler, & Sager, 1993; Kanfer, 1990; Roe, 1999). The behavioral aspect refers to what an individual does in the work situation, such as assembling parts of a car engine, selling personal computers, teaching basic reading skills to elementary school children, or performing heart surgery. Not every behavior is subsumed under the performance concept, but only behavior which is relevant for the organizational goals: "Performance is what the organization hires one to do, and do well"(Campbell et al., 1993, p. 40). Thus, performance is not defined by the action itself but by judgemental and evaluative processes (Ilgen & Schneider, 1991; Motowidlo, Borman, & Schmit, 1997). Moreover, only actions which can be scaled or measured, are considered to constitute performance (Campbell et al., 1993).

The outcome aspect refers to the consequence or result of the individual's behavior. The above described behaviors may result in outcomes such as numbers of engines assembled, pupils'

reading proficiency, sales figures, or number of successful heart operations. In many situations, the behavioral and outcome aspects are related empirically, but they do not overlap completely. Outcome aspects of performance depend also on factors other than the individual's behavior. For example, imagine a teacher who delivers a perfect reading lesson (behavioral aspect of performance), but one or two of his pupils nevertheless do not improve their reading skills because of their intellectual deficits (outcome aspect of performance). Or imagine a sales employee in the telecommunication business who shows only mediocre performance in the direct interaction with potential clients (behavioral aspect of performance), but nevertheless achieves high sales figure for mobile phones (outcome aspect of performance) because of a general high demand for mobile phone equipment (Sabine & Michael, 2001).

In the context of this study, an individual research performance will be viewed from outcome aspect, in which not only individual factors such as motivation or ability, but also environment factors will be considered in predicting outcome aspect of research activities.

Research productivity or research performance is the output of a research process over a given period. It can be measured in a variety of publishing outputs such as journal articles, theses, books and chapters in books, and patents. It is also measured in terms of professional activities such as conference presentations and research seminars; and the number of grant proposals submitted or the research grants received (Kaya & Weber, 2003). Among the types, it is recognized that publishing outputs (publication) are commonly used as measures to evaluate the research productivity of academics and

researchers around the world. Publication is the key channel of intellectual products that disseminate new knowledge to the world, so it is very important.

Kyvik (1995) examined the relationship between size of departments and research productivity in Norway's four universities in five fields of study (i.e., in the humanities, social sciences, natural sciences, medical sciences, and technology). Research productivity was measured as the number of publications between 1989 and 1991. The publications were journal articles, articles in research books, textbooks and conference proceedings, research books published by book companies, and reports published in report series.

Lynn (2015) pointed out that research productivity is not always clear how it was measured: for example, whether books are given the same weight as articles, or whether co-authored works count as much as solo-authored works. Decisions about what kinds of publication 'count,' and how these things should be counted are not simply technicalities: these decisions reflect assumptions about what is valued in the particular academic setting (such as publication in prestigious journals), what is easy or difficult (writing books or book chapters versus writing articles), and what is the fairest way to compare productivity across research environments.

In many studies, individual research performance is mainly treated as a dependent variable or outcome measure—which makes perfect sense from a practical point of view: individual performance is something organizations want to enhance and optimize.

How to get data of research performance?. Standard

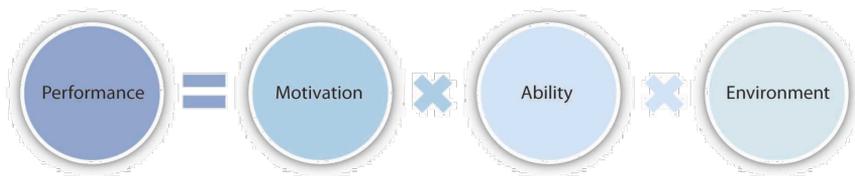
bibliometric indicators that measure academic productivity can be used to describe the research landscape across countries, regions, universities, and individual research units (Moed 2000; Costas and Bordons 2005). Reliable indicators measuring individual research performance are less readily available because they require a complete and accurate database (Costas and Bordons 2005). Studies on individual research performance have used different data sources: curricula vitae (Dietz et al. 2000; Gaughan and Bozeman 2002), institutional reports (Carayol and Matt 2006), questionnaire surveys (Prpic 2000), and bibliometric databases (Ursprung and Zimmer 2007; Krapf 2011). This study will use questionnaire survey to define research performance.

Why is individual research performance important? At present, research productivity, in particular the publishing outputs, becomes a criterion in recruiting, offering tenure, getting promotion, and maintaining tenure at all research universities globally, which ensures that the newly recruited academics will become productive academic researchers in the future to serve the research goals of the universities (Cummings & Shin, 2014; Perry, Clifton, Menec, Struthers, & Menges, 2000). It is the most important criterion for the ranking of the world's universities conducted by ranking systems such as the Times Higher Education, QS World Ranking Universities, and Academic Ranking of World Universities. In general, the research productivity of academics is important for both academics in their career development and for the universities. High quality of research productivity enhances the prestige and reputation of a university nationally and internationally.

3.2. Studies on factors that affect research performance (independent variables)

Mace (1935), Viteles (1953), Maier (1955) used a very basic conceptual model of performance to explain what factors affect employee performance: $\text{Performance} = f(\text{Motivation} \times \text{Ability})$. Performance is a function of ability and motivation. Motivation differs from performance. Motivated staffs does not imply that they trigger good performance as consequence. It depends on their ability as well. According to this principle, no task can be performed successfully unless the person has both the ability and the motivation towards completing the job.

In more recent studies, job performance is viewed as a function of three factors: motivation, ability, and environment and is expressed with the equation below (Mitchell, 1982; Porter & Lawler, 1968).



Motivation is one of the forces that lead to performance. Motivation is defined as the desire to achieve a goal or a certain performance level, leading to goal-directed behavior. When we refer to someone as being motivated, we mean that the person is trying hard to accomplish a certain task. Motivation is clearly important if someone is to perform well; however, it is not sufficient. Ability—or having the skills and knowledge required to perform the job—is also important and is sometimes the key determinant of effectiveness. Finally, environmental factors such as having the resources, information, and support one needs to

perform well are critical to determine performance. At different times, one of these three factors may be the key to high performance. For example, for an employee sweeping the floor, motivation may be the most important factor that determines performance. In contrast, even the most motivated individual would not be able to successfully design a house without the necessary talent involved in building quality homes. And finally, even competent and motivated employees might not perform well if they do not have necessary tools or equipment to perform their tasks.

Prof. Dang Hung Thang (Vietnam National University) stated that success in scientific research requires three elements: research ability, research motivation, and research environment. Research activities are the process of seeking, discovering, creating new knowledge, new technology. Thus, researchers have to be creative, and skillful in detecting the problem and conducting researches, in order to ensure the credibility of the research results. However, only research capability is not enough for a good research performance. If there is no motivation, research capability is just potential and inactive. Motivation will push academics to conduct more research and perform well. The stronger motivation the better the research capability will be optimized.

A study by Phan Thi Tu Nga (2016) on “situation and solutions to improve lecturers’ research performance in a Vietnam university (Hue University)”, surveyed 208 lecturers and 67 officers, shows that both objective factors and subjective factors affect lecturers’ research activities. Objective factors

included: motivation policy (4.51/5)¹, local social-economic environment (3.88/5), facilities and finance (4.49/5), management (3.98/5), materials and equipment (4.39/5). Subjective factors included: research motive (4.28/5), attitude toward research (4.4/5), qualification (4.74/5), research experience and skills (4.63/5), foreign language and computer skills (3.79/5), teaching load (3.73/5). The study also pointed out the lack of budget, materials, lab equipment is a big challenge for conducting research in the targeted institution (2.56/5)².

A study by Huynh Thanh Nha (2016), based on TPB - Theory of Planned Behavior by Azjen (1991) analyzed factors affecting scientific research capacity of lecturers in public colleges, based on a survey of 125 faculty members at public colleges in Can Tho city (Vietnam). The results showed that factors affecting research capacity of faculty members included: work environment, awareness, personal competence, motivation, age and expertise field of lecturers. Of which, work environment and awareness had the greatest influence on scientific research capacity of lecturers.

This study will use the model: performance as a function of motivation, ability, and environment to answer the research question what are the factors that affect university teachers' research performance in Vietnam.

3.2.1. Motivation factors which affect research performance

¹ Not influence: 1, Small influence: 2, Normal: 3, Influence: 4, Very influence: 5

² Very Poor: 1, Poor: 2, Acceptable: 3, Good: 4, Excellent: 5

According to Levin and Stephan (1991), an intrinsic motivation to do research is considered a consumption of knowledge because it is used to satisfy one's learning ambition and one's feeling of satisfaction. In contrast, an extrinsic motivation to do research is viewed as an investment of personal time, effort, and resources to get external outcomes or benefits, such as promotion. From this point of view, Chen et al. (2006) found 12 common motivational factors (rewards) associated with the research productivity of academics. They are divided in two categories: intrinsic motivation and extrinsic motivation as in Table 4:

<i>Factors associated with intrinsic motivation</i>	<i>Factors associated with extrinsic motivation</i>
Achieving peer recognition	Receiving tenure
Gaining respect from students	Being full professor or receiving promotion
Satisfying a personal need to contribute to the field	Getting a better salary
Satisfying a personal need for creativity or curiosity	Getting a managerial position
Satisfying a personal need to collaborate with others	Getting a chaired professorship
Satisfying personal needs to stay in the field	Reducing teaching load

Table 4: Factors associated with intrinsic and extrinsic motivation

These 12 motivational factors were validated in another study by Chen, Nixon, Gupta, & Hoshower (2010), which found that they were still significant, but that they vary according to the

academic's gender, rank and tenure. Although Chen et al. (2006) and Chen et al. (2010) indicated that people might be either intrinsically or extrinsically motivated, it was previously noted by Tien & Blackburn (1996) that motivation to do research is neither purely intrinsic nor purely extrinsic. Rather, the two types appear to operate mutually, dependent upon the circumstances of the individuals, their values, and their institutional environment. The interchange between the two types might be possible in the context of higher education because the psychological states of academics often change with stressors and work-related outcomes at different times.

Despite the type of motivational rewards, academics who have the following three common personal characteristics: curiosity, need for recognition, and adaptability to stay in the field, were identified as research-productive persons (Hunter & Kuh, 1987). The preference for rewards may vary, depending on the expectations and research goals of the academics. For example, Tien (2000) found that academics who strive for promotion tend to publish articles; those who want to demonstrate their mastery by contributing new knowledge to the field, tend to publish books; and those who care about personal income are more likely to seek and receive research grants.

Financial rewards

In Vietnam, each university has its own financial rewards system to facilitate research activities. Financial rewards approaches are written in each university research policy. This means it could be an efficient way to encourage and motivate staffs to conduct research and produce high quality research outcome, and also it has a strong influence on academic staff

research behaviour.

Since 2014, the government has run a pilot program on self-reliance mechanism for public universities during period 2014 - 2017 (Resolution 77/NQ-CP). Therefore, many universities have been more active in promoting scientific research activities. Ho Chi Minh Open University, for instance, has a policy of rewarding lecturer with published scientific articles, especially international publications. If the article published in the ISI, SCI, SCIE journals, the reward is 35 million VND; and in Scopus list, the reward level is 20 million VND, etc. Together with that, the income distribution mechanism, for lecturer is linked to scientific research performance. Faculty members with article published in journals under ISI category, Scopus will be ranked among the highest in the six-level of academic evaluation. Since these financial rewards applied, the number of publications has increased significantly. In the first 6 months of 2017, the number of articles published in scientific ISI category, Scopus was 20 articles.

Prof Dang Hung Thang also argued that faculty members who have a good research performance with international publications should get better income than lecturers do not conduct any significant research. Such income disparities is also equality that will motivate academic staffs conduct more valuable researches.

Promotion

Some scholars believe that promotion has a motivating effect on research productivity. For instance, Fox (1985) suggested that higher education institutions can influence academic staff research behaviour through the manipulation of

the reward structure for promotion. Lai (1990) also considered promotion as an effective way of encouraging staff to conduct research. In Ruscio's (1987) interview study, a faculty respondent commented about research publications: "Half to three quarters of what I read, if I asked myself why this was written, the answer normally is 'promotion'."(p.55)

Similarly, Beck (1990) viewed that the motivational effect of promotion is dependent on an individual's need for promotion. If a person does not value a promotion, she or he will not work (publish) hard for it. This is the same as Tien's finding (2000), that it is expected that among academic members who need promotion, those who attach more importance to promotion will publish more than those who do not.

From the behavioral reinforcement theory's perspective, Cooper and Burger (1980) thought that, as a reward, promotion has the greatest motivating effect when it is contingent upon performance; as a reinforcement schedule, the introduction of, and the removal of promotion rewards influences publication rates and the shape of the productivity curve. According to Tien and Blackburn's survey (1996), the expected publication rate remains low in the early period of the interval in rank because no promotion reward is conferred. Toward the end of the rank interval, the nearer the time of promotion, the higher is the publication rate. In general, the nearer the time of promotion, the higher is the publication rate. Tien and Blackburn (1996) agreed that the promotion system can be regarded as a fixed reinforcement interval schedule because the desirable academic staff behaviour will not be reinforced until the passage of a specified period of time.

In Vietnam, promoting to a higher academic rank (lecturer, senior lecturer, superior lecturer) and getting to a higher professorship (associate professor, full professor) are directly related to the prestige, income and benefits of university staff, and research output is considered to be the most important indicator in academic promotion assessment in Vietnam.

Performance appraisal

Most universities have clearly-written documents of performance requirements that are set for academic staff. The assessment of the professional performance of academic staff is conducted every academic year, measuring both teaching and research performance.

According to the circular No 47/2014/TT-BGDDT, each lecturer has to spend at least one third of working time for research activities. Depending on a lecturer's academic rank, he or she will have to fulfill a higher or lower research time. If a lecturer cannot fulfill research requirement, he or she has to compensate by teaching hours. For instance, University of Economics Ho Chi Minh City stipulates the minimum research hours that each academic rank has to fulfill each year as follow: Full Professors and Senior Lecturers: 500 research hours (equivalent 140 teaching units); Associate Professors and Principal Lecturers: 400 research hours (equivalent 120 teaching units); Lecturer: 300 research hours (equivalent 100 teaching units).

Identifying factors that increase research productivity is very important. If research productivity is mainly driven by intrinsic motivation, the main challenge of university managements consists in identifying, selecting, and promoting

intrinsically motivated researchers. If, however, researchers are mainly motivated by extrinsic factors, these factors need to be identified so that the universities or government ministries are in a position to develop incentive-compatible policies, such as performance pay and performance-related promotion schemes.

Accordingly, this research expects that a good motivation will lead to a better research performance.

Hypothesis 1: Extrinsic motivation factors will have positive impact on academic research performance.

Hypothesis 2: Intrinsic motivation factors will have positive impact on academic research performance.

3.2.2. Ability factors which affect research performance

Ability or competence is a combination of knowledge, skills and attitude required to perform a job. Competence = knowledge + skills + attitude (KSAs). Tran Thanh Ai (2014) argued three main factors that a researcher need to have:

- Knowledge in the field: In order to be able to do scientific research, the expertise of a researcher must be sufficient to identify the pertinent research problem. Modern science is built on the notion that scientific knowledge is temporary, and constantly evolving, from less to big, from simple to complex. The goal of the research is to produce new knowledge. Thus the scientist must have a profound knowledge to discover the boundary between the known science and the unknown.
- Research skills: In order to be able to conduct research, the researcher must master a variety of research methods, depending on the nature of the topic, research objectives,

research approach. The researcher is expected to possess a variety of research skills, including: skills to build a research project, to make research design, to collect data, to analyze data and to use different analyze tools, to criticize, to argue, and to write a scientific report. Moreover, scientist needs to communicate in a global environment, the ability to express a scientific ideas in a foreign language, especially English, is crucially important.

In Vietnam context, the six foreign languages mostly used are English, Russian, Chinese, French, German, and Japanese. Among them, English has been the priority and most used language.

- Attitude towards research: A number of researches have been conducted to explore the attitude towards research and the results showed that attitudes towards research are generally not positive. Students think that it is tough and dry to study the research (Adams & Holcomb, 1986). They do not understand the concepts of research and its importance in their professional life. Williams & Coles (2003), Sabzwari, Kauser, & Khuwaja (2009), Sadia Shaukat et al.(2014) found that males had significantly better attitude towards the research than the females. Significantly better attitude towards the research in the males in current study may be due to the reason that male students can realize the practicality of the research. This study will examine how importance each respondent weigh on the importance of the research in their professional life.

Accordingly, this study expects that a research skills proficiency and a good foreign language level especially English

will lead to a better research performance.

Hypothesis 3: Research skills competency will have positive impact on academic research performance

Hypothesis 4: Foreign language proficiency will have positive impact on academic research performance

3.2.3. Environment factors which affect research performance

Numerous studies show that the characteristics of the research environment are the most important factor that allow us to predict the productivity and quality of research. In a broad sense of research environment, it consists many elements such as state policy and regulations of scientific research; the development of society, social capital and financial resources; technical infrastructure such as a laboratory or library; institution's research policy (Altbach and Salmi, 2013). In a narrow sense, the research environment is the atmosphere of relationships inside research organizations, including collaboration with peers, peer review mechanisms, leadership of the academic leader, leader's support.

There has been an emphasis on the contribution of doctoral students to research productivity (Boud and Lee 2009). Graduate students have been argued to play the most important role in university research output (Salter et al. 2000), and according to Song (2001), an increase in the number of doctoral students significantly positively correlates with their professors' productivity. Kotrlik, Bartlett, Higgins, and Williams (2001) found that graduate students' ability and confidence in conducting research as well as research assistants' ability

significantly influence university professors' research article production. Kyvik and Smeby (1994) found a relationship between graduate student behavior and professors' research performance. For professors who worked in the fields of natural sciences, medicine, and engineering, when their graduate students' theses related to their research field, their research production significantly increased.

In Vietnam context, Prof Dang emphasized on research facilities (equipment, lab, library - online sources, books, journals), and research group (or team working). While research facilities depend greatly on financial resources, research group depends on the mechanism of organizing research activities into team - working on a similar scientific interest. This is recently the main trend in organizing scientific research. Advanced universities in the world often organize research activities in team, each team has a leader – who is often expert in the field and guides young researchers in conducting many research projects. This practice help synergize researchers' strength as well as supplement their loopholes, followers can learn research skills from their leader as well. Some universities in Vietnam, such as the Vietnam University of Natural Science, have started to organize research activities in working team, however, the fundamental working style is still independent from one another, the collaboration between researchers is still loose, and each follower focuses on a distinct problem. Prof Dang also suggested that the university should sign contract with great researchers/scholars who are expert in the field to create an effective research team.

Based on a survey of 142/271 universities, 945 scientific working group (SWG) have been formed in universities, or a

university has an average of seven SWGs. Each SWG includes scientists working within a focus field, and the leader is often a senior researcher with many years' experience and have a certain influence in the field. This creates a good environment to junior researchers, and to promote the research performance of each member.

Another inevitable trend emphasized by Prof Dang is the linkage between research activities and PhD programs. This will help not only build up high qualified human resources but also improve quality of research activities. Scientific research and PhD programs have a tight relationship and support each other. Research is one of the determinants of the quality of doctoral training and vice versa, the program will address issues that scientific research needs to answer. The integration between research activities and doctoral programs will create double benefits, as an arrow hit multiple targets. PhD students' motivation of conducting research is quite clear. Regarding advisors' motivation, even though the salary get from this guidance is quite small (about 1.5 million VND/year/each candidate), they still want to do to train their successors. In addition, regulations such as to be considered Professor titles, one must guide successfully at least two PhD students, and leader of a scientific subject in which there is doctoral students' participation will get priority in approval process, these give strong motivation for teachers.

Accordingly, this study expects that a good research environment and a supervision of doctoral students will lead to a better research performance.

Hypothesis 5: Good research environment will have

positive impact on academic research performance

Hypothesis 6: The number of doctoral students will have positive impact on academic research performance

3.3. Research question, hypotheses, and model

The study attempts to answer the research questions: What are the factors that affect teaching staffs' research performance in Vietnam?. From the literature, the following hypotheses are derived:

- *H1: Extrinsic motivation factors will have positive impact on academic research performance*
- *H2: Intrinsic motivation factors will have positive impact on academic research performance*
- *H3: Research competency will have positive impact on academic research performance*
- *H4: Foreign langue proficiency will have positive impact on academic research performance*
- *H5: Good research environment will have positive impact on academic research performance*
- *H6: The number of doctoral students will have positive impact on academic research performance*

Research Model (next page)

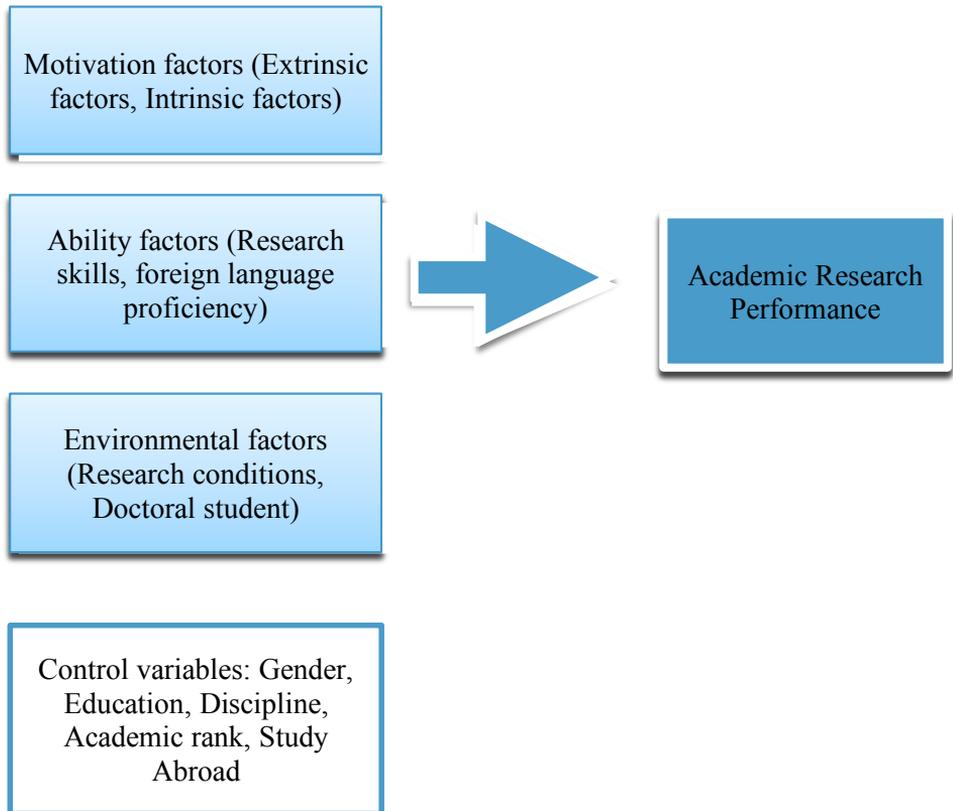


Figure 3: Research Model

Chapter 4: Research Methodology

4.1. Introduction

In this chapter, I explain the research methodology used to investigate the factors that influence the research performance of academics in Vietnam higher education context. The study used quantitative approach to collect and analyze data. Online survey questionnaire including 13 range of questions was designed and distributed to participants who are lecturers working at different universities in Vietnam. As it is hard to apply a random sampling from the population of more than 75,000 lecturers, snowball sampling was used for data collection, and the process achieved 207 respondents eventually.

The study used the Statistical Analysis System (SAS) for data analysis, both descriptive and inferential statistics. Principle Components Analysis, Correlation, and Regression model were gradually used to determine the relationship between independent and dependent variables in the research model.

4.2. Data collection

Method of data collection

In this quantitative method, an online questionnaire survey, Google form, was used to collect data. It is the most convenient way of collecting a whole bunch of data from a large sample, and from as distant place which the researcher is unable to visit because of limitations of time and finance. The advantages of a survey are easily recognized because its speed, low cost, and accuracy in collecting the required data in a structured set of questions beyond any geographical boundary.

Although having many advantages, a questionnaire survey still have some shortcomings, such as the low response and low quality data because some participants may answer the questions quickly without thinking about the answers carefully. I had to follow-up and re-invite participants every two weeks up to two or three times to get a high response rate in this study. Moreover, the contribution of this study were emphasized in the survey introduction. It was hoped that participants would realize the importance of this study and respond to the questions thoughtfully.

Participants

The participants in this study were lecturers from the target population of more than 75,000 lecturers in Vietnam (48% females in 2017). They were accessible by email, Facebook, and other social media networks. They are full-time academics whose main responsibility is teaching, alongside with research, services, administration, and management. In Vietnam institutions of higher education, there is no academic whose responsibility is research-only, because all universities are teaching-intensive institutions.

Structure of the questionnaire

The questionnaire (see Appendix) consisted of three compulsory parts: 1) demographics and job-related characteristics; 2) perceptions of academics about research motivation, research ability, and research environment; 3) research performance in a five-year period, 2013 – 2017.

Part 1: Demographics

This part has eight questions, from question number 1 to 8. They were designed to collect demographics and job-related characteristics of participants, such as age, gender, academic rank, seniority, discipline, and so on.

Part 2: Perceptions of academic about research motivation, ability, and environment

This part has three group of questions related to motivation factors, ability factors, and environment factors. Questions range from number 9 to number 11. Most of questions use a 5-point scale, such as Totally Disagree = 1, Disagree = 2, Partially Agree = 3, Agree = 4, Totally Agree = 5. Table 5 shows details of variables.

Research motivation factors include: M1 income, M2 promotion, M3 performance, M4 recognition, M5 contribution, and M6 curiosity

Research abilities factors include: A1 defining a research topic, A2 literature review, A3 design a research project, A4 organize a research group, A5 networking researchers, A6 peer review, A7 research methods, A8 collecting data, A9 analyze data, A10 write domestic articles, A11 write international articles, A12 research ability in general; and the three items AL1, AL2, AL3 related to foreign language proficiency; and the two supplementary items Ai – importance of research and An – need of research training program.

Research environment factors include: E1 teaching load, E2 research policy, E3 library, E4 facilities equipment, E5 research fund, E6 support from colleagues, E7 environment in general; and the two supplementary items Es1 – number of PhD students and Es2 – number of master students supervision

Part 3: Research performance

This part consists of two questions, question number 12 asks the output of domestic publications and question number 13 explored the output of international publications, over the last five years 2013 - 2017.

The questionnaire is developed by the researcher, based on issues raised in the literature review. Some questions use a five-option Likert scale, others use numeric measurement or dummy variables, as summarized in the table below:

Variables	Type	Measurement
Dependent Variables		
Research performance 1 (P1)	Number	Number of domestic publications
Research performance 2 (P2)		Number of international publications
Independent Variables		
Motivation factors	5 point Likert scale	1 - Totally Disagree 2 - Disagree 3 - Partially Agree 4 - Agree 5 - Totally Agree
Ability factors		1 - No experience 2 - little experience 3 - average 4 - good 5 - excellent
Languages (AL1 English, AL2 five languages, AL3 others)		1-Don't know 2- Limited 3-Average 4-Fairly good 5-Good
Ai - Research importance		1- Not important 2- Slightly important 3- Partially important 4- Important 5- Very important

An – Need of research skills training		1- Not necessary 2- Slightly necessary 3-Fairly necessary 4-Necessary 5-Very necessary
Environment factors		1 – Totally disagree 2 – Disagree 3 – Fairly agree 4 – Agree 5 – Totally agree
Es1	Number	
Es2		
Time for research per week (Et)	Category	
Control Variables		
Gender	Dummy variable	Female = 0 Male = 1
Education		Bachelor = 1 Master = 2 PhD = 3
Academic rank		Lecturer = 1 Senior Lecturer = 2 Superior Lecturer = 3
Discipline		Social Sciences = 1 Others = 2
Study abroad		Yes = 1 No = 0

Table 5: Summary of variables and its measurements

To conduct survey, the questionnaire was translated in Vietnamese. At the end of collecting data process, the results were translated back in English, and imported into SAS for analysis.

4.3. Data analysis

This study applied both descriptive analysis and inferential analysis. Descriptive analysis was used to describe the

sample of the study in terms of the distribution and pattern of data (Field, 2013). Inferential analysis makes reference or predictions to the whole population that the sample represents (Field, 2013). In order to generate these inferences and predictions, several tests of significance were undertaken. Principal components analysis, correlation analysis, robust regression analysis were employed in this research. The analysis was conducted in the following order:

First, principle components analysis was done to reduce a large number of measured variables into a smaller number of extracted factors. The related variables are often associated with each other in groups which are called factors. Therefore, it was used in this study to create factors (factors might be also called ‘scales’). Then, such factors were used in the correlation analysis and the regression analysis.

Second, the correlation analysis was conducted to preliminarily examine the relationship between variables.

Lastly, the regression analysis was run to determine factors that significantly impact the academic’s research performance at domestic level and at international level.

Chapter 5: Results

In this chapter, before presenting key findings that come from the regression analysis, descriptive analysis, principle components analysis, and correlation analysis will be presented. These analyses were necessary to prepare good variables for regression analysis. Data were analyzed using the Statistical Analysis System (SAS, studio online).

5.1. Descriptive analysis

The study had a participant pool of 207 university teachers in Vietnam: 66.18% of the participants represented female respondents while the remaining 33.82% represented the males. Furthermore, 74.40% of the participants were within the age range of 31-45, 16.43% of the participant were between the ages under 30, and the remaining 9.18% represented the respondents who were aged 46 or above. Additionally, 50.24% of the 207 academics had worked at university as long as 11 years or more, 35.75% of the respondents had worked with 6-10 years and 14.01% represented the respondents between 0-5 years.

Regarding to education qualification, the majority respondents got a Master degree with 56.52%, the second largest were PhD qualification with 40.10%, and the remaining 3.38% represented the bachelors. In addition, the academic rank of 207 respondents was majority at lecturer level, accounted for 71.98%, while senior lecturer and superior lecturer accounted for 16.43% and 11.59% respectively. Furthermore, among five disciplines, Social Sciences got the highest level of respondents with 62.32%, the four remaining disciplines including Medicine and Pharmacy Science, Engineering and Technology Science, Natural Science,

Agricultural Science had a smaller proportion of 14.49%, 12.56%, 6.76%, 3.86% respectively.

Variables	Number of people	Percentage (%)
Age		
<30	34	16.43
31-45	154	74.40
46+	19	9.18
Sex		
Male	70	33.82
Female	137	66.18
Seniority		
0-5	29	14.01
6-10	71	35.75
11+	104	50.24
Education		
Bachelor	7	3.38
Master	117	56.52
PhD	83	40.10
Academic rank		
Lecturer	150	71.98
Senior Lecturer	34	16.43
Superior Lecturer	24	11.59
Disciplines		
Social Science	129	62.32
Medicine and Pharmacy Science	30	14.49
Engineering and Technology Science	26	12.56
Natural Science	14	6.76
Agriculture Science	8	3.86

Table 6: Descriptive analysis

The results of independent samples T-TEST:

There was no significant difference in domestic research performance for males (M=7.28, STD=6.80) and females (M=9.31, STD=10.68) in the independent samples T-test: $t = -1.45$, $p = 0.1512$, but there was statistically significant difference at the $p < 0.05$ level in international publications for males (M=2.73, STD=5.24) and females (M=1.09, STD=2.44) in the

independent samples T-test: $t = -2.49$, $p = 0.015$. In brief, there was no significant difference in domestic research performance between genders, but at international level, males got a higher research performance.

Regarding discipline, the independent samples T-test showed that there was no significant difference at the $p < 0.05$ level in domestic research productivity between Social Science (M=7.37, STD=6.41) and Others (Medicine and Pharmacy Science, Engineering and Technology Science, Natural Science, Agriculture Science) (M=8.96, STD=10.80), recorded $t = 1.18$ and $p = 0.24$. However, in term of international performance, there was statistically significant difference between social sciences (M=0.74, STD=2.23) and others (M=3.13, STD=4.98) in the independent T-test: $t = 3.99$, $p = 0.0001$. Social Science was still behind other disciplines in international research performance, while there was no significant difference at domestic level.

By conducting conditional frequency between discipline and gender (table 8), we found that social science had 74.45% females while other sciences represented 61.43% males.

Table of TwoDiscipline by OGender			
TwoDiscipline(TwoDiscipline)	OGender(OGender)		
	Female	Male	Total
Others	35 16.91 44.87 25.55	43 20.77 55.13 61.43	78 37.68
Social Sciences	102 49.28 79.07 74.45	27 13.04 20.93 38.57	129 62.32
Total	137 66.18	70 33.82	207 100.00

Table 7: Frequency of discipline and gender

Regarding to research input (weekly research hours, table 8) and output (the total number of publications in the last five years 2013-2017, table 9 (a) and (b)), the results showed a critical lack of both input and output in research.

Weekly Research Hours				
Et	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0-10h	93	44.93	93	44.93
10-20h	73	35.27	166	80.19
20-30h	27	13.04	193	93.24
over 30h	14	6.76	207	100.00

Table 8: Weekly research hours

Table 8 shows that 44.93% of participants spent 10 hours or less on research per week. This is below the minimum requirement time 12.5 hours/week (according to 600 hours per year). It is necessary that most academic should devote more time for research if they want to increase the research productivity.

Domestic Publications				
P1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	14	6.76	14	6.76
1-5	97	46.86	111	53.62
6-10	49	23.67	160	77.29
11-20	35	16.91	195	94.20
21+	12	5.80	207	100.00

Table 9 (a): Domestic publications

International Publications				
P2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	122	58.94	122	58.94
1-5	73	35.27	195	94.20
6-10	3	1.45	198	95.65
11-20	8	3.86	206	99.52
21+	1	0.48	207	100.00

Table 9 (b): International publications

Table 9 shows the total number of articles that participants published in domestic journals (a) and international journals (b) over the last five years 2013-2017. At domestic level, 6.76% or 14 lecturers responded they did not have any domestic publications over the last five years. This situation is even worse at international level, with nearly 60% or 122 participants have not produced any international publications during the last five years.

5.2. Principal Components Analysis (PCA)

The purpose of this Principal Components Analysis (PCA) was to reduce the large number of variables in the data into a small number of factors which then were to be used for the regression analysis. I had no prior expectations about the correct number of factors to be extracted. The number of factors should be extracted naturally, based on the correlations between items. The extraction should not have any intervention which aims to obtain a fixed number of factors. The eigenvalues-greater-than-one rule was set as default for all PCAs in this study (Kaiser, 1960). Because if a factor has a low eigenvalue, then it is contributing little to the explanation of variances in the variables.

Three PCAs were conducted in order to create extracted factors for research motivation, research ability, and research environment:

PCA on Motivation factors

PCA was run with 6 measured variables (items of questionnaire) related to motivation, M1 to M6. Two factors were extracted based on rotation converged in 2 iterations, accounting for of 66.32% cumulative variance. All items had a good loading ($> .5$), as indicated in table 10.

Factor 1 gets an eigenvalue of $2.63 > 1$, accounted for 43.79% variance. This extracted factor includes M4_peer recognition, M5_contribution, M6_curiosity. They are also elements of intrinsic motivation, so the factor 1 was renamed into intrinsic motivator (EM2).

Factored variables	Extracted factors	
	Factor 1 (Intrinsic motivator)	Factor 2 (Extrinsic motivator)
M1_Higher income		0.54
M2_Promotion		0.88
M3_Performance requirement		0.75
M4_Peer recognition	0.65	
M5_Contribution	0.92	
M6_Curiosity	0.91	
EigenValue	2.63	1.35
Variance accounted (%)	43.79	22.53
Cumulative % variance	43.79	66.32
Cronbach Coefficient Alpha	0.61	0.81

Table 10: Extracted factors of research motivation

Factor 2 has an eigenvalue of $1.35 > 1$, with 22.53% variance. It includes M1_higher income, M2_promotion, and M3_performance requirement. These items also belong to

extrinsic motivation, so the factor 2 can be called as extrinsic motivator (EM1).

The evaluation of reliability is the process of examining the internal consistency of variables contained in a factor. A reliability coefficient (Cronbach's alpha) greater than .7 is normally acceptable (Cronbach, 1951). A value between .6 and .7 might be questionable. Factor 2 has a good Cronbach Alpha, 0.81, however, factor 1's coefficient is a bit lower. However, according to motivation theory, the factor 1 – intrinsic motivator is necessary, and acceptable by different studies. So it is retained for further analysis.

In brief, the results of principle components analysis on motivation items led to the two new variables, EM1 – extrinsic motivation and EM2 – intrinsic motivation, which will be used in correlation analysis and regression analysis.

PCA on Ability factors

Next, I conducted principle components analysis (CPA) on 16 items related to research ability, A1 to A11, AL1, AL2, AL3, Ai, and An. Factored variables, variables' loading, and extracted factors are presented in Table 11. There are three factors with eigenvalues greater than 1 and the amount of variance they explained were 43.61 %, 9.03 %, and 7.48 % respectively.

By checking Cronbach's Alpha for the three new factors, only factor 1's alpha is greater than 0.7, while the two factors 2 and 3 get quite low coefficient of 0.4 and 0.37 correspondingly.

Factor 1 includes measured variables from A1 to A11, these items correlated each other, and all related to different

aspects of research skills, so it can be renamed as ‘Research Skills Competency’, EA.

Factored variables	Extracted factors		
	Factor 1 (Research skills competency)	Factor 2 (Foreign language skill)	Factor 3
A1_define research topic	0.78		
A2_literature review	0.71		
A3_peer review	0.83		
A4_design research project	0.80		
A5_organize research group	0.79		
A6_networking researchers	0.79		
A7_mastering research methods	0.77		
A8_collecting data	0.76		
A9_analyzing data	0.73		
A10_writing domestic articles	0.72		
A11_writing international articles	0.66		
AL1_English		0.62	
AL2_French/Russian/C/G/J		0.56	
AL3_Other		0.71	
Ai_Importance of research			0.69
An_Need of research skill training			0.78
Eigenvalue	6.98	1.44	1.2
Variance accounted (%)	43.61	9.03	7.48
Culmulative % variance	43.61	52.64	60.13
Cronbach Coefficient Alpha	0.93	0.40	0.37

Table 11: Extracted factors of research ability

Regarding factor 2, it relates to foreign language proficiency. AL1 measured English proficiency, this is the most common used foreign language in Vietnam education context. Majority of academics have a certain level of English, as it is often required in many education contexts. AL2 measured Russian/German/French/Chinese/Japanese language proficiency, these are the second most used foreign language in Vietnam. Finally, AL3 means other foreign languages. One person can be very good at English (AL1 high score) but do not master well other foreign languages (low score at AL2 and AL3). That is the

reason why their relationships are weak, and not strongly correlated each other. Considering three measured variables, AL1, AL2, and AL3, AL1 or English proficiency is more important than the two other variables AL2 and AL3, and it is predicted that the variable AL1 (English proficiency) will be meaningful in the context of this study, AL1 should be retained for analysis.

Regarding factor 3, A_i measured the importance of research to an academic's professional life, while A_n measured their need for more research skills training. One person can find research very important to their career but their need for training is low as their research skills are already good, and vice versa, a poor researcher can neglect the importance of research as well. Therefore, it is understandable that the two variables are not internal consistent each other. They should be examined separately. The factor 3 is removed, yet the two variables will be used for explanation in discussion part.

Eventually, considering the results from CPA analysis, ability factors consists of extracted factor 'research skills competency – EA' and 'English proficiency - AL1'.

PCA on Environmental factors

Finally, the principle components analysis (PCA) was conducted on eight items on environment factors (table 12). Two factors were extracted based on the MinEigen criterion, greater than 1. Factor 1 includes items from E1 to E6, this is renamed as 'research environment condition - EE'. The second factor named 'supervision postgraduate students', including the number of Master students and PhD students one is in charge of. However, factor 2's Cronbach alpha is $0.57 < 0.7$, not so high. It is not

strongly internal consistency, or the two items Est1 and Es2 are not closely related in one group.

Factored variables	Extracted factors	
	Factor 1 (Research environment conditions)	Factor 2 (Supervision grad and postgrad students)
E1_fair teaching load	0.51	
E2_research policy	0.79	
E3_library	0.83	
E4_facility & equipment	0.89	
E5_research funds	0.83	
E6_colleague support	0.73	
Es1_number of PhD student supervised		0.85
Es2_number of Master student supervised		0.83
Eigenvalue	3.62	1.4
Variance accounted (%)	45.25	17.47
Culmulative % variance	45.25	62.72
Cronbach Coefficient Alpha	0.86	0.57

Table 12: Extracted factors of research environment

However, considering the two variables Es1 (number of PhD students supervision) and Es2 (number of Master students supervision), the variable Es1 has been viewed as important and significant in Vietnam context, as PhD programs often link to in-depth research activities and publications in journals. Moreover, the positive relationship between doctoral students and research performance has been examined in a number of studies (Boud and Lee 2009, Salter et al. 2000, Song 2001). It is predicted that the number of doctoral students were meaningful in this study context, Es1 will be retained for further analysis.

In brief, environment factors will include two variables: ‘research environment condition - EE’ and ‘number of Phd Student supervision – Es1’.

5.3. Correlation analysis

Correlation analysis was used to examine the correlation between 13 variables, including six independent variables (EM1, EM2, EA, English, EE, Es1), two dependent variables (P1, P2), and five control variables (gender, education, academic rank, discipline, and study abroad). Among them, the variables “EM1, EM2, EA, EE” were new aggregate variables which were created by computing the mean of the correspondent factored variables. This newly-created variable was necessary for this correlation analysis as well as the regression analyses in order to seek answers for the research question.

The table 13 shows the mean, standard deviation, and correlation of 13 variables: Gender (female=0, male=1); Education (Bachelor = 1, Master = 2, PhD = 3; ARank=Academic Rank (lecturer = 1, senior lecturer = 2, superior lecturer = 3); Abroad = study abroad (No = 0, Yes = 1); Discipline (Social Science = 1, Others = 2), EM1 = extrinsic motivation; EM2 = intrinsic motivation; EA = Extracted Ability or Research skills competency; EE = Extracted Environment or research environment conditions; English = English Proficiency; PhDstud = number of PhD students supervision; P1 = number of domestic publications; P2 = number of international publications.

The demographic information indicated the following interpretations: many female academics participated in this survey. Most participants held a Master’s degree, were lecturers, did not study abroad, and had an average level of English proficiency. A great number of participants works in social sciences. The average number of doctoral students one supervises was under 1 and quite varied between respondents.

The average number of domestic publishing was much higher than at international level.

The correlation result showed that domestic research performance (P1) was positively correlated with Education ($r = 0.43^{***}$, $p < .0005$), Academic Rank ($r = 0.58^{***}$, $p < .0005$), Research skills competency ($r = 0.43^{***}$, $p < .0005$), and the number of doctoral students supervision ($r = 0.23^{***}$, $p < .0005$).

The two out of five control variables, including education level and academic rank, were significantly correlated with a better domestic research performance. Regarding the six main variables, only two variables over six variables, research skills competency and number of PhD students, had a positive relationship with domestic performance, while the four remaining variables: research environment condition (EE), extrinsic motivator (EM1), intrinsic motivator (EM2), and English proficiency showed no significant correlation with domestic research performance.

The international research performance (P2) was positively correlated with Gender ($r = 0.21^{**}$, $p < .005$), Education ($r = 0.27^{***}$, $p < .0005$), Academic Rank ($r = 0.39^{***}$, $p < .0005$), study abroad ($r = 0.29^{***}$, $p < .0005$), Discipline ($r = 0.31^{***}$, $p < .0005$), Research skills competency ($r = 0.42^{***}$, $p < .0005$), English proficiency ($r = 0.31^{***}$, $p < .0005$), and number of doctoral students supervision ($r = 0.26^{***}$, $p < .0005$).

All the five control variables had significantly positive relationship with international research performance (P2). Whereas only three out of six main variables, including research skills competency, English proficiency, and PhD students, had a positive correlation with the number of international publications

Comparing between P1 and P2, the differences are listed as below:

- Gender was positively correlated with P2 only. This means male lecturers perform better at international level compared to females. Yet at domestic level, there was no difference.
- Education level was positively correlated with both P1 and P2, but stronger correlation was recognized on P1 – domestic research performance. A higher education level had a better research performance.
- Similarly, academic rank was positively correlated with both P1 and P2, and stronger on P1. A higher academic rank correlated with a greater number of publications.
- Study abroad was positively correlated with P2 only. This is understandable, as people study abroad would have more favorable condition in publishing an international article.
- Discipline was positively correlated with P2 only. This means other science (natural sciences, engineering and technology, medicine and pharmacy, agriculture science) performed better than social sciences at international level. However, at domestic level, there was not much difference.
- Research skills competency was positively correlated with both P1, and P2. And the relationship was a bit stronger at domestic level. A better research skills might trigger a better research performance at both domestic and international level.
- English proficiency was positively correlated with P2 only. This is understandable, as for international publication, English skills has been essential assets for reading and writing articles.

Table 13: Descriptive statistics and correlations for variables³.

Variable	Mean	STD	1	2	3	4	5	6	7	8	9	10	11	12
1.Gender	.34	.47												
2.Edu	2.37	.55	.06											
			(.38)											
3.ARANK	1.40	.69	.11	.53***										
			(.12)	(.000)										
4.ABroad	.36	.48	.25***	.21**	.24***									
			(.000)	(.00)	(.000)									
5.Discipl	1.38	0.49	.35***	.12	.03	.26***								
			(.000)	(.10)	(.66)	(.000)								
6.EMI	3.33	.72	-.09	-.17*	-.07	.00	-.10							
			(.21)	(.02)	(.32)	(.97)	(.16)							
7.EM2	3.86	.72	.15	.05	0.06	.16*	.23***	.33***						
			(.03)	(.50)	(.40)	(.02)	(.000)	(.000)						
8.EA	3.28	.66	.25***	.39***	.39***	.37***	.18**	.07	.31***					
			(.000)	(.000)	(.000)	(.000)	(.00)	(.31)	(.000)					
9.EE	2.85	.75	-.04	-.03	.04	-.04	-.08	.20**	.22**	.13				
			(.52)	(.66)	(.56)	(.54)	(.27)	(.00)	(.00)	(.06)				
10.English	3.63	.96	.06	.08	.11	.52***	.25***	.05	.26***	.43***	.07			
			(.38)	(.24)	(.11)	(.000)	(.000)	(.45)	(.000)	(.000)	(.34)			
11.PhDstud	.85	2.49	.22**	.31***	.37***	.18*	.10	-.06	.03	.23**	-.00	.04		
			(.00)	(.000)	(.000)	(.01)	(.15)	(.39)	(.62)	(.00)	(.95)	(.57)		
12.P1	7.97	8.35	.12	.43***	.58***	.09	.09	-.07	.13	.43***	.09	.13	.23***	
			(.10)	(.000)	(.000)	(.21)	(.19)	(.32)	(.05)	(.000)	(.17)	(.06)	(.000)	
13.P2	1.64	3.70	.21**	.27***	.39***	.29***	.31***	-.04	.11	.42***	.02	.31***	.26***	.48***
			(.00)	(.000)	(.000)	(.000)	(.000)	(.55)	(.13)	(.000)	(.75)	(.000)	(.000)	(.000)

³ Notes: N=207, STD=standard deviation; P-values are presented in parentheses: * p<0.05, **p<.005, ***p<.0005

- Number of PhD student was positively correlated with both P1 and P2, but stronger relationship showed at P2. This means a lecturer who supervise more PhD student tend to have more publications both at domestic and international level.

5.4. Regression analysis

The study conducted two regression models: model 1 for domestic research performance (P1), and model 2 for international research performance (P2).

The Breusch- Pagan test for heteroscedasticity for P1 ($\chi^2 = 89.90$, $P=0.0000$) and P2 ($\chi^2 = 177.64$, $P=0.0000$) showed that the null hypothesis of constant variance was rejected at the .001 level. To take care of this heteroscedasticity problem, I used the robust regression option. Also the variance inflation factor (VIF) was checked to detect multicollinearity. EA (research skills competency) was the variable with the highest VIF = 1.74, for both P1 and P2, which means that there is no serious concern about multicollinearity (Gujarati 2003).

According to previous studies (Fiona Wood, 1990; Quy Nguyen, 2015), demographic variables (e.g., gender, education, academic rank, study abroad, and discipline) may have effects on research performance. After controlling for the demographic variables, I examined the six main independent variables: extrinsic motivation 'EM1', intrinsic motivation 'EM2', research skills competency 'EA', English proficiency 'AL1', research environment condition 'EE', and number of PhD student supervision 'Es1'.

The results of robust regression were summarized in Table 14 with beta coefficient and correspondent standard error in parentheses.

Independent Variables	Dependent Variables	
	Model 1	Model 2
	Domestic Publications (P1)	International Publications (P2)
	Coefficient (Std. Err.)	Coefficient (Std. Err.)
<i>The main independent variables</i>		
Extrinsic motivator (EM1)	-0.63 (0.52)	0.11 (0.12)
Intrinsic motivator (EM2)	0.62 (0.55)	-0.03 (0.12)
Research skills competency (EA)	1.73** (0.67)	0.46** (0.15)
Research environment condition (EE)	0.4 (0.47)	-0.03 (0.12)
English proficiency	-0.05 (0.45)	0.25** (0.10)
PhD students	-0.14 (0.15)	0.04 (0.03)
<i>Control Variables</i>		
Gender	0.16 (0.81)	-0.05 (0.19)
Education	1.86** (0.77)	0.05 (0.18)
Academic rank	4.69*** (0.61)	0.37** (0.14)
Study abroad	-1.82* (0.87)	0.23 (0.20)
Discipline	0.06 (0.79)	0.94*** (0.18)
R-square	0.2825	0.1528
N	207	207

Table 14: Regression analysis for model 1 and model 2⁴

⁴ Notes: * significant at 0.05 level; ** significant at 0.01 level; *** significant at 0.001 level; (two-tailed tests)

In model 1, only research skills competency EA (beta = 1.73, $p < 0.01$) was significant, while the five remaining variables (EM1, EM2, EE, English, and PhDstud) were not. In model 2, the two variables, research skills competency EA (beta = 0.46, $p < 0.01$) and English proficiency (beta = 0.25, $p < 0.01$) were significant, while the four remaining (EM1, EM2, EE, PhDstud) did not show any significant impact at 0.05 level.

In both models, the two motivation factors (intrinsic motivation EM2 and extrinsic motivation EM1), environment factors, and number of PhD students supervision had no significant correlation with research performance at both domestic and international scales. The results did not support hypothesis 1 - *Extrinsic motivation factors will have positive impact on academic research performance*, hypothesis 2 - *Intrinsic motivation factors will have positive impact on academic research performance*, hypothesis 5 - *Good research environment will have positive impact on academic research performance*, and hypothesis 6 - *The number of doctoral students will have positive impact on academic research*. It means that a good motivation, a good environment, or supervising doctoral students did not lead to a higher research performance.

On the contrary, 'research skills competency' EA showed a strong correlation with both domestic and international research performance. This result supports hypothesis 3 - *Research competency will have positive impact on academic research performance*. Moreover, research skills competency had a stronger positive effect on domestic research performance than on international one, $\beta = 1.73$ vs 0.46. This means that a good research skills would improve research performance at both domestic and international level, but the effect was much

stronger at domestic level.

Finally, English proficiency had a strong correlation with international research performance, but no significant correlation with domestic research performance. This result partially supports the hypothesis 4 *Foreign language proficiency will have positive impact on academic research performance*. This means that academics with a better English level would have more publications on international journals, but it did not have the same effect on domestic level.

Regarding control variables, education had a positive correlation with domestic publication ($\beta = 1.86$), but had no effect on international publication. A higher education level did lead to a higher performance at domestic level only. Academic Rank also had a positive correlation with both research performance levels, but much stronger at domestic level, $\beta = 4.69$ vs 0.37. Discipline had a positive correlation with the number of international publications ($\beta = 0.94$). This means that compared to social science, the other sciences (natural science, engineering, technology science, pharmacy and medicine, agriculture science) had a greater research performance internationally. Finally, study abroad had a negative correlation with domestic research performance ($\beta = - 1.82$). Academics who studied abroad had a tendency to have less domestic journals compared to academics who did not study abroad.

In term of model fit or how much the regression model fits the data, the model 1's R-square = 28.25%, while the model 2's R-square = 15.28%. It means that the model 1 explains 28.25% of the variability of the response data – number of domestic publications, and the model 2 explains 15.28% of the variability

of the second response data – number of international publications around its means.

In brief, according to the initial research question and six hypotheses. The data and statistic test bring to results as presented in the table below:

Hypothesis	Result
H1: Extrinsic motivation factors will have positive impact on academic research performance	Rejected
H2: Intrinsic motivation factors will have positive impact on academic research performance	Rejected
H3: Research skills competency will have positive impact on academic research performance	Accepted
H4: Foreign language proficiency will have positive impact on academic research performance	Accepted at International level Rejected at Domestic level
H5: Good research environment will have positive impact on academic research performance	Rejected
H6: The number of doctoral students will have positive impact on academic research	Rejected

Table 15: Findings summary table

Chapter 6: Discussions

6.1. Explanation of the results

(1) The regression analysis found that research skills competency (EA) has significant influence on research performance at both domestic and international level. This indicated that their research performance increased as they got a better experience on research skills. This is reasonable in this field because without research knowledge and skills one cannot produce reliable and significant scientific results.

In Vietnam context, most universities have been teaching intensive institutions, academics often focused on teaching rather than conducting scientific research. Since 2014, the new regulation required all lecturers have to spend at least one third of their working hours for research, academics started to recognize the importance of this activity, about 83% of 207 respondents answered research is important or very important to their professional career (table 16). However, research is a scientific work that requires a lot of skills and experience, one cannot do research well right after a short-period of practicing and training. The need for more research skills training is permanent and increasing, about 94% of participants answered they fairly or very need more research skills training programs (table 17). All participants showed a certain level of need for more training and found the importance of research to their academic career.

Importance of research to professional career				
Ai	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	0.48	1	0.48
3	35	16.91	36	17.39
4	105	50.72	141	68.12
5	66	31.88	207	100.00

Ai: 1-not important, 2-slightly important, 3-partially important, 4-important, 5-very important

Table 16: Importance of research to professional career

Need for research skills training				
An	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	13	6.28	13	6.28
3	55	26.57	68	32.85
4	97	46.86	165	79.71
5	42	20.29	207	100.00

An: 1-not necessary, 2- slightly necessary, 3-fairly necessary, 4-necessary, 5-very necessary

Table 17: Need for research skills training

Explore in more detail the research skills competency. As indicated in the principle components analysis (PCA), the factor named ‘research skills competency’ was measured by eleven items (table 18). While the average scores of most items were around 3. (average level of research experience), the score for writing international articles was quite lower, around 2. (little experience), meaning that most of respondents had little

experience for international publishing. To promote international publications, university should provide more trainings by inviting international researchers or cooperation program with other research institutions for research capacity building, locally and internationally.

Variable	Label	Minimum	Maximum	Mean	Std Dev
A1	Define research topic	1.00	5.00	3.54	0.72
A2	Literature review	1.00	5.00	3.51	0.74
A3	Peer review	1.00	5.00	3.27	0.87
A4	Design research project	1.00	5.00	3.32	0.92
A5	Organize research group	1.00	5.00	3.17	0.88
A6	Networking researchers	1.00	5.00	3.06	0.95
A7	Mastering research methods	1.00	5.00	3.37	0.76
A8	Collecting data	1.00	5.00	3.24	0.86
A9	Analyzing data	1.00	5.00	3.29	0.79
A10	Writing domestic articles	1.00	5.00	3.64	0.79
A11	Writing international articles	1.00	5.00	2.69	1.08
EA		1.00	5.00	3.28	0.66

*1 – No experience, 2 – little experience, 3 – average, 4 – good,
5 - excellent*

Table 18: Measured variables of research skills competency

The descriptive results also show that comparing to other sciences, social sciences recorded lower research performance at international level. Corresponding with that, research competency level of academics working in social sciences (M=3.2) recorded lower score compared to other sciences (M=3.6) (independent TTEST on A12 and Discipline, t=3.51, P=0.0006). This result is consistent with a research done by DTU Research Informeta (Duy Tan university) on the Vietnam’s situation of international publications from 2017 to 2018: international publications were mainly from agriculture, biology, chemistry, genetics, informatics, engineering, mathematics,

medicine, physics, while very few from humanities, art, economics, social sciences. Social sciences would need more training on research skills, especially how to read, analyze and write articles according to international standards.

The regression results also show that the research competency level was more correlated at local level than at international level. This means that a good research skills led to a good research performance more at local journals than at international journals. This is because publishing an international article requires not only good research knowledge and skills, but also other factors, such as English proficiency, and experience in writing international articles.

(2) For Vietnamese academics, writing a scholarly paper in English is more difficult than writing a paper in Vietnamese. As Vietnamese academics' levels of English proficiency are relatively low when compared with those of other academics from the same Southeast Asia region (Quy Nguyen, 2015), the probability of Vietnamese academics publishing many papers in international journals is low. Therefore, the factor of good research skills is necessary but not sufficient to strongly contribute to any success in increasing the number of international publications.

The regression analysis showed a significant correlation between English proficiency level and the number of international publications. The better English level, the higher international research performance would be. The university would consider to set up more English training related to writing and publishing articles according to international standards.

(3) Regarding motivation factor, this study expected that intrinsic and extrinsic motivation would be positively correlated with academic research performance. However, the two motivation factors did not have significant effects on the research performance at the .05 level. This result rejected hypothesis 1 and 2. This means that higher motivation cannot directly lead university academics to produce higher research performance, both at domestic and international level. This result is not consistent with other researches which defined the positive correlation between motivation and performance (Chen et al., 2006; Quy Nguyen, 2015). To explain this result, we refer some studies on moderator role of motivation on performance (Edwin, 1978; A Dysvik, 2011) in which motivation was performed moderator effect in the relationship between one factor (e.g. ability, autonomy) and performance. A higher motivation cannot directly increase research performance, but it is a good stimulus that help a competent researcher to conduct more research and achieve a better research performance. A motivated academic but limited research skills and knowledge would not be able to produce any research. In this context, research skills competency plays a crucial role in determine one's research performance. It is reasonable to conduct further study related to the moderator effect of motivation on the relationship between research capability and research performance.

(4) Similarly to research environment, the regression result indicated no positive correlation between research environment condition and research productivity. Two academics work in a same research environment, but one might perform much better than other. This is because research performance might depend on the individual factors such as

research motivation, and research skills competency. One might work in a very good research environment, but without research skills and experience would trigger low scientific works, especially at international level. In this study context, environment factor might serve as a moderator factor between research skills competency and research productivity. Further study relates to this relationship should be conducted.

(5) Regarding to the impact of number of doctoral students on research performance, the regression analysis showed no significant relationship between the two. Supervising more postgraduate students might not be connected to a better research performance. This result is contrary to our expectation, as it is different from other studies (Salter et al. 2000, Song 2001) in which supervision of PhD students had a positive influence on academic research performance.

Prof. Tran Van Tho (Waseda University, Tokyo, Japan) who has many years of cooperation with Vietnam universities, commented on Vietnamese postgraduate works: "The way choosing a research topic for a PhD dissertation lacks of academic, creativity and uniqueness. In general, the content and qualifications of those thesis are far away from the world's minimum standards, and a PhD student in that case is hardly able to discuss scientific issues with foreign experts in the same field." (Tran Van Tho, 2003). If the quality of postgraduate programs was limited, its scientific results would not able to contribute to a better research performance of supervisor and professor. This issue would need to be investigated more in Vietnam context to understand the effect of PhD program on supervisor's research productivity across disciplines.

In conclusion, it can be predicted that research skills competency is one of the most important factors which positively impacts on academic research performance. And English proficiency will have a good impact on an academic's international research performance.

6.2. Implications

This section addresses practical implications withdrawn from the findings of this study. The implications will be addressed at individual, university, and national level.

Individual level

This study indicated the importance of research skills competency in enhancing the research performance. The research skills competency includes defining research topic, doing literature review, mastering different research methods, networking researchers in the field, etc. Among them, the capacity of writing international articles was one of the most critical issue with the majority answered no experience or little experience. In order to enhance research performance, one should invest more time on self-learning and practicing research. There are some suggestions for individuals to enhance their research capability, such as:

- Work closely with senior researchers and learn their experiences
- Cooperate with foreign researchers to share and learn research experiences
- Read as many articles as possible, lecturers should spend more time on learning how international articles were

written. Before becoming an international author, one must spend a lot of time being a reader.

- Participate in research skills training and workshops.

“Researchers at all career stages should seek to continually improve themselves by regularly updating and expanding their skills and competencies. This may be achieved by a variety of means including, but not restricted to, formal training, workshops, conferences and e-learning”. – Continuing Professional Development - European Charter for Researchers

Beside research skills, lecturers should constantly develop English skills in both reading and writing. English is common language among scientists, as the most famous scientific journals are all in English. Reading international articles will help lecturers not only increase vocabulary, understand the structure of an international article, but also learn their research methodology in solving scientific questions. After reading as many publications as possible, an academic can practice to present their results in English in academic and formal writing style.

University level

The findings of this study raise the need to provide research capacity development for university academics. Their low level of research productivity was significantly caused by a low level of research skills experience. It is not a surprise to see that university’s academics have a little research experience because they were predominantly teaching-only staff and a majority of them have not been trained at PhD level. Therefore, research training programs should be timely and regularly provided to improve their research skills competency. The

universities should provide workshops and training programs which are formally and professionally organized by the university and in cooperation with other institutions nationally and internationally. The training programs should focus on research methodology and research skills such as how to define a research topic, how to do literature review, how to criticize or review other's articles, how to collect data, how to analyze qualitative and quantitative data, etc.

The university should also provide English training program for academics. English is the most widely used language in academic and scholarly publications in the world. The critical issue of no international publications was somehow a consequence of a low level of English proficiency, especially in the academic writing for international publications. Facilitators of the English courses should have good experience in undertaking research and publishing internationally.

Both research skills and English proficiency are important as it will allow academics to read and discuss ideas with overseas researchers.

The university may consider build up an exchange research program with international universities which allow academics to go abroad for a short-term (6 months or 1 year) for research skills training program, or invite research experts/international academics to come and give training courses.

Research performance should also be listed as an important criteria in recruiting process. This will make sure that new lecturers would have a certain level of research skills

competency and experience in conducting research, moving from teaching-intensive criteria into research-oriented one.

National level

As Vietnam has a separate system of universities and research institutes, the government should have a policy to integrate these two institutions, for sharing research knowledge and skills. Academics will have good opportunities to work with experienced researchers of national research institutes.

The government should also strengthen the quality of graduate and postgraduate program (Master and PhD) in order to build up good research skills for potential academics.

Researcher exchange program, such as short-term research fellowship in the UK under NAFOSTED-UK collaboration programme, should be continued and opened at a wider range, to allow more lecturers go overseas for research skills training and practicing.

Chapter 7: Conclusions

In response to the issue of low research performance among academic staffs in Vietnam universities, a number of research has been conducted to define the factors that affect academic research performance. However, very few studies examine how research performance is associated with research motivation, research capability, and research environment. This study was designed to examine which factor is the main contribution to academic research performance in Vietnam higher education context, using the framework of performance as a function of motivation, ability, and environment.

Explore in details, the study investigated the relative effects of three group factors – research motivation (intrinsic and extrinsic motivation), research ability (research skills competency and English proficiency), and research environment (research conditions and number of doctoral students) – on research performance, and including five control variables: gender, education, academic rank, discipline, and study abroad. Based on previous studies (Chen et al., 2006; Quy Nguyen, 2015), this study expected that research motivation, ability and environment would be positively correlated with the research performance of Vietnam university teachers. However, the analysis results were somewhat different from those expectations. Only research skills competency had a positive and significant influence on research performance at both domestic and international scale, and English proficiency had a positive impact on international research performance only.

As the research has demonstrated, the predictor variable ‘research skills competency’ has a significant impact on both

domestic and international research performance. A good research skills and experience would trigger a greater performance. Research skills become the key factor which determine one person performance. It includes the ability to define a scientific topic, to do a literature review, to master different research methods, to collect and analyze data, to write articles according to journal's requirement, etc. A motivated lecturer would not be able to conduct valuable research if they do not have skills and experience, especially at international level. Similarly, a good research environment can only facilitate researchers in conducting research, it cannot guarantee a high research performance for unexperienced and unskillful researchers. Therefore, by considering three factors: motivation, ability, and environment, the universities and government should focus more on building up research capability for lecturers, by providing regular research skills training and workshops, for instance.

The result also indicated that the social science was more critical than other sciences in term of poor research skills and research performance, especially international publishing. Academics working in social science would need more attention and training for a better research performance. Also a further study related to this problem should be conducted to answer the cause of the performance disparity between social science and other scientific research. .

The result also pointed out the important role of English proficiency which has a positive impact on international research performance. It is the common language between scientists all over the world. A good English skills would help researcher to analyze and discuss scientific issue with international authors. It

is a critical skill that need regular training and self-learning.

Finally, regarding motivation factors and environment factors, even though this study does not show their significant impact on academic research performance, yet they have been important factors that predicted research performance in some other research. With the same level of research skills and experience, a good motivation and a good environment would promote one's research performance higher than others, then it might be served as a moderator or mediator on the relationship between research ability and research performance. Future study could raise this suspect as a research question.

Limitations of the study:

The study has answered the research question, and recognized the importance of research skills and English proficiency. However, the following limitations have been defined:

- Social sciences was still the main participant pool, snowball sampling limits the external validity of the research. For better result, further research should involve a great number of participants.
- The publishing outputs only focused on journal articles. This is quantitative aspect of research performance, qualitative aspect such as impact factor, citation have not been considered in the study. Further research may consider involve other publishing such as books, conference proceedings, etc., as well as qualitative aspect of their publications.

- Although the questionnaire was based on results of previous studies in the literature, I acknowledge that the questionnaire still had some limitations. For example, the questionnaire used only 6 items among 12 items in two categories of intrinsic motivation and extrinsic motivation.

Suggestions for further study:

From the discussion part, I raised the question of the moderator and mediator effect from motivation and environment on the relationship between research capability and research performance. Further study should consider this effect in analyzing the relationship between factors affecting research performance. That would give a more complete picture on the factors that influence research performance in Vietnam higher education context.

Further study should also consider the quality of the outputs, rather than just focus on the quantity of publishing outputs as in this study.

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Appendix

QUESTIONNAIRE

This questionnaire is designed to understand the factors that affect academic's research performance in Vietnam higher education context. We greatly appreciate your taking time to provide meaningful input. Your responses will be kept confidential. Your name will not be revealed in any of our reports or articles.

Part 1: Background data

1. Age:.....
2. Gender: Male () Female ()
3. Education
 - a. Bachelor's degree ()
 - b. Master's degree ()
 - c. Doctorate degree ()
4. Professorship
 - a. N/A ()
 - b. Associate Professor
 - c. Professor ()
5. Academic rank
 - a. Lecturer. ()
 - b. Senior Lecturer. ()
 - c. Superior Lecturer
6. Discipline
 - a. Natural Science. ()
 - b. Engineering and Technology Science. ()
 - c. Medicine and Pharmacy Science. ()

- d. Agriculture Science. ()
 - e. Social and Humanities Science. ()
7. For how long have you been teaching?.....
8. Have you been studied abroad for graduate and/or postgraduate program?
- a. No
 - b. Yes

Part 2: Factors Data

9. Motivation factors that motivate you to conduct research

On a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”, please rate how much you agree with each of the following statements regarding your current perceptions of your motivation in conducting research

Reasons why I want to conduct a research:	1 Strongly Disagree	2 Disagree	3 Agree Partially	4 Agree	5 Strongly Agree
Getting a higher income					
Receiving promotion to a higher academic rank					
Fulfilling performance requirement					
Achieving peer recognition					

Reasons why I want to conduct a research:	1 Strongly Disagree	2 Disagree	3 Agree Partially	4 Agree	5 Strongly Agree
Satisfying my need to contribute to the field					
Satisfying my need for creativity or curiosity (discovering unknown insights)					
Other (please specify):.....					

10. Ability factors that affect your research performance

On a scale of 1 to 5, where 1 is “Excellent” and 5 is “Poor”, please self-evaluate your current research ability.

Please indicate your research ability in term of:	1 No experience	2 Little experience	3 Average	4 Good	5 Excellent
Define research questions					
Skills to do literature review					
Ability to do peer review					
Designing a research project					
Organizing a research group to solve a research problem					

Please indicate your research ability in term of:	1 No experie nce	2 Little experie nce	3 Averag e	4 Good	5 Excele nt
Networking researchers in the field					
Mastering different research methods (qualitative, quantitative methods)					
Experience in collecting data (interviews, survey...) (if any)					
Experience in analyzing data and using analytical tools/software					
Writing a scientific article according to domestic publication requirement					
Writing a scientific article according to international publication requirement					
In general, my research ability is					
Foreign language proficiency: - English - French, Russian, Chinese, German, Japanese - Other (please specify):.....					

To what extent do you think research is important to your professional life?

Not important at all (1) --- (2) --- (3) --- (4) ---Very important (5)

How much do you need more training in research skills?

No need (1) ---- (2) ---- (3) ---- (4) ---- Really need (5)

11. Environmental factors that affect your research performance

On a scale of 1 to 5, where 1 is “strongly disagree” and 5 is “strongly agree”, please rate how much you agree with each of the following statements regarding your current perceptions of the impact of environment to your research performance.

Please define the impact of environment factors to your research performance	1 Strongly Disagree	2 Disagree	3 Unsure	4 Agree	5 Strongly Agree
My teaching load is not heavy, so I have time to conduct research					
My faculty/university has polices in promoting research					
Library provides sufficient materials, books for my research					
The university provides good facilities and equipment for my research					

Please define the impact of environment factors to your research performance	1 Strongly Disagree	2 Disagree	3 Unsure	4 Agree	5 Strongly Agree
Fund is sufficient for my research					
I receive good support from colleagues in conducting research					
In general I have a good environment in conducting research					

How many PhD students have you been guiding over the last 5 years?.....

How many Master students have you been guiding over the last 5 years?.....

The average time for research per week:

- 0-10h ()
- 10-20h ()
- 20-30h ()
- over 40h ()

Part 3: Research Performance

12. How many articles have you published in domestic journals over the last 5 years?

13. How many articles have you published in international journals over the last 5 years?

국문초록

베트남 대학 교원의 연구 성과에 영향을 미치는 요인에 대한 연구

Nguyen Thi Thanh

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글로벌행정전공

본 논문은 베트남의 고등 교육을 담당하는 교원의 연구 성과에 영향을 미치는 주요 요인이 무엇인지 밝히고자 한다. 본 연구는 연구 동기, 연구 역량, 연구 환경의 세 가지 요인이 국내 및 국외 수준에서 연구 성과에 긍정적인 영향을 미칠 것이라고 예측하였다. 연구 성과는 2013년부터 2017년까지 1) 국내 학술지에 게재된 논문 수와 2) 해외 학술지에 게재된 논문 수로 측정하였다.

양적 연구 방법을 사용하여 연구를 진행하여, 온라인 설문조사를 통해 베트남에 소재하는 대학 교수자를 대상으로 207 명의 응답을 받았다. 또 설문결과를 SAS 프로그램을 사용하여 기술적 통계 분석 및 통계적 추론을 시행하였다. 연구 결과 교원의 연구 기술 및 역량이 국내 수준과 국제 수준 모두에서 연구 성과에 가장 큰 영향을 미치는 것으로 나타났다. 한편 영어 능력은 오직 국제적 연구 성과에만 유의미한 영향을 끼치는 것으로 드러났다.

게다가 국제 수준에서 사회과학 분야의 경우 다른 학문 분야에 비해 연구 역량 및 연구 성과가 낮은 결과를 보였다. 본 연구는 이러한 분석 결과를 바탕으로 정책가들과 지도자들이 대학 교원의 연구 성과를 개선하기 위해서는 연구 역량에 대한 훈련 프로그램에 집중하고, 국제적 연구 성과 개선을 위해서는 교원의 학술적인 영어 능력에 대한 향상이 필요함을 제시한다.

주제어: 연구 성과, 연구 동기, 연구 역량, 연구 환경, 대학 교원

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