

**Factors Influencing the Research Productivity of Academics at the
Research-Oriented University in Vietnam**

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**Factors Influencing the Research Productivity of
Academics at the Research-Oriented University
in Vietnam**

by

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ABSTRACT

This study investigated the factors that influence the research productivity of academics at one of the leading universities of Vietnam, which is anonymously named *the Research-Oriented University* (ROU). Exploring the impacts of three sets of possible influences – research environment, research motivation, and research behaviours – the study predicted that the interconnected relationships among environmental factors (individual academics and the institution), research motivational factors, and research behavioural factors ultimately influenced the research productivity of ROU's academics. The study focused on two categories of research productivity outputs: 1) the total number of publishing outputs and 2) the total number of international refereed journal articles from 2009 to 2013.

Since the emergence of the research university has become a new trend in global higher education (Altbach, Reisberg, & Rumbley, 2010), many countries have built research universities to serve their economic or social development, as well as to achieve higher status in the competitive environment of global higher education. In Vietnam, some key universities of Vietnam, including ROU, have been selected by the Vietnamese government to be developed into internationally competitive research universities by 2020. As a result, research has become an important and compulsory mission of ROU's academics. Although ROU has encouraged its staff, and even applied a financially punitive policy measure to try to coerce them into actively engaging in research and to produce publishing outputs, their research productivity is still significantly low, compared with that of other key universities.

Changing academics' working practices, attitudes and behaviours from teaching-intensive to teaching-and-research focused, causes challenges not only ROU's academics, but also the educational leaders of this university. It is the responsibility of the university to implement appropriate teaching and research policies which can promote the commitment of academics to the research goals of the university and that consequently produce high research productivity. For that reason, an investigation into factors that motivate academics to undertake research, or that hinder them from engaging in research productively, is necessary.

This study applied a mixed-method design that includes interviews with academic staff (N = 19) as well as a survey, but relies predominantly on the quantitative data (N = 526) to generate its results and conclusions. Three research questions were explored as follows:

- *What is the impact of research environment on research motivation?* The qualitative data indicated that the following factors reduced the research motivation of academics: a heavy teaching load; a low salary; insufficient professional meetings; and shortages of scholarly resources, research funding, and research infrastructure. Furthermore, respondents were not satisfied with the university's research policy and perceived the impossibility of a positive research climate in departments. These qualitative results were broadly confirmed by quantitative data.
- *What is the impact of research motivation on research behaviour?* The qualitative data revealed that if academics were paid a better salary, were involved in a research group, and involved in postgraduate supervision, they would have a high level of research motivation which ultimately would influence their research behaviours. The quantitative results found that there were relationships between four types of research motivation and three research behavioural factors: 1) the factor of research collaboration was influenced by intrinsic motivation, extrinsic motivation, and normative motivation; 2) the factor of postgraduate supervision was influenced by extrinsic motivation and normative motivation; and 3) the factor of weekly research hours, was influenced by normative motivation.
- *What is the impact of research behaviours on research productivity?* The quantitative analyses found the associations between research behaviours and two categories of publishing outputs: 1) the total number of publishing outputs was positively associated with research collaboration, postgraduate supervision, and weekly research hours and 2) the total number of international refereed journal articles was associated with postgraduate supervision and weekly research hours.

This study makes a timely contribution to our understanding of research productivity in the Vietnamese Higher Education sector which can be used by educational leaders of Vietnamese universities. The information may help the leaders of the Research-Oriented University to redesign their teaching and research policies as well as to provide sufficient support for academics in terms of resources and professional development. If such matters are well and timely improved, the research productivity of ROU's academics will be significantly increased.

STATEMENT OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Signature:

Name:

Date:

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ABBREVIATIONS

HE	Higher Education
HERA	Higher Education Reform Agenda
EM	Extrinsic Motivation
IM	Intrinsic Motivation
NM	Normative Motivation
MOET	Ministry of Education and Training
ROU	Research-Oriented University
RP	Research Productivity
RB	Research Behaviour
SM	Status Motivation
SCI	Science Citation Index
SSCI	Social Sciences Citation Index
VHE	Vietnamese Higher Education

Chapter 1

Introduction

This thesis is the documentation of an empirical study using qualitative and quantitative methods to identify factors that influence the research productivity of academics at the Research-Oriented University¹ (ROU) in Vietnam. The study examines how factors pertaining to either academics or the university influence the research productivity of ROU's academics. The relationships between factors that influence academics and their research productivity have been predicted through three sets of possible influences: a) the relationships between both individual and institutional factors and the research motivation of ROU's academics; b) the relationships between research motivational factors and the research behaviours of ROU's academics; and c) the relationships between research behavioural factors and the research productivity of ROU's academics. Research productivity is explored in two categories of publishing outputs: 1) the total number of publishing outputs that ROU's academics published from 2009 to 2013 and 2) the total number of international refereed journal articles that ROU's academics published from 2009 to 2013.

1.1 Rationale for the Study

Vietnamese Higher Education (VHE) has been influenced by the development of higher education systems in other countries in an era of rapid globalisation. Particularly, it is influenced by the global model of the research university in developed countries such as the United States of America (the USA) and Australia (Altbach, 2011b; Brew, 2006). Brew and Lucas (2009) and Faust (2013) mention that the research university is the place which generates and disseminates knowledge through research outputs. The research university not only provides a highly qualified labour force for a society so it can meet the high demands of industrialisation and modernisation of the country to which it belongs, but it also conducts research to serve many societal roles (Altbach, 2007). The research university always connects closely with its communities, local and international, so it plays an important role in dealing with the most urgent problems of a country and of the world, such as those associated with diseases, financial crises, or natural

¹ This anonymous name has been created to protect the identity of the investigated university and is used throughout this study.

disasters. For such reasons, research universities have rapidly emerged not only in developed countries, but also in developing countries and are “making it possible for their countries to join the global knowledge society and to compete effectively in the sophisticated knowledge economies of the twenty-first century” (Altbach, 2013, p. 316). The existence of the research university in a country has, therefore, generally been regarded as a sign that a country has a high-quality and high-ranking higher education sector.

In attempting to integrate in the global trend of higher education, Vietnam launched a fundamental and comprehensive reform of the higher education sector in 2005 called the Higher Education Reform Agenda (HERA). One of the core missions of HERA was the plan to develop a few key universities, including the Research-Oriented University, into becoming research universities by 2020. The Government of Vietnam, the Ministry of Education and Training (MOET), and the key and targeted universities, have all considered implementation of the plan an extremely important mission.

Since 2005, to implement the Government's plan, the university leaders of the Research-Oriented University have considered that ROU should focus on developing: research capability, research performance, and the research productivity of academics, alongside technology transfer and postgraduate training. ROU's purpose is to become a research university by 2020 as desired by the government. The University's leaders fully recognise that research productivity, particularly publishing outputs (publications), is not only the means of disseminating new knowledge, but that it is also a crucial element in the constitution of the research university (ROU, 2011).

In order to achieve its challenging goal, ROU has requested its academics to be actively engaged in research activities in order to increase their research productivity. Despite the on-going calls for publications by ROU's leaders, as well as the implementation of a punitive policy² against those who do not produce at least one publication in a year (even a domestic refereed journal article), a large number of ROU's academics have not engaged in research and consequently not published. Their

² ROU academics are required to have at least one refereed paper or an equivalent output per year. The paper can be published on the Journal of Science and Technology of ROU, or of other universities / research institutes nationwide. The paper is considered as an outcome of 300 hours that an academic must spend for research per year. If an academic does not have any paper or an equivalent output, s/he will be fined an amount of approximately to AUD200. This fine will be deducted directly from one's salary.

research productivity is regarded as significantly low in terms of this requirement (ROU, 2011). According to C. Nguyen (2011), only about 30% of ROU's academics conduct research, while the other 70% of academics focus intensively on teaching. Furthermore, most of the publications that have been produced have been written in Vietnamese and published only in national refereed journals. The researcher observed that few academics have been able to write a manuscript in English and publish it in an international refereed journal. ROU's academics' publication numbers are also very low not only in terms of refereed journal articles, but also in other types of publications. The following table demonstrates the number of research outputs disseminated by ROU's academics from 2001 to 2011. This timeframe has been chosen for two reasons: first, to show that since the implementation of HERA in 2005, the research output of ROU's academics slightly increased between 2005 and 2011,³ compared to the relatively low output in the five-year period before 2005.

Table 1.1

The Research Productivity of ROU's Academics from 2001 to 2011⁴

Year	Textbook	Domestic refereed journal article	International refereed journal article ⁵	Conference presentation (national and international)
2001	12	95	6	30
2002	26	123	19	32
2003	16	159	25	56
2004	31	200	31	59
2005	41	188	45	72
2006	37	177	44	28
2007	44	268	64	66
2008	39	268	80	79
2009	54	307	97	104
2010	99	457	107	124
2011	49	474	139	120

Information in Table 1.1 reflects that only a small number of academics, compared with the total number of academics working for ROU (1,449 academics as

³ 2011 is the year in which I started a doctoral program to conduct this study.

⁴ The data was provided by ROU's Department of Science, Technology, and Environmental Studies.

⁵ All articles which were declared as international refereed journal articles were counted, despite the origin of the journal in which a paper was published. This is just a tentative record.

of June 2013), have conducted research and produced subsequent publications. Furthermore, the number of domestic refereed journal articles published, is much higher than that for the other categories. However, in order to transform ROU into a research university by 2020, ROU's academics must increase their numbers of international publications.

Nowadays, the roles of academics in institutions of higher education are becoming more complex because academics have more responsibilities in teaching, research, and service than ever before (Krause, 2009). Academics' roles and identities are multi-faceted and differently influenced by many factors relating to the individual academic, the departments within the university, and the university itself. So, to deal with the current low level of research productivity among ROU's academics, it has proved essential for ROU's leaders to gain an understanding of the factors that impact on the low research productivity of academics and of the factors that can motivate academics to be actively engaged in research. A study exploring the factors that influence the research productivity of ROU's academics is not only timely but also extremely necessary in this context. While there is an established volume of research investigating the research productivity of academics in many countries in the world, mostly in the West, an extremely limited number of scholarly resources that explore this matter in the context of Vietnamese Higher Education, were found.

To my best knowledge, there is no evidence indicating the existence of a scholarly publication that systematically investigates factors that influence the research productivity of academics at institutions within Vietnamese Higher Education. So far, there have been two edited books written about Vietnamese Higher Education (VHE), which are: *Reforming Higher Education in Vietnam: Challenges and Priorities* (Harman, Hayden, & Pham, 2010) and *Higher Education in Vietnam: Flexibility, Mobility and Practicality in The Global Knowledge Economy* (Tran, Marginson, Do, et al., 2014). The books briefly present an overview of the research environment and research policy of VHE, without any focus on exploring the factors that motivate academics to undertake research or hinder them from doing so. In the case of ROU, although leaders of this University have widely recognised the low research productivity of its academics and want to improve on it, there has so far not been any research conducted directly for this University regarding this problem.

The topic of this research project has grown out of my personal interest and experience over the past 12 years of working for ROU. Being a staff member in the Department of Personnel, I see my responsibilities as being: to participate in academic recruitment; and to organise professional development programs for academics. More importantly, I am supposed to assist ROU's leaders in designing and implementing a research policy which aims to improve the research productivity of ROU's academics. I acknowledge that the majority of ROU's academics are teaching-staff, only a few have research interests. For the above-mentioned reasons, this study entitled, *Factors Influencing the Research Productivity of Academics at the Research-Oriented University in Vietnam* has been undertaken. The study aims to provide ROU's leaders with evidence-based information to modify their current documents related to research management or to build an appropriate research policy and a strategic professional development program to support the research productivity of academics.

1.2 Background to the Study

When acknowledging the significant contribution of research universities to the development of a nation, it appears that most countries want to build at least one research university to support the advancement of knowledge, development, and sustainability of the country (Altbach, 2011a). The USA has built nearly 300 such research universities (The Carnegie Foundation for the Advancement of Teaching, 2010). Another example of the building of a research university is the establishment of the King Abdullah University of Science and Technology in Saudi Arab (KAUST). This Kingdom has spent about ten billion dollars in building a new university and turning it into one of the world's great research universities. In Asia, countries such as China, Singapore, and South Korea have also invested many resources into their higher education systems to build research universities that are able to foster research collaboration and cooperation with many prestigious research universities all over the world (Altbach, 2011b).

The competitiveness in the global environment of higher education has triggered challenges for all universities promoting research productivity of academics. The competitiveness arises from a reduction in research funding from the federal/state governments of most countries in recent years, including developed countries such as the USA (Kerr, 2001). Most universities, including the research ones, have to compete with each other in terms of research productivity in order to

receive the competitive funding from the government and sponsorship from non-university sources such as industry and non-government organisations.

In Vietnam, prior to the 2000s, research was not conducted by academics at universities. Since Vietnam early on adopted the educational model of the National Academy of the Soviet-Union, for many years, research has been exclusively implemented by research institutes which are members of either of two national research academies: The Vietnam Academy of Social Sciences or The Vietnam Academy of Science and Technology. Furthermore, the research institutes belong to ministries, in order to serve the specific purposes of the ministries (H. T. L. Nguyen, 2014). The evidence from MOET shows that Vietnam currently has over 24,000 doctorate holders, but that there are only 9,562 doctorate holders who are working at colleges and universities (Bộ Giáo dục và Đào tạo, 2013) and the remaining number of doctorate holders are working at research institutes and/or other organisations in society. The annual expenditure for research and development (R&D) in Vietnam currently accounts for only 2% of the total state budget. Moreover, according to H. T. L. Nguyen (2014),

Of the 2% of the stage budget allocated for R&D, only about three-fifths were actually spent for research. The remaining part allocated to all of the ministries and provinces by the Ministry of Planning and Investment for investment in development. The majority of the research funding was spent on paying salaries for more than 60,000 employees of all state-owned research institutes throughout the country. Only about 10% of the total R&D funding was spent on doing research through various research projects carried out from local to national levels (p. 197).

Although research has not been a traditional practice of academics at Vietnamese universities, since the implementation of HERA in 2005, MOET has emphasised that research is one of the compulsory activities of academics besides teaching. The educational leaders of Vietnam have understood the importance of research as was indicated by Lincoln (1998) and Lindsay, Breen, and Jenkins (2002), who agreed that undertaking research advances the disciplinary knowledge of academics as well as increases their teaching quality. The combination of teaching and research helps to 'validate the university's academic authority' and 'excite the intellectual imagination of students' (Scott, 2004, p. 14). Altbach (2011a) and Ramsden (1998a) agree that even with standard workload conditions, it is difficult

for academics to perform well in both teaching and research. Therefore, it is difficult and challenging for academics to conduct research and increase research productivity in the context of their heavy teaching load, limited research funding, inadequate scholarly resources, and inadequate infrastructure for research.

In order to design appropriate strategies and policies to enhance research capability and promote the research productivity of academics, all leaders of the Ministry of Education and Training and universities require a deep understanding of the current expectations of academics, their current research capacity, what hinders them from undertaking research, and what might motivate them to engage in research. These matters need to be examined in the context of Vietnamese Higher Education in general, and in that of the Research-Oriented University in particular.

1.3 Aim and Objectives of the Study

Study Aim:

To investigate the factors that influence the research productivity of academics at the Research-Oriented University, Vietnam.

Study Objectives:

In order to achieve the study aim, six study objectives have been considered.

1. To explore whether or not ROU's academics recognise the importance of research to their teaching, knowledge development, and career.
2. To explore the reasons as to why ROU's academics have had low research productivity despite the University's continual encouragement and requests for them to undertake research.
3. To examine if the current research policy of ROU creates satisfaction among its academics.
4. To examine whether or not ROU provides sufficient support for its academics to do research.
5. To identify the factors that motivate ROU's academics to engage in research and increase their research productivity.
6. To acquire empirical evidence as to how to improve the research productivity of ROU's academics for the university's leaders.

1.4 Research Question of the Study

To address the study aim, the following overarching research question has been formulated:

What are the factors that influence the research productivity of academics at the Research-Oriented University in Vietnam?

Based on the conceptual framework of this study (see Chapter 3), the following sub-research questions (hereafter called research questions) are derived from the overarching research question:

1. What are the individual and institutional factors that impact the research motivation of academics at the Research-Oriented University in Vietnam?
2. What are the research motivational factors that impact the research behaviours of academics at the Research-Oriented University in Vietnam?
3. What are the research behavioural factors that impacted the publishing outputs from 2009 to 2013 of academics at the Research-Oriented University in Vietnam?

Each research question has been tabulated against the specific objectives in Table 1.2 to ensure that the aim of this research has been met and that the research questions have been aligned to the aim of the research.

Table 1.2

Tabulation of Addressing Research Questions by Objectives

	Research question one	Research question two	Research question three
1. To explore whether or not ROU's academics recognise the importance of research to their teaching, knowledge development, and career.	√		
2. To explore the reasons as to why ROU's academics have had low research productivity despite the University's continual encouragement and requests for them to undertake research.	√	√	√
3. To examine if the current research policy of ROU creates satisfaction among its academics.	√		
4. To examine whether or not ROU provides sufficient support for its academics to do research.	√		
5. To identify the factors that motivate ROU's academics to engage in research and increase their research productivity.		√	√
6. To acquire empirical evidence as to how to improve the research productivity of ROU's academics for the university's leaders.	√	√	√

1.5 Research Design and Methodology of the Study

To collect the data for the three research questions, I decided to follow the research design of a case study. The case study has been conducted in two stages using a mixed-method approach: the qualitative methodology in the first stage and the quantitative methodology in the second stage. Figure 1.1 demonstrates the research design and methodology adopted in this study.

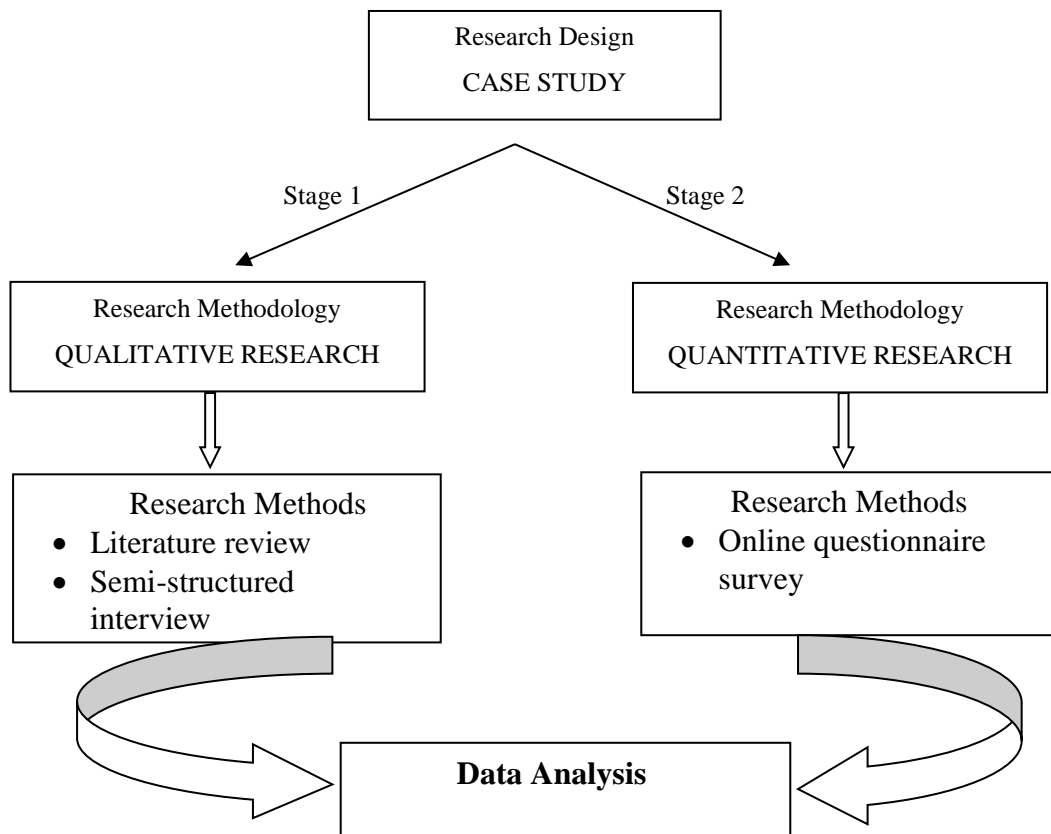


Figure 1.1 Research design and methodology

1.6 Significance of the Study

The Research-Oriented University is adapting to the global trend of higher education by changing to the model of a research university in 2020. Despite the fact that ROU continues to encourage and request its academics to meet the minimum, set requirements for research, a majority of academics have not met this requirement. What is of great interest, is how ROU's academics can improve their research productivity; and in what way can ROU support its academics to promote research productivity. Such questions have been remained unanswered so far. This study, therefore, has the following significant contributions to knowledge in the field of Higher Education in Vietnam as well as to the university in terms of policy and practice development.

Regarding to the contribution to knowledge, this study is one of the scarce scholarly resources, which investigate research productivity of academics in Vietnam in general, and is the first original contribution to the knowledge of the field in the context of ROU. Its findings provide empirical information about the sequential

relationships between three attitudes of job satisfaction, commitment to research goals of the university, and academic motivation to undertake research and research behaviours of academics that then influence their research productivity. Having such knowledge helps educational leaders at all levels (the Ministry of Education and Training and ROU) to understand how to stimulate research behaviours of academics. The knowledge, also, helps in revising current policy and institutional conditions or even to implement new policies in order to guide research practices. What academics really need is a strong support from the university so that they can engage well in research, and not just pressures (for example the punitive policy) or rhetoric putting on them.

Regarding the significance of policy, the findings of this study will inform ROU's leaders about possible strategies and plans which could be written into its research policy to promote the research productivity of its academics. In order to design an appropriate research policy that supports the research activities of academics, it is necessary to understand their difficulties, to know their expectations, and to have ways of meeting their demands. This study also reminds ROU's leaders that any implementation of a research policy should be well prepared and done at different stages over a long period. It cannot be successfully implemented overnight. This study may prove a good reference document for other universities in Vietnam, especially the universities that are planning on changing their models of operation from teaching-intensive universities to research universities in the future. The study will also be a good source of knowledge for the leaders of the Ministry of Education and Training and the Government of Vietnam as to what they need to do to support the key universities which have been targeted under the HERA plan, in order to accomplish educational reform by 2020.

Regarding the significance of practice, this study enriches educational knowledge about the "formula" that can be used to promote research productivity of academics. The findings contribute to the understanding of aspects of academics such as commitment to research, research motivation, and research satisfaction. Under the light of the conceptual framework of this study, which aligns with the research questions, ROU's leaders can use the findings to improve the research motivation and the research behaviours of its academics. When academics are highly motivated to research (having appropriate attitudes) and have appropriate research behaviours, their research productivity will be increased. This study found that there

were significant connections between the research motivation and research behaviours of ROU's academics, and between their research behaviours and research productivity. Therefore, this study shines a light to help those interested, to understand factors that can promote the research motivation and research behaviours of ROU's academics in order to increase their research productivity outputs in general, and their publishing output in particular.

1.7 Limitations of the Study

Three potential limitations of the study have been recognised.

First, although there were 19 academics who participated in the semi-structured interview at the first stage, their voices may not represent those of all academics at ROU very well. This researcher has endeavoured to interview academics who have different characteristics in factors such as qualification, gender, age, teaching, and research experience, and discipline; the points of view of all academics interviewed, could not be conveyed in all aspects of discussion of the research topic.

Second, the respondents who participated in the online survey accounted for only 42.45% of the sample size (526/1,239), so the findings did not reflect the points of view, research attitudes, and research behaviours of all academics at ROU. However, to some degree, the findings might be generalised to all academics of ROU or even to other institutions in Vietnam because all institutions share the same cultural, economic, historical, and political context as ROU. Some modifications might be necessary to adapt the findings in such a way that they will suit the new context of those institutions that choose to apply the findings of this study, in order to promote the research productivity of their academics.

Last, this study observed that intrinsic motivation impacted on the most important of the research behaviours of ROU's academics, which was "research collaboration". It is believed that intrinsic motivation lies at the heart of all research activities of academics. However, this study was not able to identify factors that promote the research motivation of ROU's academics because it was out of the scope of this study. This is a potential topic for further research: to explore significant predictors of academics' intrinsic motivation to undertake research.

1.8 Defining the Terminology Used in this Study

It is necessary to define the terms that have been used in this study to facilitate an understanding of the issues.

- ✓ Research-oriented university: This term is translated directly from a Vietnamese term of '*Đại học theo định hướng nghiên cứu*' (Đại học = university, theo định hướng = oriented, nghiên cứu = research). Đại học theo định hướng nghiên cứu is the term used to indicate a Vietnamese university which is in a transitional period of changing its model from a teaching-intensive university to a research university (Đại học nghiên cứu). At this transitional state, academics of the university are still undertaking much teaching and having little engagement to research activities. Kindly reminded that this term has also been used as an anonymous name of the university investigated in this study (ROU), instead of using its real name.
- ✓ Academics: Full-time and tenured teaching staff at ROU. This includes all academics appointed at ROU regardless of the type of educational qualification.
- ✓ Research productivity: To indicate the research output of ROU's academics, particularly in the form of publishing outputs.
- ✓ Publishing output: The products of research such as refereed journal articles, book chapters, books, and research projects.
- ✓ Individual factors: Factors that relate to individual academics. They include demographic characteristics such as age and gender; and other personal factors such as educational qualification, academic rank, research motivation, and research behaviours.
- ✓ Institutional factors: Factors that relate to the university, such as the overall institutional policy, the research policy, the reward structure, work allocation of teaching and research, salary, human resources, and scholarly resources.
- ✓ Research collaboration: To indicate actions that ROU's academics take indirectly, but the effect of undertaking them can contribute to their research productivity. Examples include sharing a research idea with a colleague, asking for advice from a colleague, mentoring a colleague, proof-reading a manuscript for a colleague, or supervising postgraduate students.
- ✓ Weekly research hours: To indicate the number of hours that an academic spends on undertaking a research activity in order to produce a publication. For example, weekly hours spent on writing a manuscript.

1.9 Organisation of the Thesis

This thesis has eight chapters.

Chapter One outlines the rationale, background, and aim of the study. The overarching research questions with accompanying three sub-research questions are presented. It is followed by the research design and methodology, which are demonstrated in Figure 1.1 to inform the readers of how this research was implemented. The discussion of the significances and limitations of the study are thoroughly addressed before the chapter concludes with a presentation of terminologies that have been used in this study.

Chapter Two firstly overviews the context of Vietnamese Higher Education and then addresses the context of the Research-Oriented University. The presentation informs the reader of the context which urges ROU to become a research university by 2020.

Chapter Three presents the literature review that has informed the formulation of the conceptual framework for this study. In particular, the review aims to inform the reader of the factors that influence the research productivity of academics in many countries. It also examines the impact of some psychological attitudes such as commitment, motivation, and satisfaction on the research behaviours of academics (which lead to research productivity). The conceptual framework comes as a result of the review and can be used to predict the research productivity of ROU's academics.

Chapter Four details the research design and methodology used to answer the research questions and outlines the research methodology adopted at each stage of the study. At each stage, the method of data collection, the participants, the materials, and the procedures of data collection are clearly presented in steps. The techniques of data analysis are also addressed consistently at each stage.

Chapter Five is divided into two parts aligning with the two research stages: qualitative research and quantitative research. In each part, significant factors that influence the research motivation of ROU's academics are reported first, followed by discussions of the results. The chapter is concluded with a general conclusion regarding the findings of research question one.

Chapter Six is also divided into two parts, like Chapter Five. In each part, significant factors that influence the research behaviours of ROU's academics are reported first, followed by discussions of the results. The chapter is concluded with a general conclusion regarding the findings of research question two.

Chapter Seven presents the quantitative findings only. Significant factors that influenced the publishing outputs from 2009 to 2013 of ROU's academics are reported first, followed by discussions of the results. The chapter is concluded with a general conclusion regarding the findings of research question three.

Chapter Eight firstly summarises the findings of each research question. It is followed by the presentation of the implications of policy and practice. Finally, limitations of this study and suggestions for further study are presented to conclude the thesis.

Chapter 2

Contexts of the Vietnamese Higher Education and the Research-Oriented University

2.1 Introduction

This chapter presents the context of the Vietnamese Higher Education as well as that of the Research-Oriented University. It aims to convey the landscape of the higher education sector in Vietnam and specifically to contextualise ROU. The presentation focuses on the current level of research productivity of Vietnamese academics in general, and of ROU's academics in particular, in order to recognise where the position of ROU lies in terms of world-class research universities,⁶ in order to identify the perceived gap between them, ROU, and research universities globally.

2.2 The Context of the Vietnamese Higher Education

This section initially presents the social, political, and economic contexts of the Vietnamese Higher Education (VHE) since 1986. This is a milestone date, one when Vietnam started a fundamental change in economic policies, in order to respond to the difficulties and challenges of national development that the country was facing after the Vietnam War ended in 1975. This section is then followed by a review of the current level of research productivity of academics in Vietnam, after which current responsibilities of Vietnamese academics are revealed.

2.2.1 Social, Political, and Economic Contexts

Since the end of the Vietnam War in 1975, the North and the South of Vietnam united under the name of Socialist Republic of Vietnam. During the time from 1975 to 1985, the country suffered many difficulties economically because of the sanctions and embargos imposed by the USA. In order to make a change, during the sixth Congress of the Vietnam Communist Party in December 1986, leaders of Vietnam launched a "Renovation" in the economy (widely known as *Đổi Mới*). The main purpose of the Renovation was to create a transformation from the existing centralised and planned economy that was mostly based on imports and subsidisation, to a socialist-oriented market economy. Through the Renovation, the Government of Vietnam "made a commitment to increased economic liberalisation and structural reforms were implemented to modernise the economy and develop

⁶ These will be reviewed in Chapter Three

competitive, export-driven industries” (Westerheijden, Cremonini, & Empel, 2010, p. 183). That change opened ways for Vietnam to integrate in the world economy gradually, in alignment with the international development trends, and the process of globalisation. Since that time, the economy of the country has been improving and the living standard of the people has gradually been increasing. The Revolution opened the opportunity for Vietnam to re-establish its diplomatic relations with China in 1991 and with the USA in 1995 after a period of interruption and to establish new relations with other countries. The participation of Vietnam in international organisations and associations such as the Association of Southeast Asian Nations and the World Trade Organisation has gradually strengthened its identity in the world.

As a result of the Renovation in 1986, and along with various social and economic changes, the higher education system has achieved some changes. The system has been restructured to meet the high demands of student learning and to improve its quality of education. The system has expanded dramatically in terms of the number of institutions, number of students, number of academics in general, and number of academics who have a postgraduate qualification such as a master's or doctoral degree. Table 2.1 gives an overview of such changes.

Table 2.1

Statistics of Colleges and Universities in Vietnam, 2000-2012

	2000	2006	2012
Colleges			
Number of colleges	104	183	214
Number of students	186,723	367,054	724,232
Number of academics,	7,843	15,381	26,008
<i>of which:</i>			
- Doctorate	109	216	693
- Master's	1,468	3,669	10,015
Universities			
Number of universities	74	139	207
Number of students	731,505	1,173,147	1,453,067
Number of academics,	24,362	38,137	61,674
<i>of which:</i>			
- Doctorate	4,454	5,666	8,869
- Master's	6,596	14,603	28,987

Source: Bộ Giáo dục và Đào tạo (2013)

Table 2.1 indicates that the number of colleges in 2012 was two times higher than that in 2000 (104 vs 214), and the number of universities has increased three times in the 12 years, from 74 to 207. Although the number of academics at colleges and universities increased accordingly, the increase has not been enough to keep pace with the rapid explosion in the number of student enrolments, as illustrated. A critical shortage of academics across the system has been widely recognised by the Government of Vietnam and researchers (Hayden & Thiep, 2010; Thanh, 2011). More seriously, Vietnam lacks highly qualified academics who have obtained a doctoral degree, even though the number of doctorates has significantly increased since 2000. Table 2.1 indicates that there were 693 doctoral academics at colleges and 8,869 doctoral academics at universities in 2012. This percentage of doctoral academics among all teaching staff at universities varies between institutions, but an average of 10-15% has been widely used. At present, two of the national universities of Vietnam⁷ have the highest concentration of doctoral academics, but it is still only at 44.5% for Vietnam National University-Ha Noi (VNU-HN, 2014) and at 38.4% for Vietnam National University-Ho Chi Minh city (VNU-HCMC, 2014). Although the doctoral academic percentages for these two national universities are very high compared to those for other universities in Vietnam, such percentages are still low compared to those for institutions of higher education in other countries, where almost 90% of academics hold a doctoral degree (Altbach, 2011b). It is predicted that the low number of highly qualified academics negatively affects the research productivity of Vietnamese academics.

Two hundred and seven universities in Vietnam have been classified in three administratively hierarchical classes from top to bottom⁸: 1) national university, 2) regional university, and 3) university. National and regional universities have been recently established on the basis of amalgamating several long-standing colleges and universities that already existed in the five key cities at that time. Details are in Table 2.2.

⁷ They are considered the top universities of Vietnam.

⁸ Vietnamese Higher Education does not have a professional framework for classifying universities like the Carnegie Classification of Institutions of Higher Education in the USA.

Table 2.2

National and Regional Universities of Vietnam

Class	Name / Established Year	Location	Region in charge
National universities	Vietnam National University, Ha Noi (VNU-HN) / 1993	Ha Noi city (the capital, municipality)	
	Vietnam National University, Ho Chi Minh city (VNU-HCMC) / 1995	Ho Chi Minh city (municipality)	
Regional universities	The University of Danang (UD) / 1994	Da Nang city (municipality)	South Central Coast and Highlands
	Hue University (HU) / 1994	Thua Thien Hue province	North Central Coast
	Thainguyen University (TNU) / 1994	Thai Nguyen province	Northeast

Currently, the geography of Vietnam has 63 administrative divisions. They are grouped in eight regions, as shown in Figure 2.1. The national and regional universities are located in key economic zones of the country in order to stimulate the development of the whole region where they are located.



Figure 2.1 National and regional universities across geographical regions

Generally, the mission of the two national universities has been to produce highly qualified human resources and talents for the industrialisation and modernisation of the whole country, while the three regional universities have been in charge of the three regions where they are located (as shown on the right of the figure). The Government of Vietnam expects these universities to become the research universities of Vietnam by 2020 (Thủ tướng Chính phủ, 2012).

Although it has made significant changes since the Renovation, the higher education system still has some deficiencies as a result of its status as a developing country, such as: a lack of learning and teaching resources, outdated teaching methods, low numbers of highly qualified academics, poor physical infrastructure, and an extremely low level of research productivity of academics (Nghị, 2010). As such, the Government decided to launch a comprehensive reform in 2005 that was called HERA, as mentioned. HERA aims to create a higher education system that, by 2020, is “advanced by international standards, highly competitive, and appropriate to the socialist oriented market system” (Chính Phủ, 2005). It focuses on all aspects of the higher education system: teaching and learning programmes, curriculum, academic qualifications, university governance, and academic research. Among such aspects of the system, academic research has been particularly emphasised in order to increase the research productivity of Vietnamese academics, in both quantity and quality, as well as both nationally and internationally. It focuses on “the development of an advanced research and development culture, with research and development activities to account for 25% of the higher education system’s revenue by 2020 (currently it accounts for less than 2%)” (G. Harman et al., 2010, p. 3). However, the research capability of Vietnamese academics remains really low, which leads to low research productivity across the country.

2.2.2 Research Productivity of Academics in Vietnam

Although Vietnam has implemented HERA since 2005, the research productivity of Vietnamese academics has been widely recognised as low. Hayden and Thiep (2010) indicated that just a small number of academics have research interests, while a majority of them are still focusing on teaching. This is because almost all colleges and universities in Vietnam are currently teaching-intensive. So, the research productivity of academics at all institutions, including academics at national and regional universities, is still low. Table 2.3 compares the number of international refereed journal articles published by researchers of some ASEAN countries in the period 2002-2012. The data was extracted from the Incites database of Thomson Reuter (Incites™ Thomson Reuters, 2012a). Note that the following information reflects the number of articles published by all academics, researchers, and scientists of each country, because it is unable to extract the articles published by academics at institutions of higher education separately.

Table 2.3

International Refereed Journal Articles of Researchers in ASEAN Countries, 2002-2012

Country	Quantity	Times cited	Citations per article
Singapore	82,050	982,088	11.97
Thailand	42,701	373,349	8.74
Malaysia	39,765	188,393	4.74
Vietnam	9,896	73,087	7.39
Indonesia	8,821	73,857	8.37
Philippines	7,439	73,081	9.82
Cambodia	1,063	11,068	10.41
Laos	719	6,361	8.85
Brunei	494	3,524	7.13
Myanmar	452	3,860	8.54

Table 2.3 indicates that the number of refereed journal articles from Vietnam is just about one-ninth that from Singapore (9,896/82,050), one-fourth that from Thailand (9,896/42,701), and one-third that from Malaysia (9,896/39,765). Although Vietnam has more articles than Indonesia, the Philippines, Cambodia, Laos, and Myanmar; the indicator of citations per article from Vietnam is lower than that of citations per article from those countries. This reality reflects that both quantity and quality of publications of Vietnam are still low compared with those of other countries in the same region. A statement from the Minister of Science and Technology indicates that Vietnam has the largest number of doctors (24,300 doctors) and masters (many thousands) among ASEAN countries, but that the research productivity of Vietnam is at the bottom of the list for the region (Giáo dục Việt Nam, 2012). This statement raises an alert for many educational leaders in Vietnam.

Furthermore, Vietnam has aimed at having at least one research university to be ranked in the top World's 200 universities by 2020. Until 2013, which is only seven years off the point of 2020, Vietnam has no university listed in even the top 400 universities of Asia (Table 2.4). Therefore, its target seems so ambitious and is an illusion.

Table 2.4

Numbers of Research Universities Ranked in the Top 400 of Asia

Country	Times Higher Education	Shanghai ranking	QS ranking
China	10	26 ⁹	11
Taiwan	8	0 ¹⁰	6
South Korea	7	7	9
Singapore	2	2	2
Malaysia	0	1	4
Thailand	0	0	2
Indonesia	0	0	1
Vietnam	0	0	0

2.2.3 Responsibilities of Academics in Vietnam

Teaching has been the main responsibility (or function) of academics in Vietnam for a long time. Since the implementation of HERA in 2005, academic research has been considered and has counted as an important responsibility of academics. However, the primacy of teaching over research represents the model of all Vietnamese universities. In 2011, the Ministry of Education and Training (MOET) and the Ministry of Internal Affairs (MOIA) issued a joint Circular No. 06/2011/TTLT-BNV-BGDDT dated June 06, 2011 (Bộ Nội Vụ & Bộ Giáo dục và Đào tạo, 2011), which concretised the number of working hours for university academics, depending on the academic rank, in three areas of responsibility: teaching, research, and professional activities and services as shown in Table 2.5.

Table 2.5

Working Hours of Academics in an Academic Year¹¹

Academic rank	Teaching	Research	Professional activities and services	Total
Lecturer	900 (51.14%)	400 (22.72%)	460 (26.14%)	1,760
Senior lecturer	900 (51.14%)	500 (28.41%)	360 (20.45%)	1,760
Superior lecturer	900 (51.14%)	600 (39.09%)	260 (14.77%)	1,760

⁹ Included universities of Taiwan.

¹⁰ The record might have counted Taiwan's universities in with those of the China mainland.

¹¹ Based on 08 working hours/a day, 05 days/a week, 44 academic weeks/an academic year.

Table 2.5 indicates that academics at all levels have to spend at least 900 working hours in a year for teaching activities. There are differences in the allocation of working hours for research and professional activities, and services between academics of different academic rank. The higher the academic rank is, the more hours allocated for research and the fewer hours allocated for professional activities and services. This is the basic allocation issued by the authorities as a reference point for universities. Universities can adjust the ratios between areas, depending on the circumstance and mission of the institutions. Note that the number of working hours for teaching (900 hours / year) does not represent the actual teaching hours that academics teach. Rather, it represents the amount of time academics spend on all activities related to teaching, such as preparing lessons, delivering lectures in classes, being invigilators, marking papers, and supervising students during their work practice at schools or companies. All such activities are converted to the 'standard teaching hours' as below.

Table 2.6

Standard Teaching Hours in an Academic Year

	Standard teaching hours per year (2 semesters) ¹²
Lecturer	280
Senior lecturer	300
Superior lecturer	320

Academics are required to perform enough standard teaching hours in order to receive a basic monthly salary. If the number of standard teaching hours is over their allocation, academics will be paid more for these extra hours. The more they teach, the more they get paid. This mechanism of remuneration is problematic as it provides opportunities for academics to teach many hours in order to be paid more and potentially ignore research activities.

2.3 The Context of the Research-Oriented University

The Research-Oriented University is one of the three regional universities in Vietnam, as mentioned in Table 2.2. This section presents ROU's organisation, its number of academics and their educational qualification (qualification for short), and the current research productivity of its academics.

¹² One standard teaching hour = 45 minutes teaching in class

2.3.1 Organisation

The Government of Vietnam, upon the rearrangement of former colleges and universities, established the Research-Oriented University in 1994. ROU consists of four colleges, previously independent universities that had directly belonged to MOET. However, once they were merged into ROU, their title was changed from 'university' to 'college' so as to fit into the hierarchical structure of a regional university. The identities and missions of four colleges have remained unchanged. Additionally, ROU has two junior colleges, one satellite campus located in another province, and a faculty of medicine and pharmacy. ROU offers training programmes at all levels from diploma to doctoral degree. Details are presented in Table 2.7

Table 2.7.

Numbers of Training Programmes

Element	Training programmes			
	Doctorate	Master's	Bachelor	Diploma
College of Technology	12	16	26	0
College of Economics	4	5	18	0
College of Education	0	6	26	0
College of Foreign Language Studies	0	2	11	0
Junior College of Technology	0	0	0	16
Junior College of Information Technology	0	0	0	9
A satellite campus	0	0	13	4
Faculty of Medicine and Pharmacy	0	0	2	0
Total	16	29	96	29

Table 2.7 shows that only the College of Technology and College of Economics offer doctoral training programmes. The total number of postgraduate programmes (master's and doctorate) at ROU is just one-third of the numbers of its undergraduate programmes (45/125). This indicates that ROU is a teaching-intensive university, particularly at the undergraduate level.

2.3.2 Number of Academics and Educational Qualification

Table 2.8 presents the total number of academics in each academic element, and their qualification in three levels of Doctorate, Master's, and Bachelor as of June 2013.

Table 2.8

Academics by Educational Qualification

Academic element	Total academics	Educational qualification		
		Doctorate	Master's	Bachelor
College of Technology	420	106	233	81
College of Economics	249	40	141	68
College of Education	288	43	181	64
College of Foreign Language Studies	240	28	159	53
Junior College of Technology	144	7	71	66
Junior College of Information Technology	52	3	21	28
A satellite campus	43	1	15	27
Faculty of Medicine and Pharmacy	13	1	3	9
	1,449	229	842	396
		(15.80%)	(56.87%)	(27.33%)

Table 2.8 indicates the College of Technology has the highest number of academics (460) and the Faculty of Medicine and Pharmacy has the lowest number of academics (13). The College of Technology also has the highest number of highly qualified academics with 233 Master's and 106 Doctorates. Academics who hold a Master's degree constitute a majority in all elements. Although it is a regional university and has been targeted to become a research university by 2020, only 15.80% of academics hold a Doctoral degree.

As of June 2013, ROU has three Professors and 42 Associate Professors, as detailed in Table 2.9. "Professor" and "Associate professor" are the titles which have been granted for highly qualified academics by the State Council of Professorship of Vietnam. It is different from Western countries where Professorship is one of the academic ranks that is granted to distinguished academics who are excellent in teaching and research or withdrawn by a university; the Professorship title in Vietnam is a lifetime title granted to academics. This mechanism of professorship appointment causes a fact that many professors and associate professors do not engage in research for a long time and have low research productivity.

Table 2.9

Academics by Professorship

Academic elements	Total academics	Professorship	
		Professor	Associate Professor
College of Technology	420	1	25
College of Economics	249	1	4
College of Education	288	1	10
College of Foreign Language Studies	240	0	3
Junior College of Technology	144	0	0
Junior College of Information Technology	52	0	0
A satellite campus	43	0	0
Faculty of Medicine and Pharmacy	13	0	0
	1,449	3	42
		(0.21%)	(2.90%)

Table 2.9 shows that the percentage of academics that have been granted a professorship title is very low. It is only 0.21% for Professor and 2.9% for Associate Professor. Although such percentages seems to be low, they are not unusual, because most universities in Vietnam have percentages similar to, or even lower than, these — with the exception of the two national universities, whose numbers might be a little larger, though not over 5% more (VNU-HCMC, 2014; VNU-HN, 2014).

2.3.3 Research Productivity of ROU's Academics

As preparation for the transformation from a teaching-intensive university to a research-oriented university, ROU made considerable efforts to encourage academics to engage in more research in order to increase their research productivity. Despite the calls of the University, the research productivity of its academics remained steadily low. A majority of academics have not met the minimum level of research output expected by the university. For example, as mentioned above, a lecturer has to spend approximately 400 working hours per year for research, and he/she has to produce at least one refereed journal article per year (even published in a domestic journal in Vietnam) but many academics have not managed to write one in fulfilment of their research responsibility, as required. For reference, Table 1.1 has initially illustrated some research productivity of ROU's academics.

In order for ROU to become a research university by 2020, it should increase its numbers of published international refereed journal articles, in particular the articles published in high-ranking journals that have been indexed in prestigious

research databases such as Thomson Reuters or Scopus. Table 2.10 reviews the number of articles that academics of six universities of Vietnam, including ROU, have published in high-ranking journals of the world and that are indexed in Thomson Reuter: Science Citation Index (SCI) and Social Sciences Citation Index (SSCI), from 2000 to 2013. The table serves to compare the publishing output of ROU's academics with that from academics of other universities. The record was extracted from Thomson Reuter databases (Incites™ Thomson Reuters, 2012b)

Table 2.10

Numbers of Articles Indexed by Thomson Reuters, 2000-2013

Institution	Number of articles	Times cited	Cites per articles
Vietnam National University, Hanoi	1,155	8,622	7.46
Vietnam National University, HCMC	835	4,823	5.78
Hanoi University of Science and Technology ¹³	722	3,392	4.70
Cantho University ¹⁴	414	2,461	5.94
Hue University	287	1,610	5.61
The Research-Oriented University	62	269	4.34

Table 2.10 shows that in the last 13 years, ROU's academics have only achieved 62 journal articles indexed by Thomson Reuters. This number is 4.6 times fewer than the number from Hue University, which is also a regional university and of the same classification as ROU. Unbelievably, ROU's output is much worse than that of Cantho University (414) and Hanoi University of Science and Technology (722) despite these two universities being just single key universities, classified at level three (lower than ROU at level two; see Table 2.2). Those are remarkable outputs for such universities but an alert for ROU's academics and leaders in seeking solutions to improve their numbers of international refereed journal articles.

2.4 Summary

Chapter Two has drawn a picture of the Vietnamese Higher Education and the Research-Oriented University. The review shows a comparison of the research productivity of researchers in some ASEAN countries, and the results show that Vietnamese researchers' capability of publishing research results in international high-ranking journals is rather low in terms of both quantity and quality. Also,

¹³ This is a key university that has been selected to develop into a research university. It has become an international university since 2009 in partnership with French universities.

¹⁴ This is a key university.

particular notice must be taken by ROU when its current numbers of international refereed journal articles are too low compared with those of its missions. Being a regional university, ROU has assumed that its research productivity in all areas must be higher and better than that of other single universities such as Cantho University. However, the record shows sadly contradictory information to ROU's expectations. If Vietnam in general and ROU in particular aim to increase research productivity and research profiles in the region and the world, they must rapidly improve the number of international publications. The next chapter will review significant factors that influence the research productivity of academics globally, in order to build a conceptual framework for this study.

Chapter 3

Literature Review

3.1 Introduction

Research activities and research productivity have become very important for institutions of higher education globally. The matter of research productivity of academics has been a concern from as early as the 19th century, starting with the higher education system in Germany, and then moving later to the higher education institutions in the USA (Brodin et al., 2002). This chapter has six sections. Firstly, it addresses the emergence of the research university in the world, responsibilities of academics in the research university, and how research supports teaching. This is followed by a review of indicators and by measurement of research productivity. Next, the core section of this chapter is the review of previous studies related to factors that influence the research productivity of academics in many countries around the world. The review of such studies provides opportunities to identify factors that are potentially applicable in the context of ROU, as well as to identify the supporting theories which can be used to build a conceptual framework for this study. The chapter ends with suggested research questions and with the research hypotheses used to seek answers for the study.

3.2 The Importance of Research Universities in Global Higher Education

This section has three aims: 1) to provide a general overview of what a research university is and why it is needed in contemporary society, 2) to reflect on the responsibilities of academics in the research university in terms of teaching and research, and 3) to consider a positive relationship between teaching and research and how research supplements teaching.

3.2.1 The Emergence of Research Universities and Their Roles

The 21st century has witnessed the rapid development of science and technology as well as challenges for human life, which has caused universities to extend their academic roles. Research universities are places that not only transfer existing knowledge, but also intensively create new knowledge. Knowledge creation requires a network of distinguished scholars who actively engage in research activities in order to search for the unknown. According to Sibal (2011), the concept of the university as a research institution arose in 19th-century Germany, following the explosion of new ideas that arose with and after the Industrial Revolution. Kerr

(2001) asserts that the University of Berlin was the first research university in the world. It was established in 1809 as an institutional response to the two great forces of science and nationalism. Soon after, some American universities adopted the model of the research university, and later the model spread to other countries in the West, in order for them to respond to the changes in their environment. Nowadays, research universities make significant contributions to the development of countries because they not only generate knowledge themselves, but also collaborate with business firms in industry to conduct joint research and development projects. Therefore, they are considered a necessary pathway to the development and prosperity of a country, and are acknowledged as contributing to a knowledge-based economy (Cummings, 2014).

There are several different definitions for the research university. Considered through the lens of an educational mission, Altbach (2007) states that “research universities are defined as academic institutions committed to the creation and dissemination of knowledge in a range of disciplines and fields; featuring the appropriate laboratories, libraries, and other infrastructures that permit teaching and research at the highest possible level” (p. 1). They are also defined as institutions “based on the high quality of programs of academic research and scholarship and undergraduate, graduate, and professional education in a number of fields, as well as general recognition that a university is outstanding by reason of the excellence of its research and education programs” (Association of American Universities, 2014a, p. 1). The Carnegie Foundation for the Advancement of Teaching (2010) emphasises:

Research universities must be doctoral-granting universities and typically offer a wide range of baccalaureate programmes, and they are committed to graduate education through the doctorate. (p. 1).

Altbach (2011b, p. 11) indicates that research universities “are elite, complex institutions with multiple academic and societal roles. They provide the key link between global science and scholarship and a nation’s scientific and knowledge system”. Through the above definitions, it can be understood that a research university integrates effectively in its national context of higher education and provides academic excellence to the society through high quality training programs. Focusing on postgraduate training, especially at the doctoral level, the research university is not only a place that creates the scholarship of teaching and research, but also one that serves the community and industry of a nation.

Altbach (2007) recognises the important role of the research university in the age of the knowledge-driven economy. It creates new knowledge and discovers solutions for real problems of nations. It serves as a centre of excellence for teaching as well as a centre for the fundamental and applied scientific research of a country or even for the globe. For example, in the USA, 60 leading research universities out of several hundred research universities are at the leading edge of innovation, scholarship, and solutions that contribute significantly to the economy, security, and well-being of the USA and the world (Association of American Universities, 2014b). Kerr (2001) writes that about 3% of all institutions of higher education in the USA are research universities, and they account for about 20% of all students and academics in the American Higher Education. However, they have the core of that country's science and technology systems, security, defense, and social economic development (Atkinson & Blanpied, 2008; King, 2004a).

Therefore, many countries, including some developing countries, striving for academic excellence, have spent resources on establishing research universities. Establishing research universities is done either by transforming teaching-focused universities to research universities, or by building completely new research universities, such as in the case of the King Abdullah University of Science and Technology in The Kingdom of Saudi Arabia. Another example is the 2002 Centre of Excellence project started in 2002 in Japan, which aimed to build world-class universities for Japan. Similarly, South Korea created the Brain Korea 21 project (BK 21) between 1999 and 2005 to improve the research performance and productivity of academics from 67 participating universities and whose majors were science and engineering. The developing country of the Philippines has 'The Philippines Long-Term Higher Education Development Plan', which focuses on developing the research capability and productivity of academics in higher education. In Vietnam, the Higher Education Reform Agenda, started in 2005, emphasises the importance of active engagement in research and the production of greater research output from academics.

Research indicates that in order to build a research university, both university leaders and the government need to have collaborative and targeted strategies. Boontham (2012) recommends the five-step V-A-L-U-E strategy, which includes the development of specific strategies in a bottom-up direction from 'E' to 'V' in order to promote the Efficiency, Utility of research, Linkage, Accreditation, and Vision

creatively of a university. At the highest level of Vision, strategies should “promote [a] new culture of creative thinking, corporatizing together outstanding professional[s], determining the direction of research and innovation policy, mission and goals of research in the university [which] can be implemented to meet the needs of society and nation” (Boontham, 2012, p. 129).

In short, the emergence of the research university is a timely response to the requirement of knowledge development, science, and technology of every country in the world. The research university is the place which facilitates creativeness and strong research collaboration between academics in order to generate and transfer new knowledge.

3.2.2 The Responsibilities of Academics at Research Universities

One of the primary missions of a research university is its active engagement in research in order to generate new knowledge and development. For this to occur, academics at a research university have to shift from being teaching-intensive to research-intensive (Brew, 2006; King, 2004b). Webber (2011a) indicates that “due to economic cycles with reduced funding, interest in institutional rankings and prestige seeking, interests in faculty productivity have gained increasing importance in higher education over the past century” (p. 105). So, research has been considered the most legitimate work of academics in research universities (Brew, 2003; Cummings, 2014). The above-mentioned ideas indicate that academics working at research universities must prioritise a significant amount of working time for research, besides teaching and administration, in order to fulfil the research goals as requested by their universities.

Table 3.1 illustrates the results from an international study conducted by Cummings and Shin (2014) which compared the research preference and share of research hours between academics in research universities and their peers in other types of universities in some developed countries.

Table 3.1
*Research Preference and Share of Research Hours per Week*¹⁵

Country	Research university		Average nationwide	
	Research preference *	Share of research hours **	Research preference	Share of research hours
Japan	89.7	38.7	71.7	31.9
Korea	80.4	39.2	68.0	33.6
Australia	79.5	35.4	69.6	29.1
UK	79.0	31.8	66.8	26.1
Germany	71.9	39.0	62.5	34.7
China	67.5	44.7	46.9	29.9
USA	61.1	35.6	44.1	24.7

* *The percentage of academics in investigated countries that indicate either a preference for research or a leaning to research.*

** *The average number of hours that academics in each country spent on research per week.*

Table 3.1 shows that Japanese academics have the highest percentage of research preference (89.7% and 71.7% respectively). However, they did not spend the largest amount of time on research. In contrast, Chinese academics at research universities spent the highest number of hours for research which was 44.7 hours per week. It is noted that the UK academics in research universities spent fewer research hours per week (only 31.8) than their peers who were working at non-research universities in Japan (31.9), Korea (33.6), and Germany (34.7). It is interesting to see that American academics, both in research universities and non-research ones, had the lowest research preference and share of research hours. However, America is the country which has the largest number of research universities, and its research productivity is also ranked at the top of the world. This means that American academics are highly productive in research (or have a high level of research efficiency).

In another study about the workload of academics in Australia, Bexley, James, and Arkoudis (2011) found that 38.9% academics there were interested in research (preferred both teaching and research, but leaning toward research) and 23.1% were interested in teaching (preferred both teaching and research but leaning towards teaching). The percentage of academics who were interested in “research only” was 25.9%, compared with only 7.4% who indicated their preference of “teaching only”.

¹⁵ Copied from Table 1.3 in Cummings and Shin (2014, p. 7) with some adaptation in format.

In the two studies cited above, it was not always true that those academics at research universities had a greater preference for undertaking research and spent more hours in research than their colleagues at other non-research universities nationwide. However, it was true that they had a greater preference for research than teaching. They did not neglect their teaching responsibility, because teaching is a basic function of all universities. Therefore, the next section examines the positive relationship between teaching and research in a research university.

3.2.3 The Positive Relationship between Teaching and Research

Although research universities are trying to improve their excellence of research by emphasising the importance of research more than teaching, the role of teaching still maintains a degree of importance in research universities. Although a few scholars find that academics' research does not bring any benefits to teaching quality (Feldman, 1987; Thomas & Harris, 2000), many studies indicate that a combination of teaching and research can enhance teaching quality because teaching quality is a desirable aim of all universities (Brew, 2003; Brew & Boud, 1995; Hattie & Marsh, 1996; Jenkins, Blackman, Lindsay, & Paton-Saltzberg, 1998). It is generally thought that a synergistic relation exists between the research of academics and their teaching quality, which university statements often emphasise. According to Brew & Boud (1995, p. 264), teaching and research are related to each other through the act of learning from each other: "Doing research is not likely to enhance pedagogical skills, but it is likely to enhance a teacher's knowledge, interest in and enthusiasm for the subject". Similarly, research enhances the knowledge and competence of academics, which, in turn, help them in supervising the research projects of students, especially postgraduate students (Lindsay et al., 2002). Jensen (1988) found three significant contributions of research to teaching quality of academics:

- 1) Research "fertilises teaching with new topics and methodological advances";
- 2) Research "provides teachers with a personal engagement of great pedagogic significance"; and
- 3) "University teaching, via research carried out by staff, maintains connections with developments in the world of international research" (p. 20).

Brew (2003, p. 4) indicates that “the research universities see ‘research-led teaching’ by active researchers as part of their competitive advantage”. Through these findings, we can see that when academics apply their updated knowledge from research to teaching, they can improve the teaching effectiveness that leads to enhanced learning outcomes for students. It is clear that the relationship between teaching and research has not changed, despite the new context of the research universities, because they are always supplementary to each other. But, there might be some differences in the ways that teaching and research are conceptualised by academics at the research university. When these responsibilities are reconceptualised by academics, they might bring teaching and research together in order to produce highly qualified human resources who are both knowledgeable in their field as a result of research-led teaching and able to conduct research independently.

3.3 The Importance of Research Productivity and Its Measurement

This section presents the indicators of research productivity in general. It is followed by a description of the measurement types for research productivity.

3.3.1 Indicators of Research Productivity

“Research productivity” is the output of a research process. It can be measured in a variety of publishing outputs such as refereed journal articles, theses, books and chapters in books, and patents (Raston, 1998). It is also measured in terms of professional development opportunities 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 recognised 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.

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.

3.3.2 Measurement of Research Productivity

Research productivity can be measured qualitatively or quantitatively. While qualitative measures evaluate the influence or impact of a publication by counting the total number of references that were made to it by researchers globally, quantitative measures focus on the number of publications that academics produce in a period. Both of the measurements are used by world ranking systems when they rank universities annually.

Citation is an important measure that reflects the quality of a publication. For example, there is always a positive correlation between the number of citations of a journal article and its quality in terms of the knowledge contribution to the field. For that reason, the citation indicator is the most prominent indicator among the 13 indicators that are currently used in the annual evaluation and ranking of world research universities by the Times Higher Education. According to Times Higher Education (2014), citations indicate how a publication contributes to the sum of human knowledge. More importantly, they indicate how this knowledge has been shared around the global scholarly community to push the boundaries of our collective understanding, irrespective of discipline. Thompson Reuters believes that the citation counts of scientists' publications can predict who will win the Nobel Laureate in certain disciplines (Thomson Reuters, 2014). However, citation has a limitation in that many researchers may contribute to a single paper. In this case, it does not tell us how much credit each author is given for that paper. Furthermore, a qualitative measure is always problematic because not all publications are indexed in research databases for citing and it is difficult to evaluate the real value of a publication. Therefore, the quantitative measures have been more widely used than the qualitative measures to evaluate research productivity of academics at most universities around the world.

The publication types used for measuring research productivity are different among disciplines. Refereed journal articles are regarded as being very important for natural sciences because the research findings in natural sciences need to be quickly

disseminated worldwide. However, books and book chapters are often the popular sources of publishing outputs in the fields of social sciences and humanities. Although there are different selections between the fields, refereed journal articles are increasingly used in all fields. Journal articles published in high-ranking journals which are indexed in the databases of Thomson Reuters, such as SCISSCI, are regarded as being valuable to scholars.

The choice of a certain type of publication and of the type of measurement to be used in evaluating a university depends on the purpose of evaluation or on the organisation. For example, the Australian Research Council (ARC), the organisation which is responsible for promoting, evaluating and offering research grants for universities in Australia, prefers citation profiles for disciplines in the natural sciences, and peer review of a sample of research outputs for disciplines in the humanities and social sciences (Australian Research Council, 2014).

In short, this section has reviewed some basic indicators of research productivity and their measurements. Each indicator or each type of research productivity outputs has different values depending on the discipline and field of study. In the scope of the present study, three types of publishing outputs: journal article, research project, and book will be used to measure the research productivity of ROU's academics. The following section reviews relevant studies in the literature which investigated the factors that influence the research productivity of academics in many countries around the world.

3.4 Reviews of Studies Related to Research Productivity of Academics

Two trends report on the research productivity of academics in higher education. The first trend looks at the influences of motivations to research such as intrinsic motivation and extrinsic motivation. The motivations can also be referred to as 'research rewards'. The emphasis on a type of research motivation determines research behaviours and performance of academics. The second trend examines background factors of academics and institutional factors of a university that influence the research productivity of individuals. There is an established literature on the research productivity of academics, mostly in the developed countries. The selection of the following studies to review is based on the following considerations: a) the research methodology, b) the sample size, c) the type of the institution(s) that was/were investigated in a study, d) a variation in academic discipline from natural

sciences, social sciences to humanities in order to capture general perception of academics at all disciplines, and e) the data analysis techniques.

3.4.1 Studies Investigated Impacts of Motivational Factors

There are three studies that will be reviewed in this trend: Chen, Gupta, and Hoshower (2006), Tien and Blackburn (1996), and Goodwin and Sauer (1995).

Chen et al. (2006) investigated the impact of various motivational factors on the research productivity of academics in the business discipline. On the basis of the expectancy theory, which is a part of the motivation theory, the researchers considered research motivations as the types of rewards. It was predicted that academics' motivation to conduct research would be greatest when they believed their research performance would lead to some rewards. This study applied a quantitative approach to empirically test 12 motivational rewards, which were divided into two groups, one of intrinsic motivation (six factors) and the other of extrinsic motivation (six factors). The 12 factors were used to discover the differences in the preference for reward between tenured and untenured academics, using a sample of 320 academics at 10 business schools of 10 research universities in the USA, who were investigated by questionnaire. Remarkably, participants of this study were productive in research. The study applied a linear regression analysis to determine the effects of demographic factors and institutional factors on the research productivity of academics in two periods: the 24 months prior to the investigation and the whole career span. Number of refereed journal articles, book chapters, books, and dollar amount of research fund were counted. This study found that the tenure status of academics and the amount of time academics spent on research were positively correlated with research productivity. It also found that tenured academics were intrinsically motivated to conduct research, while untenured academics were extrinsically motivated to conduct research.

Tien and Blackburn (1996) examined the effect of a system of academic ranking on the research behaviour of academics. The researchers tested if promotion in academic rank was a result of high research productivity. 'Promotion' was understood as an increase upwards of one-step within the hierarchical structure academics during their careers. The research hypotheses of this study focused on a prediction that promotion would increase the research productivity of academics. These hypotheses were previously supported by the research of Moses (1986) which found that the reward structure and promotion stimulated the work performance of

academics, including research productivity. However, Tien and Blackburn (1996) could not completely confirm their hypotheses because of variations among the disciplines regarding the correlation between academic rank and research productivity of academics. While no correlation was found in the fields of engineering and biology, a negative correlation was discovered in the humanities. The latter finding revealed that assistant professors (an untenured position) published more than associate professors (a tenured position) did. This finding is similar to the finding of Goodwin and Sauer (1995) below.

Goodwin and Sauer (1995) used the theory of life cycle to explore the variance in research productivity over time, of 140 full professors at seven research-oriented departments. The number of refereed journal articles was counted by examining the curriculum vitae of participants and analysed by using the Poisson-based regression analyses. This technique seems to have been appropriate in order to solve a common problem within the data: that some academics have no publications in a given period. The findings indicated that early career academics were very productive but they became less productive over time until retirement. Particularly, untenured academics were intensively engaged in research at the beginning of their career in order to successfully pass an intensive review which determines an official appointment of employment, so they were more productive in research than tenured academics. In this case, attaining tenure is what Chen et al. (2006) calls the extrinsic reward for research. This study also revealed that productive academics would almost, or even permanently, lose their research productivity if they took an administrative position.

These studies have found that the research productivity of academics was influenced by their academic rank, time spent on research, and administrative tasks. Three studies share the common finding that junior academics (in an untenured position) are very productive because they are extrinsically motivated to achieve tenure. In contrast, senior academics participated in research because of their intrinsic research motivation. Although Chen et al. (2006) classified 12 motivational factors in two categories of intrinsic and extrinsic, it is difficult to define the boundary between the two because motivation reflects a psychological status which cannot be perceived exactly. Furthermore, the type of motivation, either intrinsic or extrinsic, might change over time, depending on norms and expectations of academics as well as the context of the university.

3.4.2 Studies Investigated Impacts of Individual and Institutional Factors

Lertputtarak (2008) investigated factors that caused a low level of research productivity among academics at a public university in Thailand. The study used in-depth interviews to explore academics' perceptions about the importance of research, and obstructions preventing them from being productive. However, instead of interviewing academics in order to understand their viewpoints and their expectations or obstacles, Lertputtarak (2008) only interviewed administrators who were in charge of research activities of departments and centres. The administrators complained that many academics in their university did not perceive the importance of research. However, they admitted that academics lacked support from the university and had a high teaching load. Individually, academics lacked research self-efficacy. These three factors caused low research productivity of academics. The study also found that the institution from which academics graduated has a positive correlation with their research productivity.

Sulo, Kendagor, Kosgei, Tuitoek, and Chelangat (2012) investigated the factors causing the low research productivity of academics at a university in Kenya. The study focused on the impact of the amount of time spent on research, the academics' access to research funds, the qualifications of the researchers, and the research environment. This study differed from that by Lertputtarak (2008), who only interviewed research administrators at a university in Thailand; rather, this study collected responses from academics, using a questionnaire survey. The data were analysed using descriptive and inferential statistics (ANOVA, Pearson Correlation, and Multiple Regression). The analyses found that the amount of time spent on research, the accessibility to research funds, the qualifications of the researchers, and the research environment were positively correlated with research productivity. Among the four variables, the academic's qualification had the greatest impact on their productivity. In addition, research funding was deemed important because it enables academics to undertake projects, publish their work, attend conferences, and purchase reference materials. The amount of funding that respondents received was positively correlated to the number of conferences that they attended annually. These findings helped university administrators become aware of the importance of these factors.

Blackburn, Bieber, Lawrence, and Trautvetter (1991) examined the correlation between personal and environmental motivational factors, and how academics

allocated their work effort between research, teaching, and service. The sample was chosen from a mix of all types of institutions of higher education, from community colleges to research universities. Regression analyses were used to determine significant predictors. The independent variables included self-competence, self-efficacy, commitment to research, personal preferences, and interest to research, credence to the dean and colleagues, collegial support, financial support, and institutional preference of academic research. The findings showed that research self-efficacy, research self-competence, financial support for research, and research grants were the significant predictors of the allocation of effort to research. Among them, research self-efficacy was the most significant predictor indicated by all respondents. This study employed the socialisation theory to explain that an environment, in which academics have more opportunities to socialise with colleagues in order to discuss their research matters, will enhance their research competence. This environment is what Wenger (1998) calls a community of practice, one where people get involved in common practices to achieve their goals. Such an environment is particularly useful for junior academics in their early years at university.

Bentley and Kyvik (2012) investigated the influences of personal factors on the amount of time that academics in Argentina, Australia, Brazil, Canada, China, Finland, Germany, Hong Kong Italy, Malaysia, Norway, the UK, and the USA allocated to research. The researchers predicted that the more time spent on research, the higher the research productivity of academics is. Most of the participants were full-time academics that combined teaching and research. Using the participants' self-reported feedback, the authors weighted the average number of research hours per year for each person. Regression analyses were conducted. The results showed a variation in the research hours of academics. The levels of research interest and research motivation were the most positively correlated factors to time spent on research. These findings confirm those that have been found by almost all the aforementioned studies.

Smeby and Try (2005) examined the effect of the individual and departmental contexts on the amount of time spent on research and on the research productivity of academics. It differs a little from the study of Blackburn et al. (1991) and Bentley and Kyvik (2012) above, which considered the time allocation to research as the output; this study, however, considered the time spent on research as one of the inputs to create research productivity. The individual variables, consisting of job status,

workload, research cooperation, financial situation, and demographics, were examined. The departmental variables included the research climate of the department and the proportion of academics with a doctoral degree. Three dependent variables were used, including the research time per week (input), the number of all publications during a period of 3 years (including articles in refereed and non-refereed journals, book chapters, conference reports, institute reports) (output), and the number of refereed journal articles (output). The analysis of variance revealed that the number of highly qualified academics (doctorates) in a department is very important because they can create a good research climate within the department. In this climate, senior academics, especially the ones who hold a doctoral degree, offer research mentoring, collaborate with others, and offer other support to junior academics. Such a good research climate motivates academics to spend more time in research. Gradually, these activities create a research culture within the department, as found by Creswell (1986). Both the total number of publications and the total number of refereed journal articles were found to be significantly impacted by research time.

Teodorescu (2000) undertook a broad study to examine the influences of individual and institutional variables on the research productivity of academics across Australia, Brazil, Chile, Hong Kong, Israel, Japan, Korea, Mexico, the UK, and the USA. The sample included 11,572 full time academics in the ten academic systems. Two dependent variables of this study were the number of journal articles and chapters in academic books in the three years prior to the questionnaire survey. Regression analyses were used to determine factors influencing the research productivity of academics in each country. The cross-national results were contrasted to those established for academics in developed nations such as Australia, the UK, and the USA. The findings showed the importance of being a member of a professional society (e.g., the Australian Association of Educational Research), or participating in professional research conferences. By participating in such professional groups, academics have opportunities to improve their research skills and performance through discussions with other intellectual persons. This finding confirms that of Blackburn et al. (1991) emphasising the benefits of a research environment where academics can receive support from their peers and collaborate with each other. Teodorescu (2000) also found a high correlation between the availability of library resources and research equipment, and the research productivity of academics.

Babu and Singh (1998) examined the influential factors on research productivity of academics in the broad field of agricultural science via mail survey. The researchers initially collected 200 variables which influence research productivity of academics, through an intensive review of literature, discussions with scientists, and analyses of scientists' biographies. The variables were then critically examined before they were reduced to 80 variables. The mail questionnaire survey, which contained 80 variables, was answered by 325 academics. Through statistical analyses, the 80 variables were finally refined to a group of 26. The 26 factors were then analysed by principal component factor analysis. Finally, 11 variables were found to have influence on research productivity. They were divided into two groups: personal factors (persistence, initiative, intelligence, creativity, learning capability, concern for advancement, professional commitment) and institutional factors (resource adequacy, access to literature, stimulative leadership, and external orientation). These factors, to some degree, are similar to those found by Bland and Ruffin (1992). However, these are just predictor variables which come as a result of the factor analyses. They have not been tested with any dependent variable related to research productivity.

Bland, Center, Finstad, and Risbey (2005) used a conceptual framework that was built by Bland, Seaquist, Pacala, and Finstad (2002) to test relationships between the individual, institutional, and leadership variables and the research productivity of 465 academics in the medicine discipline. The hierarchical multiple regression analyses revealed strong influences of individual and institutional factors on the research productivity of all academics in the sample. It is similar to the findings of Bland and Ruffin (1992): research knowledge of departmental leaders, their leadership style, and their professional expertise were found to significantly affect the research productivity of academics. Definitely, good departmental leaders are able to energise and motivate academics within the department to engage in research. If they are a good source of research knowledge, skills, and experiences, they can play the role of research mentors for other staff. The support of the departmental leaders will create a positive research climate within the department. This practice gradually builds a research culture for the department.

Boakye-Dankwah (1992) examined the factors related to the research productivity of 215 academics in agricultural education at 49 American universities. A mail questionnaire survey was used. The six dependent variables that they studied

were: refereed articles, research projects, books, book chapters, conference presentations, and research proposals. These research outputs were counted in a period of three years. The data analysis was only descriptive statistics. The findings indicated that research productivity was positively correlated with academic rank. The results revealed that assistant professors were motivated to do research because of promotion and tenure, and associate professors preferred salary increase and promotion. These types of motivation were classified as extrinsic by Chen et al. (2006). In contrast, participants who were professors demonstrated intrinsic motivation to do research in terms of reputation and peer recognition. These findings are similar to those of Goodwin and Sauer (1995) and Tien and Blackburn (1996) that found positive correlations between an increase in academic rank and research productivity, as well as different types of motivation (extrinsic vs intrinsic motivation) between the ranks (assistant professor and associate professor vs. professor). Despite of the type of motivation, all participants expressed the importance of a collaborative research climate within a department, where academics support to each other.

Dundar and Lewis (1998) investigated the research productivity of academics in the four broad fields of biological sciences, engineering, physical sciences and mathematics, and social and behavioural sciences of 90 research universities in the USA. The large scale of this investigation makes it worthy of study, and more reliable than any other studies. Notably, most participants in this study exhibited strong motivation to do research and had a regular focus on scholarly writing. They were all teaching at doctoral level, so the interactions among academics, or between academics and postgraduate students, were likely to enhance their research productivity. The regression analysis results indicated that the number of academics within a department was the most important predictor for the number of publications of the department. This finding reflects the importance of having an appropriate number of academics in the same discipline in order to increase possibilities of research socialisation and collaboration among academics. Therefore, the number of academics in each department, especially of the high-ranking academics and experienced academic researchers, has become a strong predictor of research productivity of individuals and departments. For example, in a department which has many full professors, a research culture can be easily formed because such professors can play the role of 'research stars' who facilitate research support and

collaboration among academics. Dunda and Lewis (1998) also found a positive correlation between the number of postgraduate students and the research productivity of academics in the fields of engineering and physical sciences.

Cepero (2007) used an extremely large data set, which was collected from a national survey of 960 institutions in the USA, to explore factors that influence the research productivity of academics at public, research, and doctoral-granting universities. The investigation particularly focused on both sole-authored publications and co-authored publications. The data analysis was mainly based on factor analysis and regression analysis. The finding indicated that academic discipline impacted the type of authorship of academics. Particularly, academics in social sciences and education had higher numbers of sole-authored publications than those in other groups. In contrast, the number of co-authored publications in natural science and engineering was higher than the number for their colleagues in the social sciences and education. This finding confirms the finding of Dunder and Lewis (1998) that academics in the fields of engineering and physical sciences have more research collaboration with their postgraduate students than academics in other fields. The more they collaborate with other people, colleagues, and/or postgraduate students, the greater the attainment of research productivity. The study's findings also emphasised the importance of reward and incentive systems that foster the research productivity of academics.

Ramsden (1994) investigated the research productivity of academics in 18 Australian universities by examining the number of publications of 890 academics in the disciplines of humanities, commerce, science, health science, and engineering. He predicted the research productivity of academics by testing a model that linked personal variables and departmental context variables in order to see how the model affects research productivity. The number of books, refereed papers, conference papers, edited books, and book chapters of participants in the period between 1985 and 1989 was collected. The data were compared to determine what factors contributed to different levels of research productivity. Simple bivariate analyses were used to test the correlations between personal and departmental factors and the total publications. Regression analyses were then conducted to determine factors impacting the research productivity of academics. The results revealed that the research productivity of those academics was strongly influenced by their interest in research, frequent involvement in research activities, and the seniority of academic

rank. The results are similar to those from the previous studies of Chen et al. (2006), Bland et al. (2005), and Teodorescu (2000). In relation to the research interest, Ramsden (1994) clearly indicated that persons who expressed early interest in research are three times more productive than their colleagues who reported their primary interest is teaching. The finding is significantly similar to the findings of Dundar and Lewis (1998) and Migosi, Migiro, and Ogula (2011), which emphasised the matter of building research capability for academics as early as possible. It would be of great benefit if research capacity build could be well developed during the early stages of academics' careers, because Goodwin and Sauer (1995) and Tien and Blackburn (1996) have found that academics have high motivation to do research at this stages in order to get tenured positions. Therefore, if senior academics in departments invested their time and effort in supporting early career academics develop their research capability, the results would be very satisfactory.

Migosi et al. (2011) investigated factors motivating business academics in Kenya to undertake research. A survey questionnaire was conducted with 400 academics at universities that had a research emphasis in order to explore factors motivating them to publish more refereed journal papers. Factor analysis was used to reduce data from 33 variables to 14 major variables influencing research productivity. This type of data reduction is similar to the method used by Babu and Singh (1998). Among the 14 factors, self-motivation of academics, research content knowledge, research skills gained, and an early orientation to research were found to have the greatest influence on research productivity. These findings are similar to those by Brocato and Mavis (2005), Ramsden (1994), and Tien and Blackburn (1996) as these studies found professional staff development in terms of building research capability in the early stages of career, and the psychological characteristics of academics, to be important factors in research productivity.

Hu and Gill (2000) explored the reasons as to why some academics are more productive than others are in academic research. The authors counted the number of refereed journal articles that academics in the field of information systems published in a five-year period. The regression analysis was used to determine the effect of 13 independent variables on the research productivity. The findings indicated that only time spent on research and doctoral programs was significantly associated with research productivity. Specifically, the findings indicated that if academics spent

little time on research while their teaching load exceeded 11 hours per week, it would adversely affect their research productivity.

Sax, Hagedorn, Arredondo, and Dicrisi (2002) examined the relations of gender and family-related factors, such as marital status, number of children, and aging parents, to the research productivity of academics. The results indicated that gender does not cause any difference in research productivity, and family-related factors have little or even no effect on the research productivity of those academics. This is in opposition to findings from previous studies, such as those of Kaya and Weber (2003) and Zhang (2010), that demonstrated that female academics are often less productive than their male counterparts because women often have family responsibilities, such as looking after the housework and children. The findings of Sax et al. (2002) proved that, despite some family responsibilities, female academics are able to compete equally with males in research because some females have a high level of research interest, research motivation, and good time-management skills.

Creswell (1986) focused on the research culture present in a university, discussing how this is an important factor contributing to, or even determining, the research performance and productivity of academics. Creswell indicated that research culture relates to academics' attitudes towards research and their shared values. Frequent interactions between academics or between academics and administrative staff within a department, will facilitate a good research culture within a department, or, more broadly, within a university. Creswell emphasised the importance of regular communication between academics within and outside a university, because such professional communication always increases research motivation as well as creates shared belief and research values among them. It seems that a research culture within a department or a university is extremely important to facilitate the research motivation, performance, and productivity of academics in the organisation. According to Hofstede, Hofstede, and Minkov (2005), "every group or category of people carries a set of common mental programs that constitutes its culture" (p.10). They also indicated culture changes over time and context. Therefore, the research culture of each department within a university might be different depending on individual and departmental factors, such as the way that academics support each other and collaborate with each other, the leadership style of the departmental leaders, and the support of the university. So, it can be assumed that all significant factors that were found in all the above-

reviewed studies can be combined to create a research culture for a department in particular and a university in general.

Gregorutti (2008) applied a mixed-method approach to investigate environmental and personal factors that influence the research productivity of academics at doctorate-granting universities in the USA. The study also focused on the influences of organisational factors and the personal characteristics of academics. Academics who participated in this study were both part-time and full-time, and taught at both undergraduate and graduate level. The quantitative data analysis found correlations between age, gender, working experiences, academic rank, discipline, and level of teaching, to the research productivity of academics. The qualitative data found that the most helpful factors for research productivity included human resources, such as good students (both undergraduate and postgraduate level) and colleagues from the same discipline; low teaching load; supportive and mentoring environments; and clear expectations built into departmental mission statements. These findings confirmed the conclusions of organisational researchers such as Morrow & McElroy (1993) and Meyer and Allen (1997) who found that people who have a high level of commitment to an organisation will perform their best efforts and draw on their personal resources to work and contribute to the shared values and goals of the organisation.

In short, the above studies have reviewed the individual and institutional factors that influence research productivity of academics in different countries. It can be seen that almost studies applied a quantitative approach. Only Lertputtarak (2008) applied a qualitative approach and Gregorutti (2008) applied a mixed-method approach. The review of studies in this trend has shown that the research productivity of academics is a result of the interaction among many internal and external variables. The variables range from: individual personal characteristics, academic discipline, educational qualification, research interest, an early orientation to research, research self-efficacy, participation in a professional society, and time spent on research, to: institutional characteristics, workload allocation (teaching, research, and service assignments), leadership styles of departmental leaders, the access to research funds and resources, research support provided by the institutions, reward system, research environment within departments, number of postgraduate training programs, and research culture of the departments. The studies have investigated a variety of academic disciplines and types of institutions across

countries. Therefore, the significant factors that have been collectively generated through the review can be considered good enough to build a conceptual framework for the present study. The justification of the factors will be presented in the following section.

3.5 Considerations of Theories to Form a Conceptual Framework for This Study

Through the review of literature, it is recognised that there is no theory base which can be firmly used to predict the research productivity of academics. So, there has not been any universal theoretical framework in the current literature. Based on the above review and the nature of this study, the following theories, including the Theory of Job Satisfaction, the Theory of Organisational Commitment, and the Theory of Motivation have been taken into consideration in conducting this current research. The purpose of this section is not to focus on theoretical matters of the theories; rather, due to the word limitations of this thesis, only brief previews of the uses of the theories in relation to the research productivity of academics are presented. From that point of view, the theories can be the basis of the interpretation of the research attitudes and behaviours of academics at ROU.

3.5.1 Theory of Job Satisfaction

3.5.1.1 Conceptualisation of Job Satisfaction

Job satisfaction is an attitudinal construct in organisational psychology that relates to facets of work in organisations. It reflects a pleasurable emotional state that results from the appraisal of one's job when one achieves some expected things at work, for example the satisfaction of good pay, promotion, or the interesting working environment (Locke, 1969). Oshagbemi (2003) defined job satisfaction as an affective reaction to a job that results from the comparison of actual outcomes with the objectives. From the definitions, a link between one's desired outcomes and one's actual results can be seen. If the actual outcomes are similar to the expectations of employees, the latter's' feelings of satisfaction will be enhanced. It is predicted that a highly satisfied employee will demonstrate high performance at the workplace.

3.5.1.2 Impacts of Job Satisfaction on Research Productivity of Academics

The positive linkage between job satisfaction and job performance was found in previous studies in industry. Iaffaldano and Muchinsky (1985) made a substantial review of the literature and found that there was a significantly positive correlation

between employees' job satisfaction and performance. Although the correlation value was minor, it had some meaning to researchers at that time. In a study by Baird as cited in Judge, Thoresen, Bono, and Patton (2001), such significant correlation was confirmed again. That study indicated that the correlation was stronger in high-complexity work than in low-complexity work. The strongest correlation coefficient was observed for scientists and engineers.

Regarding satisfaction with institutional factors, researchers found employees' work performance is significantly enhanced when they feel satisfied with pay, supervision or leadership style, co-workers, and promotion system (Smith, Kendall, & Hulin as cited in Porter et al., 1974), or when they are satisfied with company policies and working conditions (Oshagbemi, 2003). From a personal psychological perspective, employees are found to be very satisfied if they feel there is a sense of fairness in relation to the opportunities for promotion in companies (Robbins, 1994). These findings indicate that job satisfaction is an important construct that significantly influences the work performance and work productivity of employees in organisations.

When applying the concept of job satisfaction in the context of higher education, Bentley, Coates, Dobson, Goedegebuure, and Meek (2013) found that the most satisfied academics were those who felt able to access the resources needed for their work and those who perceived that the university displayed a supportive attitude to their research activities. Bentley (2014) predicted there was a positive correlation between research productivity and academics' satisfaction with the research support provided by the university in the five areas of: laboratories, research equipment, computer facilities, library holdings, and faculty offices. The descriptive analysis showed that among academics in 11 developed countries, such as Australia and the USA, which were investigated in that study, there was a high mean of job satisfaction in relation to the support from the universities. Interestingly, Bentley (2014) found a significantly negative correlation between research support and the number of refereed journal articles published by academics. This result means that the more academics are involved in research, the less satisfaction with research support they perceive. So, not all academics at research universities in developed countries are satisfied with the research support provided by their universities. The different findings from these two studies showed that satisfaction is a complicated psychological aspect of human beings. It is perceived differently, depending on time

and the working environment of the universities in each country. So, it is reasonable to incorporate this dimension into the conceptual framework of this study to predict research productivity of academics at ROU.

3.5.2 Theory of Organisational Commitment

3.5.2.1 Conceptualisation of Organisational Commitment

Organisational commitment is a complex psychological phenomenon that relates to the attitudes and behaviours of employees at a workplace. It is considered one of the major determinants of organisational effectiveness (Angle & Perry, 1981; Koch & Steers, 1978; Mowday, Steers, & Porter, 1979; L. W. Porter, Steers, Mowday, & Boulian, 1974). There is a close relationship between commitment to organisations and attitudes and behaviours of employees to their work. The commitment of employees will be increased when their personal goals and values are congruent with those of the organisations. As a result, their work performance and effectiveness are enhanced (Meyer & Allen, 1997). Researchers agree that committed employees not only remain in these organisations for a long time, but also enhance the organisation's effectiveness because they always exert their best efforts to enhance work performance in order to meet the organisations' goals (Meyer & Allen, 1997). Accordingly, employees' commitment to organisations can be classified into three types: affective commitment, normative commitment, and continuance commitment, as discussed below.

3.5.2.2 Types of Organisational Commitment

Affective commitment involves the affectivity and emotions of employees to organisations. Kanter (1968) found a positive relationship between employees' affective commitment to the organisation and their contribution to the organisation. This type of commitment indicated employees' attachment to the organisation's goals and employees' involvement in activities to help the organisation achieve the goals. Lortie (as cited in Nias, 1981) conceived of affective commitment as a readiness to allocate scarce personal resources such as time, money, and energy to work. Therefore, only employees who have an affective commitment will contribute much to the success of the organisation (Morrow & McElroy, 1993).

Continuance commitment reflects the awareness of employees relating to the costs associated with leaving an organisation (Meyer & Allen, 1991). It is a psychological state that is shaped by working conditions at the organisation as well as by the living conditions of employees (Meyer & Allen, 1991). It is predicted that

employees with this type of commitment will continue to work for and devote themselves to the organisation simply because for their personal financial reasons, such as how much money they need to support themselves. If their financial expectations are not met, they will move to another organisation. People who cannot leave their jobs because of their limited ability to find another job will keep working for the organisation, but they psychologically and emotionally withdraw from their daily jobs (Noe, Hollenbeck, Gerhart, & Wright as cited in Joo, 2010). From this finding, it can be seen that employees with this type of commitment will not spend time and effort in contributing to the development of the organisation if they are not satisfied with their financial expectations, for example, if their salary is low.

Normative commitment reflects a sense of obligation to continue as employees and implement jobs at work as an obligation. Employees who have a high level of normative commitment often remain with the organisation because of moral or ethical considerations that create a sense of responsibility to stay (Meyer & Allen, 1991). This sense of moral duty may “result from the internalisation of normative pressure exerted on an individual prior to entry into the organisation or following entry”(Meyer & Allen, 1991, p. 72).

In relation to research activity in the university, Neumann and Finaly-Neumann (1990) found the reward system of universities to have a positive influence on the level of commitment of academics in research universities. The level of commitment to the universities was then found to be positively correlated with research publications of academics in two categories: refereed journal articles and books. K. Harman (1989) considered academics' commitment to research as a way of expressing their loyalty to the profession and their commitment to the university, as loyalty to the institution. Therefore, K. Harman (1989, p. 4) classified professional loyalties of academics into four types based on commitment to research and commitment to the institution, as illustrated in Figure 3.1.

	High	Commitment to institution	Low
Commitment to research	High	Type A <i>Research leaders</i> High research commitment High institutional commitment	Type B <i>Individual scholars</i> High research commitment Low institutional commitment
	Low	Type C <i>Artisans</i> High institutional commitment Low research commitment	Type D <i>Drones</i> Low institutional commitment Low research commitment

Figure 3.1 Professional loyalties of university academics: four ideal types using as indicators commitment to research and to institution

From Figure 3.1, it can be predicted that ‘research leaders’ are the ones who have the highest level of affective commitment to both research and the institution. In contrast, ‘drones’ are the ones who have the lowest level of affective commitment (or the highest level of normative commitment) to both research and the institution. Neumann and Finaly-Neumann (1990, p. 77) indicated that “Universities need dedicated faculty members who not only join their university but continue to remain actively involved in innovative research activities”. Therefore, building strong commitment among academics is a crucial mission of all universities.

In short, three types of organisational commitment are interrelated. They might be mutually inclusive or overlap. Among them, it has been demonstrated that affective commitment has the greatest impact on performance, effectiveness, and on employees’ work productivity (Dunham, Grube, & Castaneda, 1994; Meyer & Allen, 1991; Somers, 1995). For that reason, this present study considered the theory of organisational commitment as one of the theoretical bases for its conceptual framework. It is predicted that academics who have a high level of commitment to the research goals of the university will try their best to support the university in achieving its research goals.

3.5.3 Theory of Motivation

3.5.3.1 Conceptualisation of Motivation

In studies of human behaviours at work, motivation has been noted as an important construct that predicts the attitudes and behaviours of employees at workplaces (Hardré, 2012). Motivation is an underlying force that guides or directs the specific goal-directed behaviour of a person. It is a cognitive process that can originate from a biological, social, cultural, cognitive, or psychological need. Mawoki & Babandako (2011) consider motivation toward a specific job as a process that arouses, energises and directs a person to particular behaviours in order to enhance their work performance. Similarly, Greenberg and Baron (2010, p. 114) define motivation as “the set of processes that arouse, direct, and maintain human behaviour toward attaining some goals”. Through these definitions, we can see that the arousal, direction, and maintenance of behaviours toward a goal are important components of the motivational process.

According to Beck (2004), motivation is just an idea or concept that is used to in undertaking an explanation for a behaviour. It is neither a fact of experience nor a fact of behaviour. It is an explanatory concept that helps researchers to understand why people behave in the particular way that they do. The Theory of Motivation constitutes an appropriate tool for understanding the internal motivations of academics toward research and research productivity at the investigated university of the present study.

3.5.3.2 Impacts of Motivation on Research Productivity of Academics

Motivation is characterised by the willingness and passion of a person to undertake a job. It is predicted to enhance work outcomes. A positive relationship exists between the work motivation and work performance of employees. Employees who are highly motivated in their jobs will demonstrate better performance at their workplace, which in turn increases the effectiveness of organisations (Meyer & Allen, 1997). Within the context of higher education, motivation predicts the attitudes and behaviours of academics toward teaching, research, and services.

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 3.2.

Table 3.2

*Academics' Intrinsic and Extrinsic Motivations to Undertake Research*¹⁶

Factors associated with intrinsic motivation	Factors associated with extrinsic motivation
<ul style="list-style-type: none"> • Achieving peer recognition • Gaining respect from students • Satisfying a personal need to contribute to the field • Satisfying a personal need for creativity or curiosity • Satisfying a personal need to collaborate with others • Satisfying personal needs to stay in the field 	<ul style="list-style-type: none"> ▪ Receiving tenure ▪ Being full professor or receiving promotion ▪ Getting a better salary ▪ Getting a managerial position ▪ Getting a chaired professorship ▪ Reducing teaching load

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

¹⁶ Source: Chen et al. (2006), adapted by the researcher.

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.

This section has examined the theories of job satisfaction, organisational commitment, and motivation. The review of the studies in Section 3.4 and the examination of these three theories indicate that research productivity of academics might be influenced by 1) their satisfaction with the university in areas such as teaching and research policy, funding support for research, or library resources which makes them actively engaged in research activities; 2) their commitment to the university's values and research goals that stimulates their involvement in research; or 3) their intrinsic and/or extrinsic motivation to undertake research. The theories are to be used as a foundation for a conceptual framework of this study, which is presented in Section 3.6.

3.6 The Conceptual Framework of This Study

From the consideration of three supporting theories, this section presents a conceptual framework of this study and then presents some selective predictor variables, which were drawn from the above-reviewed studies. The study applies this conceptual framework to test the influences of such variables on the research productivity of academics at ROU in Vietnam.

3.6.1 The Conceptual Framework

The conceptual framework of this study was derived from findings of the previous studies. Such studies found positive correlations between 1) the level of satisfaction of academics and their research productivity, 2) the level of commitment to the institutions' research goals of academics and their research productivity, and 3) the level of research motivation of academics and their research productivity. However, satisfaction, commitment, and motivation only reflect attitudes of academics toward research activities. Research productivity, in terms of publication, is a specific outcome of research behaviours that academics conduct in a period of time. Therefore, this study aims to explore a linear relationship between research attitudes and research behaviours of academics. Among the three attitudes of satisfaction, commitment, and motivation, it is unable to decide which attitude causes which one. Studies that explored causal relationships between the attitudes have not

been found in the literature. As this is an empirical study and furthermore it is conducted in the context of a developing country like Vietnam, I take this opportunity to conceptualise such three attitudes in two constructs named 'research environment' and 'research motivation' in order to predict the relationships of research attitudes with research behaviours in the third construct. Measured variables related to satisfaction and commitment were incorporated in 'research environment', while measured variables related to motivation of academics to do research were incorporated in 'research motivation'. The empirical tests in the present study predict bridging connections between the factors contained in each construct, particularly:

- Research environment (including individual and institutional factors existing at ROU) and the research motivation of ROU's academics;
- The research motivation of ROU's academics and their research behaviours;
- The research behaviours of ROU's academics and their research productivity (publishing outputs) in the last five years prior to this investigation.

These relationships are demonstrated in Figure 3.2.

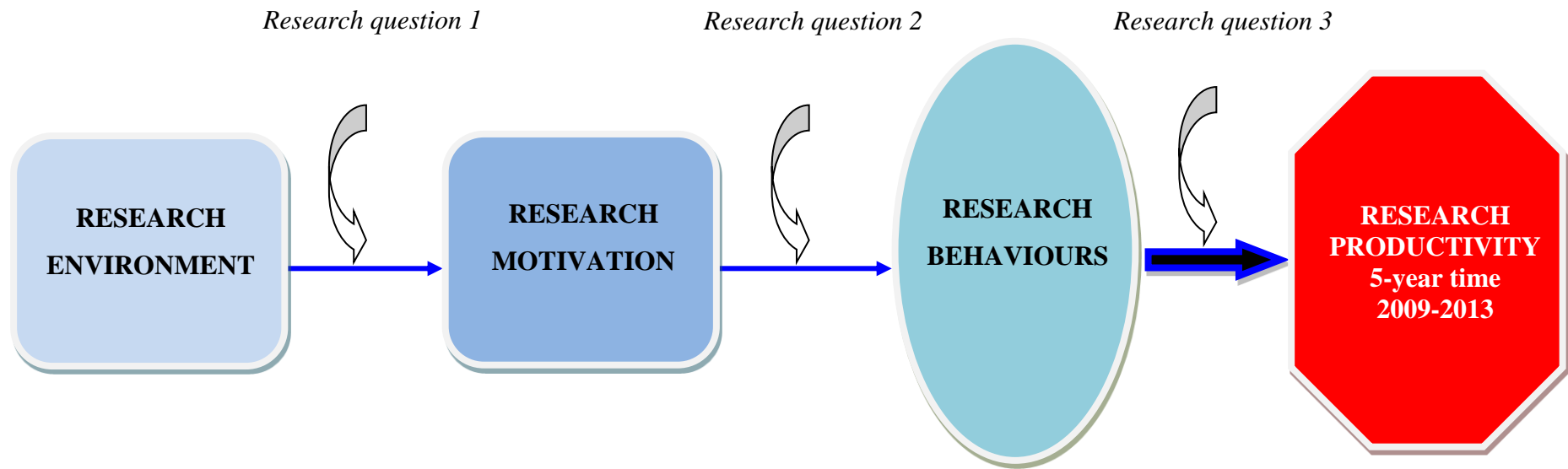


Figure 3.2 Conceptual framework of this study

3.6.2 Predictor Variables Applied in the Conceptual Framework

Considerations of the selection of factors have been based on the context of Vietnamese Higher Education and on three basic theories: Theory of Motivation, Theory of Job Satisfaction, and Theory of Organisational Commitment. The following potential factors will be used to investigate their impacts on the research productivity of academics at ROU. The factors are presented in two groups of individual factors and institutional factors.

3.6.2.1 Individual Factors

This section justifies the following eight individual factors: age, gender, educational qualification, academic rank, research interest, research self-efficacy, time allocation for research, and English proficiency.

3.6.2.1.1 Age

Different findings were found in the correlation between age and research productivity. Hedjazi and Behravan (2011) found that the research productivity of academics sharply increases to a peak point in early career and then it declines gradually. Goodwin and Sauer (1995) particularly indicated that the increase of research productivity occurs at the early stage of academics when they are still holding untenured positions. Diamond's (1986) life-cycle model of human capital investment states that when academics get older or have a tenured position, they might have other administrative duties that occupy their time. Such activities make them reduce their investment in, or commitment to, research activities. The findings of all the above authors are contrary to those of Smeby and Try (2005) and Perry et al. (2000).

3.6.2.1.2 Gender

The gender of academics is considered to correlate with their research productivity (Fisher, 2005). Kaya & Weber (2003) recognised that the number of grant proposals submitted, papers submitted for publication, and refereed journal articles published or accepted for publication by females, is significantly lower than that of their male counterparts when the variable of the academic discipline is controlled. Female academics often experience more stress than their male colleagues do, because they often perceive demands for increased research productivity, while having to simultaneously perform family responsibilities (Zhang, 2010). In contrast, Webber (2011a) found a considerable contribution by female

academics to research in recent years. The author indicated that it is unfair to say that males are always more productive than females. For example, females usually have lower numbers of non-refereed journal articles, book reviews, and book chapters than males, but females have the same number of refereed journal articles, books, textbooks, and conference presentations as males.

3.6.2.1.3 Educational Qualification

Educational qualification was found to be positively correlated with the research productivity of academics in all reviewed studies. According to Bailey (1999), academics with a higher degree are more committed to research and more self-efficacious about their competence in terms of research problems than are others. Similarly, doctorate-holders are usually more productive than their colleagues who hold a master's degree (Smeby & Try, 2005). Rodgers and Neri (2007) even discovered that the most productive time of an academic's career is the first five years after they are conferred a doctoral degree.

3.6.2.1.4 Academic Rank

Studies have found a positive correlation between the rank of academics and their research productivity. Tien & Blackburn (1996) discovered that academics are usually very productive before they are officially granted a tenure. To be recruited, some junior academics have to publish more than senior academics. Shin, Jung, and Kim (2014) note that many junior academics in Korea published more papers in international journals because they were under pressure to be productive for purposes of successful recruitment, while senior academics published in domestic journals. However, Tien and Blackburn (1996) also indicated that after obtaining tenure, academics, especially those of a high rank, such as professor, continued to be highly productive in research. Mostly, professors always have higher research productivity than associate professors and assistant professors do (Smeby & Try, 2005).

3.6.2.1.5 Research Self-efficacy

Self-efficacy is defined as "people's judgements of their capabilities to organise and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Research self-efficacy has been proven as an important personal predictor of time allocation to research (Blackburn et al., 1991). Academics who often spend more time on research activities than on other activities will have high research productivity (Hu & Gill, 2000; Smeby & Try,

2005). Accordingly, Vasil (1996) studied the impact of perceptions of self-efficacy among academics at some universities in New Zealand and found that male academics often possess stronger perceptions of their self-efficacy than their female colleagues. This understanding will affect their research ability and confidence in the transition from research training to publishing.

3.6.2.1.6 Research Interest

Research interest is expressed as a motivation to do research and is believed to enhance the research productivity of academics (Bentley & Kyvik, 2012; Migosi et al., 2011). Ramsden (1994) found that the research productivity of academics who have a research interest are three times higher than those whose interest is primarily in teaching. Similarly, academics who have high intrinsic motivation to conduct research, demonstrate their agreement with statements such as “I find newest topics in my subject areas are interesting, and often spend extra time trying to obtain more information about them” and “I become increasingly absorbed in my academic work, the more I do” (Ramsden, 1998b, p. 10). Ramsden (1998b) emphasised that the research productivity of the most intrinsically motivated academics is often twice as high as that of the least intrinsically motivated academics in the same discipline and under the same working conditions.

3.6.2.1.7 Time Allocation for Research

Time allocation for research has a positive correlation with research productivity (Hu & Gill, 2000). Sadler (1999) emphasised that academics should spend regular time in research rooms, offices, laboratories, and, more importantly, that their activities should be directly linked to a particular research output, such as a manuscript for a journal paper or a book chapter. This means that research hours are the number of real hours, normally in a week, in which academics perform some types of collaboration, such as reading articles, writing a manuscript, reviewing a manuscript of a colleague, discussing a research matter with colleagues, or supervising a postgraduate student in order to create a research output. Time allocation is considered a fundamental input in the research process in order to get good outputs (Smeby & Try, 2005).

3.6.2.1.8 English Proficiency

Proficiency of a foreign language, especially the English language, is regarded as important to improving research productivity of academics in the 21st

century. English is widely used as an official language in many countries beyond the Americas, such as in the European Union, United Nations, and Commonwealth countries. For other countries, English is mostly used as a second language. In scientific and technological areas, English has been a pivotal tool for research and international publications. Being proficient in this language not only helps academic researchers read English publications, but also offers them opportunities to publish their research results in international publications, such as scholarly journals. Of course, there are research publications written in other popular languages, such as French, German, Japanese, or Chinese, but English publications dominate the world of science. Hanauer and Englander (2013) revealed in the results of their mixed-method research that a majority of scientists in non-English countries faced problems with using English in their scientific writing and publications. This reflects a reality that most countries in English-speaking nations have the highest rate of international publications, while Asian countries are among the countries with the lowest rates of international publications (Man, Weinkauff, Tsang, & Sin, 2004).

In short, the above individual factors significantly influence the research productivity of academics in many countries. It is noted that research interest is very important in producing a high number of research outputs because it relates to intrinsic motivation to undertake research. Besides, time allocation for research is also important. This research-time association occurs in all countries, as found by Sax et al. (2002) and Teodorescu (2000). The above individual factors will be used to test their influence on the research productivity of ROU's academics.

3.6.2.2 Institutional Factors

This section justifies the following ten institutional factors: teaching load, postgraduate training, scholarly resources, research funding, academic promotion, peer support, research collaboration, department size, stimulative leadership of departmental leaders, and reward system.

3.6.2.2.1 Teaching Load

Teaching load is claimed to be negatively correlated with research time, leading to a low level of research productivity. A common complaint is encapsulated in the following quote: "We are so overloaded with administrative work and marking papers that there is little time left over for truly intellectually stimulating work" (Bexley et al., 2011, p. 34). As noted by Levitan and Ray (1992), the most important factor in research productivity is the amount of time that academics can spend on

doing research. Research found that if academics spend 50% of their academic time on research activities, their productivity is much higher than that of others who spend less than 50% of their academic time on research activities (Kaya & Weber, 2003; Webber, 2011b). Therefore, if academics had a small teaching load and more time for research, they would be able to work more hours on research and produce more publications. This finding supports the conclusion of Blackburn & Lawrence (1995) that when academics' teaching loads increase, their research load and subsequent productivity will decrease. When class sizes continually increase but the numbers of permanent academics remained unchanged, universities in developed countries, such as Australia, are relying on a greater number of casual or sessional teaching staff (Klopper & Power, 2014). These staff can engage in activities such as tutoring, assessment, or even lecturing. Klopper and Power (2014) indicated that the sessional teaching staff are also effective teachers who play an important role in teaching in order to reduce the heavy teaching load occurring in a research university in Australia.

3.6.2.2.2 Postgraduate Training

Postgraduate training is one of the most important indicators of a research university. A university that offers many postgraduate programs will have a higher reputation and ranking in the world academe. Through training programs, academics have more opportunities to teach and supervise postgraduate students. Marsh & Hattie (2002) indicated that at this level of teaching, most postgraduate students, especially doctoral students, are trained to become researchers in the future. As postgraduate teaching is a process wherein both academics and students can learn from each other, academics can gain benefits from teaching or supervising postgraduate students. A high number of research students in a university can create a research-led-teaching environment within the institution, which benefits the research productivity of academics (Times Higher Education, 2014). Austin (2002) remarked that many academics' publications are the result of their collaboration with postgraduate students through co-authorship or supervision. This early involvement of postgraduate students in research, equips them with knowledge and skills, which they can use when they enter the academe in the future.

3.6.2.2.3 Scholarly Resources

Scholarly resources such as academic books and scientific journals, especially the international high ranking journals, are very important in motivating academics to undertake research and lead to their high research productivity

(Lertputtarak, 2008). Teodorescu (2000) suggest that it is necessary for academics to access available resources to undertake research. Furthermore, the resources must be updated because they provide academics with new knowledge in their academic discipline. This criterion is especially important in the fields of natural sciences, engineering, and technology.

3.6.2.2.4 Research Funding

Finance in general, or research funding in specific, is a primary indicator of research productivity (Man et al., 2004). Altbach (2011b, p. 12) indicated that “because of their unique academic mission, research universities require sustained support and favourable working conditions. Their budgets are larger than those of other universities.” Sulo et al. (2012) found a positive correlation between the research funds that academics receive and the number of research outputs they produce. The fund is very necessary to disciplines that require money to conduct experiments, such as technology and medicine. Even small changes in research funding can create a variation in the research productivity of academics, while other factors are controlled (Man et al., 2004).

3.6.2.2.5 Academic Promotion

Research output is widely used as one of the most important measures for appraisal and promotion purposes at universities around the world, particularly at research universities. Evidently, Tien & Blackburn (1996) examined the impact of a ranking system on academics' attitudes and behaviours toward research and research productivity. The study revealed that an increase in academic rank was viewed as a reward; as the authors stated: “...as a reward, promotion has the greatest motivating effect when it is contingent upon performance” (Tien & Blackburn, 1996, p. 5). Accordingly, at universities across the globe, publications are mainly used as a gauge for promotion and as the basis for recognition of academic excellence (Man et al., 2004). Due to this criterion for promotion, some academics maintain their same rank for a long time (i.e., they do not receive any promotions) because they do not produce any publications (Sulo et al., 2012).

3.6.2.2.6 Peer Support (Research Mentoring)

In the demanding and competitive environment of higher education nowadays, academics support each other to improve the quality of their tasks. It is similar to the activity of peer reviewing of teaching in order to share teaching ideas,

which enhances the teaching skills of academics (Drew & Klopper, 2014). The activity of peer support in research has been increasingly emphasised because it enhances research skills, knowledge, and capability of academics. It is a useful practice for junior and less-research experienced academics. According to Raston (1998, p. 73), "peer support is possible in many ways and can be important in increasing research productivity, either directly or indirectly". Therefore, this practice can be considered as an action research method which is based on giving and receiving help from peers. In most cases, this practice is unpaid, but organised, support, and normally exists in academic departments which have a research culture. The support can take different forms, such as offering advice to junior academics, gaining advice from experienced senior researchers, or gaining feedback and support from a co-investigator in a research project. Hunter & Kuh (1987) considered peer support in research as research mentoring between a mentor and a mentee. A mentor is an important source of stimulation because his/her guidance is very valuable for novice researchers in producing greater output.

3.6.2.2.7 Research Collaboration

Collaboration in research has been proved a useful way of enhancing research productivity. Collaboration builds on and maintains relationships among academics, and promotes goal achievement (Wolff & Moser, 2009). Jalloun (2010) considered research collaboration among academics as experiences of research socialisation. These experiences are necessary for junior academics to share ideas and learn new knowledge from senior academics through the activities of research collaboration. Kyvik (2013) indicated that research collaboration can occur among academics, or between academics and postgraduate students, in different ways, such as through being co-authored in a publication or working in a research team. In universities, academics who have the same research interests and knowledge, the same shared goals and/or values, can share with others. More importantly, Creswell (1986) and Bland and Ruffin (1992) emphasise collaboration between academics should occur frequently because it not only increases research productivity, but also creates a research culture in the department and the university.

3.6.2.2.8 Departmental Size

Departmental size is a considerable indicator as to whether or not research collaboration regularly occurs in a department (Kyvik, 1995). In fact, there is a great likelihood that in large departments that have many academics whose research

interests and expertise are similar, academics will share knowledge with each other or form research teams. Evidently, Dundar & Lewis (1998) discovered a significant relationship between the number of academics in a department and research outputs in almost all academic fields. The number of academics in a department, especially the experienced academic researchers and highly qualified academics who hold a doctoral degree, can be seen as a strong predictor of the research productivity of academics within the department. Ramsden (1998b) asserts that being a member of a highly productive research department is extremely good for academics in becoming good researchers, thanks to the collaboration, support, and influences from others.

3.6.2.2.9 Stimulative Leadership of Departmental Leaders

'Stimulative leadership' is a term that Babu and Singh (1998) used to indicate the support of departmental leaders for academics regarding all activities within a department. This characteristic is especially important and helpful if the departmental leaders possess good research knowledge and skills, and are willing to support academics by giving them advice, mentoring them, or collaborating with them. Previous studies have proved that if academics are stimulated by a leader, they will perform well in research. The leaders' research engagement, performance, and outputs have significant impact on the research motivation of academics because academics consider their leaders as good exemplars of what researchers should be (Bland et al., 2005; Bland & Ruffin, 1992).

3.6.2.2.10 Reward System

The reward system indicates the research policy relating to salary increase, promotion, and incentives for research outputs. These types of rewards were found to increase the research motivation of academics (Chen et al., 2006). Ramsden & Martin (1996), who undertook a national survey of the rewards of good teaching in Australia, indicated that good university teaching is not as equally valued and rewarded as good research. Levin & Stephan (1989, 1991) found that a large number of academics were actively involved in research because of the financial rewards associated with the activities — for instance, research funds, salary increase, and promotion. Accounting participants in Levitan & Ray's study (1992) revealed that the research output is a far more important factor in determining salary increase at their institutions.

The aforementioned ten institutional variables are considered as the important inputs of a research process that impact the 'research outputs' of academics. It is

difficult to justify precisely the reasons as to why a factor is chosen, and how it relates to other factors. However, to some degree, the above individual and institutional factors have been so widely investigated in many countries that they can provide a framework for an investigation in another context such as that of Vietnam. It is a fitting to apply them in the context of Vietnamese Higher Education in order to explore the similarities and differences between academics in other countries academics in Vietnam. The above factors will be used as guidance for designing the research questionnaire of the present study.

3.7 Research Questions

Based on the conceptual framework, the following sub research questions (hereafter called research questions for short) and hypotheses are designed in order to seek answers for the overarching research question of this study, "What are the factors that influence the research productivity of academics at the Research-Oriented University in Vietnam". It is to be noted that although I hypothesise a positive relationship between each of every independent variable, except the barriers that will have negative relationships, and a dependent variable; I am using null hypotheses testing in all three research questions.

1. Research question one: What are the individual and institutional factors that impact the research motivation of academics at the Research-Oriented University in Vietnam?

H₀1.1: There is no correlation between a positive research climate within a department and the research motivation of ROU's academics.

H₀1.2: There is no correlation between ROU's academics' satisfaction with the university's research policy and their research motivation.

H₀1.3: There is no correlation between any type of research barriers and the research motivation of ROU's academics.

2. Research question two: What are the research motivational factors that impact the research behaviours of academics at the Research-Oriented University in Vietnam?

H₀2.1: There is no correlation between any type of research motivation and research collaboration among ROU's academics.

H₀2.2: There is no correlation between any type of research motivation and postgraduate supervision among ROU's academics.

H₀2.3: There is no correlation between any type of research motivation and weekly research hours among ROU's academics.

3. Research question three: What are the research behavioural factors that impacted the publishing outputs from 2009 to 2013 of academics at the Research-Oriented University in Vietnam?

H₀3.1: There is no correlation between any type of research behaviour of ROU's academics and their total number of publishing outputs between 2009 and 2013.

H₀3.2: There is no correlation between any type of research behaviour of ROU's academics and their total number of international refereed journal articles published between 2009 and 2013.

3.8 Summary

This chapter has presented a background to the emergence of the research university around the world, and to the responsibilities of academics in the new challenging context of the research university. The types of research productivity and methods of measurement were addressed. Previous studies related to the factors that impact research productivity of academics at universities around the world have been reviewed in order to discover common factors that influence academics in other countries, except Vietnam. Justifications for the common factors for the purpose of selecting the ones which are suitable to the context of Vietnamese Higher Education have been well considered. These factors are mostly reflected through the lenses of three psychological theories, including the Theory of Motivation, Theory of Job Satisfaction, and Theory of Organisational Commitment. From the review, I established a conceptual framework for this study which is used to seek answers for the three research questions. Although almost researchers of the reviewed studies chose a quantitative research approach to collect and analyse data, I decided to apply a mixed-method approach for this study. The reasons for choosing the mixed-method approach and the research methodology of each approach will be presented in Chapter Four.

Chapter 4

Research Methodology

4.1 Introduction

In this chapter, I explain the research design and research methodology used to investigate the factors that influence the research productivity of academics at the Research-Oriented University in Vietnam (ROU). The study was designed as a case study in the particular context of a university in Vietnam. A case study is commonly used when researchers focus on a unit of study occurring in a specific context or a bounded context such as individual teachers, a classroom, or a school (Gay, Mills, & Airasian, 2011). Yin (2009) stated that “Case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p.13). Yin (2009) also defined case study as a research strategy that covers data collection methods and specific approaches to data analysis. Regarding the benefits of using case study research, Merriam (1998) indicated that “The case study offers a means of investigating complex social units consisting of multiple variables of potential importance in understanding the phenomenon” (p. 41).

Regarding the research methodology, this case study applied a mixed-method research approach that consisted of two stages. The adoption of the qualitative approach in the first stage was to understand the perceptions of ROU's academics in relation to the importance of research in Higher Education, the motivation which makes them undertake research, and the obstacles or barriers which they might have been facing. Furthermore, results of this qualitative research help me to build an evidence-informed questionnaire for the quantitative research in the second stage. The adoption of the quantitative approach in the second stage was to investigate the relationships between the factors associated with ROU's academics (hereafter referred to as ‘individual factors’), the factors associated with the university (hereafter referred to as ‘institutional factors’), and the research productivity of academics. Before presenting the research methodology of each stage, the following section provides information regarding the research ethics of this study.

4.2 Research Ethics

The study gained ethical approval by the Griffith University Human Research Ethics Committee (Reference no: EDN/A2/11/HREC) (*see Appendix 1a*). All steps

of the data collection complied with the ethical approval in order to respect participants' privacy, and to maintain confidentiality of information. The access of sample site at ROU was approved by ROU's President (*see Appendix 1b and 1c*). Prior to their participation in the face-to-face interviews, participants were sent an informational letter that presented the purposes of the research project and what would be expected from them in order to help them make a decision about participation in the research and to seek their consent. Participants were informed that their participation was voluntary and that they could withdraw from the research anytime without any prejudice. In order to receive their reflections, concerns, or complaints about the ethical conduct of this study; an independent contact, who was ROU's Director of Department of Educational Quality Assurance, was appointed (*see Appendix 1d*). The following sections present the research methods that have been used at each stage of the study.

4.3 Stage One: Qualitative Research

This qualitative research aimed to explore the following matters:

- perceptions of ROU's academics regarding the importance of research and research productivity with respect to their teaching effectiveness, knowledge of the discipline and career development;
- the viewpoints of ROU's academics about the research policy as well as the research support provided by ROU; and
- the matters that ROU's academics actually experienced or psychologically perceived as barriers that constrained them from undertaking research.

Information that was collected from the review of literature, and the findings at this qualitative stage contributed to the collation of knowledge for constructing a questionnaire survey. In the following two parts, I explain the techniques that were used for data collection and data analysis.

4.3.1 Data Collection

The data collection process consisted of four steps: 1) choosing the method of data collection, 2) choosing participants, 3) designing material, and 4) implementing a procedure to collect data.

4.3.1.1 Method of Data Collection

In this qualitative research, in-depth interviewing was used to collect data. In-depth interviewing is considered a useful method of data collection and is

commonly used to explore latent and covered information from participants. It is particularly suitable for investigating complicated and multidimensional phenomena that relate to attitudes and behaviours of people. Minichiello, Aroni, and Hays (2008) stated that in-depth interviewing could bring deep understanding and feeling about matters of concern. Information that is considered sensitive and latent is normally difficult to grasp through a questionnaire survey. Rubin (2005) recognised the usefulness of the in-depth interviewing, as it provides an approach to learning about the lives of interviewees. Through the interviews, I had opportunities to understand ROU's academics' different points of view related to the research problem of this study.

The interviews were conducted in the form of a semi-structured interview. This form of interviewing provided opportunities for asking questions flexibly, while still gathering sufficient information as planned. The semi-structured interviews also afforded participants a comfortable feeling when they answered the questions because of the natural manner of asking and answering, as in a conversation. Although this interviewing technique has advantages, it has several limitations. The advantages and disadvantages of the technique and the corrective measures that were taken to reduce the disadvantages of this technique are summarised in Table 4.1.

Table 4.1

*Advantages and Disadvantages of Using the Interviewing Technique and Corrective Measures*¹⁷

Advantages	Disadvantages	Corrective measures taken in this research to reduce the disadvantages
Being a very flexible technique, it suits a wide range of research purposes.	Takes time of both researchers and participants	I tried to focus on the questions and explore the information as much as possible in the limited time for each interview.
Being able to obtain high-quality data because the researcher can either explain ambiguities related to the interview questions to participants, or use probes to get clarifications for the answers of participants.	Takes much time to process raw data after the interviews.	Yes, it took much time to transcribe raw data, verify it with participants, and validate it again. However, this step needs to be conducted carefully in order to have good sources of data for analysis.
Being able to collect factual information about participants' circumstances.	Potentially has biases when interpreting information.	During the transcription process, I listened to the talk of participants carefully to catch exact ideas. I did not make any references or predictions. If there is something of which I was not sure, I contacted the participants to confirm.
Being able to collect statements of participants' preferences and opinions.	Taking much time for preparation before each interview.	I had sufficient knowledge about the content of this study and good communication skills. I learned something from each interview, and regarded it as a good experience for the next interviews.

In summary, the adoption of in-depth interviewing was a suitable measure to take to achieve the objectives of this qualitative research. Creswell (2014) emphasised the usefulness of qualitative research and indicated a fact that a researcher cannot speculate or manipulate independent variables if he/she needs them for quantitative research.

¹⁷ Adapted from Anderson and Killenberg (2009) and Drever (1995)

4.3.1.2 *Participants*

The participants were 19 academics at ROU who varied in age, gender, academic rank, qualification, discipline, and managerial position within the university. They were chosen from a target population of academics at four colleges and two junior colleges of ROU (1,393 academics) as mentioned in Table 2.8. The Satellite Campus and Faculty of Medicine and Pharmacy were excluded from the target population because they have been recently established. Furthermore, almost all academics who are teaching there are visiting academics who are fulltime academics at one of the six actual colleges.

Nineteen participants were purposefully chosen from across the six colleges. The qualitative data conducted in the first stage were supplementary for the analysis in the second stage of quantitative analysis. Nineteen participants were chosen from different departments of ROU based on differences in their age, disciplines, academic rank, qualification, teaching and research experience, administrative position (if any). The diversity of 19 representatives from different disciplines is quite satisfactory. Although the number of interviewees represented only 1.36% of the target population, I believe that the sample was sufficiently representative to reflect the voices of all academics. The following tables show the representativeness of the sample in terms of the number of participants in each college (Table 4.2) and their qualifications and academic ranks (Table 4.3). A description of the 19 participants' characteristics that contains code, academic rank, qualification, managerial position, and date/time of the interview, can be found in Appendix 4a.

Table 4.2

Numbers of Participants in Each College

Colleges	Target population	Number of participants	Gender	
			Male	Female
College of Technology (CT)	420	8	4	4
College of Economics (CEc)	249	3	2	1
College of Education (CEd)	288	4	2	2
College of Foreign Language Studies (CFLS)	240	2	1	1
Junior College of Technology (JCT)	144	1	1	0
Junior College of Information Technology (JCIT)	52	1	0	1
Total	1,393	19	10	9

Table 4.3

Diversification of Participants' Educational Qualifications and Academic Rank

Qualification - Academic rank / Professorship	CT	CEc	CEd	CFLS	JCT	JCIT
Bachelor - Lecturer	2			1		
Master's - Lecturer	3	1	1			
Master's - Senior lecturer			1			1
Doctor - Lecturer	1		2			
Doctor - Senior lecturer	1	1			1	
Doctor - Associate Professor		1		1		
Doctor - Professor	1					
Total	8	3	4	2	1	1

* Bachelor - Lecturer: an academic who has a Bachelor degree and who has been appointed to the level of lecturer (the lowest level).

4.3.1.3 Material

This qualitative research used a set of 12 semi-structured questions. The question design was based on the information that was amassed through the literature review. The questions were constructed in alignment with the three research questions as listed in Table 4.4.

Table 4.4

Questions for Semi-Structured Interviews

Research question	Interview question
1. What are the individual and institutional factors that impact the research motivation of academics at the Research-Oriented University in Vietnam?	1.1. Do you think that research is an important responsibility of academics?
	1.2. What do you think about the library resources for research at this university?
	1.3. What do you think about the facilities and equipment that support research at this university?
	1.4. Are you satisfied with the research policy of this university in terms of research funding and services that support research?
	1.5. What other factors do you think might influence the research motivation of yourself as well as your colleagues?
2. What are the research motivational factors that impact the research behaviours of academics at the Research-Oriented University in Vietnam?	2.1. Why do you engage in research?
	2.2. What are the factors that motivate you to engage in research behaviours?
	2.3. What are the factors that are currently constraining you from engaging in research behaviours?
3. What were the research behavioural factors that impacted the publishing outputs from 2009 to 2013 of academics at the Research-Oriented University in Vietnam from 2009 to 2013?	3.1. Do you discuss research matters with your colleagues? How often?
	3.2. Do you collaborate with your colleagues to do research? How often?
	3.3. Have you ever supervised a postgraduate student? If yes, what are the benefits of the supervision?

Besides the interviews, several documents relating to the teaching and research policies issued by the Government of Vietnam, the Ministry of Education and Training, ROU, and/or published on media, were also examined to enrich the data for this qualitative research. Such documents were considered supplementary sources of data that provided an understanding of the bounded context which affects the research productivity of academics.

4.3.1.4 Procedure for Data Collection

The procedure for data collection consisted of three stages: 1) recruiting participants, 2) interviewing, and 3) processing data.

4.3.1.4.1 Recruiting Participants

Participants were recruited using a purposeful sampling strategy. This strategy is useful for selecting people who can best help a researcher understand details of a phenomenon (Creswell, 2012). Using this technique, I was able to invite the most appropriate participants to partake in the survey as well as to avoid bias of selection. The recruitment process consisted of the following four steps, as mentioned in Table 4.5.

Table 4.5

Steps in Participant Recruitment

Step	Tasks	Conductor
1	Preparing the invitation letter and the consent form for potential participants.	The researcher
2	a. Selecting potential participants based on given characteristics. b. Sending the invitation letter and the consent form to potential participants. c. Getting agreement of participants. d. Giving names and contact details of participants (email and telephone number) to the researcher.	An administrative staff member of ROU's Department of Personnel ¹⁸
3	Contacting the voluntary participants to arrange a suitable time and a location for an interview.	The researcher
4	Conducting the interview	The researcher

4.3.1.4.2 Interviewing

I conducted the face-to-face interviews during February and March, 2013 in Vietnam. On average, each interview lasted 30-45 minutes and was conducted in Vietnamese because few participants were able to articulate their responses in English. The questions were asked randomly, depending on the flow of the talk, but not in order as listed in Table 4.4. This flexible discussion created a comfortable atmosphere for the participants. During the interview, some probes were used to elicit further information from the participants.

4.3.1.4.3 Processing Data

The digital recordings from the interviews were carefully transcribed in Vietnamese. Wherever there was misunderstanding in the data captured, that piece

¹⁸ *This administrative staff member manages a personnel database at ROU. The release of academics' personal information to the researcher was approved by the President of ROU. This activity strictly complied with the standard of research ethics for this study.*

of datum was double-checked with the relevant participant via telephone to ensure that their opinions or statements were interpreted correctly. Once data had been cleaned, they were used for coding. As the transcriptions (raw data) were very long, it was impossible to translate them all from Vietnamese into English. Therefore, the thematic analysis (coding) was conducted in Vietnamese.

After the analysis, the themes and relevant quotations were then translated into English by the researcher. The English version was then checked by a Vietnamese colleague who was a senior lecturer in English language at ROU, to ensure the accuracy of the translation was proper and correct in terms of nuance and meaning. The steps of data collection and data validation are summarised in Table 4.6.

Table 4.6

Steps of Data Collection and Data Validation

Step	Jobs	Done by
1	Interviewing	The researcher
2	Transcribing raw data	The researcher
3	Verifying raw data (if needed)	The related participant and the researcher
4	Analysing the data in themes	The researcher
5	Translating the emerging themes and quotations from Vietnamese into English	The researcher
6	Checking the Vietnamese-English translation of the findings	The researcher's colleague

4.3.2 Data Analysis

This qualitative research applied a thematic analysis approach to analyse the data. Thematic analysis is a content-driven approach which involves different stages of data analysis and is one of the most common approaches of qualitative data analysis. It is an inductive and systematic approach which involves identifying common themes through the analysis of similar ideas or groups of ideas in the data (Mills, Durepos, & Wiebe, 2010). Thematic analysis explicitly takes into account the issues of resources (data) and the quality of such data in looking for the major thematic ideas in the text that represent for concepts or themes (Bryman, 2012). Although the analysis required more involvement, interpretation, and time from the researcher in order to fully understand what was going on in the data, the application of thematic analysis had five purposes: it was a means of i) seeing, ii) finding relationships, iii) analysing, iv) systematically observing (a case), and v) quantifying qualitative data (Boyatzis, 1998).

In thematic analysis, coding data is a process of attaching ideas that are represented by names to pieces of text in the qualitative data. In this study, the coding process consisted of four steps as presented below. The data of all 19 academics were analysed and coded in a way like a cross-case comparative analysis, to identify common opinions among participants. The common opinions of participants were categorised into themes that aligned the research questions.

- Step 1: Reading the text (data transcriptions) as a whole to examine the data and to look for major concepts/themes of the text.
- Step 2: Reading the text again and marking all common or similar opinions which are related to different concepts. This includes comments, marginal notes, and labels for codes (the labels told the researcher what the text was about or represented a concept).
- Step 3: Coding the text systematically by trying to find out what the codes represented for. The researcher grouped common or similar opinions which were underlined in the step two in different lists of concept.
- Step 4: Relating general theoretical ideas to the text in order to interpret the content of such concepts to find the key themes of the data. At this step, the researcher identified significances for respondents by looking at the concepts which were related to the research questions and research literature and then finalised the themes.

The analysis of data was done manually with the assistance of MS Excel.

Results of these analyses are presented in Chapters Five and Chapter Six.

4.4 Stage Two: Quantitative Research

The quantitative research was conducted to identify factors that influence or are associated with the research productivity of ROU's academics. This correlational research has been widely used when researchers collect data to determine whether, and to what degree, a relationship exists between two or more quantifiable variables (Gay et al., 2011). Creswell (2008) indicated that the correlational research provides opportunities for researchers to measure the degree of association between independent variables and dependent variables of a study which interpret relationships using some statistical tests. In the following two parts, I explain the techniques that were used for data collection and data analysis.

4.4.1 Data Collection

The data collection process consisted of four steps: 1) choosing the method of data collection, 2) choosing participants, 3) designing material, and 4) implementing the procedure to collect data.

4.4.1.1 Method of Data Collection

In this correlational research, a questionnaire survey was used to collect data. According to Creswell (2014), a questionnaire survey is typically used to make a generalisation from the findings of a sample, which has a reasonable number of participants, to that of the whole population. Fowler (2009) also indicated that a questionnaire survey has some advantages such as economy of the design and rapid turnaround in data collection. It is the most convenient way of collecting a whole bunch of data from a large sample, and from a distant place which the researcher is unable to visit because of limitations of time and finance. Particularly, when an interview is conducted via the internet, the advantages of a survey are easily recognised 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 has some disadvantages, as listed in Table 4.7. In the table, I suggest corrective measures to be employed to reduce disadvantages in order to increase the quality of data collection.

Table 4.7

Disadvantages of an Online Survey and Corrective Measures

Disadvantages	Corrective Measures
a. Low response rate	a. I had to follow up and re-invite participants every two weeks up to five times to get a high response rate in this study.
b. Low quality data because some participants may answer the questions quickly without thinking about the answers carefully	b. The contribution of this study to the University and ROU's academics were clearly emphasised in the invitation email. It was hoped that participants would realise the importance of this study and respond to the questions thoughtfully.

4.4.1.2 Participants

The participants in this correlational research were 1,239 academics out of the target population of 1,393 academics of six colleges of ROU. These 1,239 academics were accessible by email contact while others (154 people) were unable to participate because they did not communicate via email. They are full-time

academics whose main responsibility is teaching, alongside with research, services, administration, and management. In Vietnamese institutions of higher education, there is no academic whose responsibility is research-only, because all universities are teaching-intensive institutions.

Regarding representativeness of the sample, there is no fixed number as to what sample size is big enough and well representative. However, Gay et al. (2011) suggested that for correlational research, which applies descriptive and inferential research, a minimum sample size should be at least 10% of the target population. A sample size of about 30% of the target population can constitute a good representativeness. The sample size of this correlational research represents 88.94% of the target population (1,239/1,393 people). The response rate (those who completely responded) was 42.45% of the sample size (526/1,239). This number showed a good representativeness of the sample. Information on the demographic details of the survey participants, particularly those related to research input (weekly research hours) and outputs (the total number of publishing outputs in the last five years) are presented in Table 4.8 and Table 4.9 respectively.

Table 4.8

Weekly Research Hours

Number of hours	Frequency	Percent	Cumulative Percent
.00	29	5.5	5.5
1.00	24	4.6	10.1
2.00	39	7.4	17.5
3.00	24	4.6	22.1
4.00	23	4.4	26.4
5.00	42	8.0	34.4
6.00	36	6.8	41.3
7.00	3	.6	41.8
8.00	27	5.1	47.0
9.00	2	.4	47.3
10.00	86	16.3	63.7
12.00	29	5.5	69.2
13.00	3	.6	69.8
14.00	5	1.0	70.7
15.00	36	6.8	77.6
16.00	6	1.1	78.7
18.00	17	3.2	81.9
20.00	26	4.9	86.9
21.00	3	.6	87.5
22.00	1	.2	87.6
23.00	1	.2	87.8
24.00	13	2.5	90.3
25.00	3	.6	90.9
28.00	1	.2	91.1
29.00	1	.2	91.3
30.00	18	3.4	94.7
31.00	1	.2	94.9
32.00	1	.2	95.1
35.00	4	.8	95.8
36.00	1	.2	96.0
40.00	11	2.1	98.1
48.00	1	.2	98.3
50.00	1	.2	98.5
56.00	1	.2	98.7
60.00	2	.4	99.0
63.00	1	.2	99.2
64.00	1	.2	99.4
72.00	1	.2	99.6
87.00	1	.2	99.8
90.00	1	.2	100.0
Total	526	100.0	

Table 4.8 shows that 69.2% of participants spent 12 hours or less on research per week. Sufficient number of weekly research hours is considered as one of the most important research behaviours contributing to research outputs. Recalling the information provided in Table 2.5, the number of weekly hours that a lecturer in Vietnam is required to spend for research is 9.09, and that of a senior lecturer is 11.3. It can be seen through Table 4.8 that only 16.3 % of the sample (86 people) spent ten hours for research per week, and 5.5% of it (29 people) spent 12 hours for research

per week. Surprisingly, there are 29 academics who did not spend any time on research at all (5.5%). 34.4% of participants spent only from one to five hours per week which might not significantly contribute to their research productivity because that number of time is relatively small. It is in desperate necessary that most academics at ROU should devote more time for research if they want to increase the research productivity. It is noted that ten participants (1.9%) reported that they spent more than 40 hours (from 48 up to 90) for research per week. Such self-reported numbers seem amazing devotion of time for research but they do not reflect the truth in the context of Vietnam where the maximum number of working hours per week is 40 hours but it needs to be balanced among three activities of teaching, research, and administration/services.

Table 4.9

The Total Number of Publishing Outputs in the Last Five Years

Number of Publications	Frequency	Percent	Cumulative Percent
.00	65	12.4	12.4
1.00	35	6.7	19.0
2.00	55	10.5	29.5
3.00	57	10.8	40.3
4.00	41	7.8	48.1
5.00	38	7.2	55.3
6.00	24	4.6	59.9
7.00	28	5.3	65.2
8.00	23	4.4	69.6
9.00	17	3.2	72.8
10.00	17	3.2	76.0
11.00	18	3.4	79.5
12.00	10	1.9	81.4
13.00	9	1.7	83.1
14.00	7	1.3	84.4
15.00	7	1.3	85.7
16.00	10	1.9	87.6
17.00	6	1.1	88.8
18.00	8	1.5	90.3
19.00	6	1.1	91.4
21.00	8	1.5	93.0
22.00	4	.8	93.7
23.00	4	.8	94.5
24.00	4	.8	95.2
25.00	1	.2	95.4
26.00	2	.4	95.8
27.00	2	.4	96.2
28.00	2	.4	96.6
29.00	2	.4	97.0
30.00	3	.6	97.5
31.00	2	.4	97.9
32.00	1	.2	98.1
33.00	1	.2	98.3
34.00	2	.4	98.7
38.00	1	.2	98.9
41.00	1	.2	99.0
43.00	2	.4	99.4
48.00	1	.2	99.6
55.00	1	.2	99.8
59.00	1	.2	100.0
Total	526	100.0	

Table 4.9 shows the total number of publishing outputs that participants published in the last five years. The outputs include sole-authored and co-authored refereed journal articles, research projects, books and book chapters as clearly mentioned in Table 4.11 below. The frequency analysis of publishing outputs indicates that 63.6% of the sample has produced from one to ten publications and 21.5% of them published from 11 to 30 ones in a 5 year-period. 2.5% self-reported that they have published more than 30 publications, varied from 31 to 59. It is

agreed that some ROU academics are very active in research and highly productive, this information seems questionable because it looks high, especially the ones who published more than 40 publications in five years. On the contrary, it is a strong astonishment that there are 65 academics who are very poor in research because (12.4%) because they have not produced any publication during the last five years even though it is just a co-authored publication with someone.

4.4.1.3 Material

In this part, I explain the structure of the questionnaire, the operationalisation of the concepts in the conceptual framework in specific measures, and the questionnaire testing before it was widely conducted at ROU.

4.4.1.3.1 Structure of the Questionnaire

This questionnaire was constructed based on knowledge that I have generated from previous studies. Predominantly, the studies of Bland and Ruffin (1992), Blackburn et al. (1991), Blackburn and Lawrence (1995), Chen et al. (2006), Chen et al. (2010), Hardre et al. (2007), Hardré, Beesley, Miller, and Pace (2011), Ramsden (1994), Sax et al. (2002), and Teodorescu (2000) contributed much to the construction of this questionnaire. Twelve items related to intrinsic and extrinsic motivation to research which were classified by Chen et al. (2006) were replicated in this questionnaires.

The questionnaire consisted of three compulsory parts: 1) demographics and job-related characteristics; 2) perceptions of academics about research and motivation to do research; and 3) research productivity in a five-year period, January 2009 — December 2013. Besides, there is another optional part at the end of the questionnaire which aimed at generating further discussion.

Part One: Demographics

This part has nine questions, from question number one to nine. They were designed to collect demographics and job-related characteristics of participants.

Part Two: Perceptions of Academics about Research and Motivation to Undertake Research

This part has nine questions, from the question number 10 to question number 18. In each question, there are several items (the so-called measured variables) that were labelled by alphabetical letters. In Table 4.10, I summarise the purpose of each question and indicate the items that serve each purpose.

Table 4.10

Questions and Measured Variables for Part Two

Question	Purpose of the question	Items
10	Perceptions of academics about research	10A, B, and C (3 items)
11	Motivation to do research	11A, B, C, D, E, F, G, H, I, J, and K (11 items)
12	Obstacles to do research which academics are facing	12A, B, C, D, E, F, G, H, I, J, K, and L (12 items)
13	Types of research collaboration that academics have performed during the last five years	13A, B, C, D, E, F, G, H, I, and J (10 items)
14	The contributions of such research collaborations that academics have performed to their research productivity	14A, B, C, D, E, F, G, H, I, and J (10 items)
15	The research climate within academics' departments	15A, B, C and D (4 items)
16	Academics' satisfaction with the support for research provided by the university	16 A, B, C, D and E (5 items)
17	Academics' satisfaction with the research policy of the university	17 A, B, C, D, E, and F (6 items)
18	Readiness to collaborate with colleagues in research activities	18A, B, and C (3 items)

Regarding the scale used in this questionnaire, the Likert scale was used in parts one and two. In almost all questions (10, 11, 13, 15, 16, 17 and 18), I decided to use a 4-point scale. The use of a 4-point scale aimed preventing participants from choosing a middle point as might happen if a 5- or 7-point scale was applied. If an answer leans to one side or the other of the scale, it reflects the viewpoint of participants and is good for analysis. If there is a middle point, there is a chance that many participants will choose the middle point so as to neither agree nor disagree. This practice has been widely recognised in the context of Vietnam because of its culture of hesitation in expressing direct opinions of Vietnamese people.

Differently from the above questions, the choice of 'Not applicable' (N/A) was added to the scale for questions number 12 and 14. This is because there might be some things for which participants did not experience obstacles, so an N/A is another option for them.

Part three: Research Productivity

This part consists of six questions, from question number 19 to number 24. The first three questions (19, 20, and 21) explored the publishing outputs of participants. Specific types of publishing output are listed in Table 4.11.

Table 4.11

Types of Publishing Outputs for Part Three

Question	Type of publishing output
19	Refereed journal articles (Domestic and international. Sole-authored and co-authored)
20	Research projects (at college level, university level, and ministry level. Sole-authored and co-authored)
21	Textbooks, book chapters, and books (Sole-authored and co-authored)

Next, question number 22 asks participants about the number of hours which they spend for teaching, research, and management per week. This information is very important because previous studies indicated that there is a positive correlation between time spent on research and research outputs.

Then, question number 23 asks participants about the total number of outputs for each of type of publishing output *in the whole of their academic life*. The reason for this extra question was to reduce any feelings of shame among participants who may not have had any output in the five most recent years, but who may have had some output beyond the period investigated in the present study. It is possible, in the context of Vietnam, that some academics have not published any paper for several continuous years because of reasons such as sickness, pregnancy, or heavy teaching load; but they may have had a few publications before 2009.

Lastly, question number 24 asks participants about their teaching and research preferences to see if their interests lie primarily in teaching or research.

4.4.1.3.2 *Operationalisation of the Concepts in the Questionnaire*

This section takes a further step by operationalising the concepts appearing in the conceptual framework into specific measures and items in each measure. The concepts include research environment, research motivation, research behaviour, and research productivity. For each concept, I present the sub-concepts, what to measure in each sub-concept, and the position of items (measured variables) in the questionnaire.

Table 4.12

Operationalisation of the Concepts in the Questionnaire

Concept	Sub concept	Measure	Position of items in the questionnaire
1. Research environment	Personal factors	1. To explore demographic characteristics	Q1 and Q2
		2. To explore academic background	Qs 3, 4, 5, and 6
		3. To explore level of teaching	Q7
	Main job duty	- To explore the balance between teaching, research and administration	Q8 and Q28
	Satisfaction with infrastructure, research funding, and the reward	1. To explore if participants are satisfied with infrastructure and funding for research	Q16A, B, C, D, and E
		2. To explore if the university provides enough funds for research which make participants satisfied	Q17A, B, C, D, and E
		3. To explore if the university offers appropriate reward for research output and if participants are satisfied with it	Q17F
	Research climate	1. To explore if there is a supportive research climate within the departments of participants	Q15A, B, C, and D
		2. To explore if participants often collaborate with their colleagues within the department to discuss ideas, get advice, or co-author in research	Q18A, B, and C
	Opportunities for professional development and collaboration with other researchers	- To examine if participants have opportunities to attend research conferences and collaborate with international researchers	Q12G and J
	Barriers that constrain participants from doing research	1. To explore barriers related to research infrastructure	Q12, D, E, H, and I
		2. To explore barriers related to workload	Q12A and B
		3. To explore barriers related to research capability	Q12K and L
4. To explore barriers related to finance		Q12F	
2. Research	Importance of	- To measure the importance of research	Q10A, B, and C

Concept	Sub concept	Measure	Position of items in the questionnaire
motivation	research in higher education	and how participants perceive such importance	
	Intrinsic motivation to research	- To measure participants' intrinsic motivation to do research	Q11F, G, H, I, J, and K
	Extrinsic motivation to research	- To measure participants' extrinsic motivation to do research	Q11A, B, C, D, and E
3. Research behaviours	Research performance	1. To examine participants' frequency in undertaking some specific actions/practices that relate to research	Q13A, B, C, D, E, F, G, H, I, and J
		2. To examine how much time participants spend on research, compared with that for teaching and services in a week	Q22A, B, and C
	Attributions of the research performance	- To explore how much the specific actions above contribute to the research productivity of participants	Q14A, B, C, D, E, F, G, H, I, and J
4. Research productivity	Publishing outputs	1. Refereed journal articles (domestic and international)	Q19A, B, C, D, E, and F
		2. Research projects (at all levels)	Q20A, B, C, D, and F
		3. Textbooks, book chapters, and books	Q21A, B, C, D, E, F, G, H, and I

4.4.1.3.3 *Material Testing*

The testing procedure of this questionnaire consisted of repeated steps of designing — checking — editing — checking — redesigning, until the completion of the final version. The purpose of the testing procedure was to ensure that all questions and their items were clearly understandable to participants at all levels of literacy and age before the questionnaire was widely deployed across ROU. Table 4.13 describes the nine steps of this testing procedure.

Table 4.13

Steps of the Testing Procedure of the Questionnaire

Step	Activity	Conductor	Language used / form of the questionnaire
1 st	The first <i>English version was produced</i> (EP1).	My supervisors and I (the researcher)	English / paper
2 nd	EP1 was translated from English into Vietnamese (VP1)	The researcher	Vietnamese / paper
3 rd	VP1 was checked by lecturers of English at ROU, Vietnam, to ensure the correct translation from English into Vietnamese	Five lecturers (the translators)	Vietnamese / paper
4 th	The second Vietnamese version was produced based on the comments of the translators (VP2)	The researcher	Vietnamese / paper
5 th	VP2 was sent to some academics at ROU for comments. They commented on the use of language, structure, and content of the questionnaire	20 ROU's academics. Some of them have good knowledge about higher education.	Vietnamese / paper
6 th	The third Vietnamese version was produced based on the comments of 20 academics (VP3)	The researcher	Vietnamese / paper
7 th	VP3 was designed on SurveyMonkey (VO1)	The researcher	Vietnamese / online
8 th	The VO1 was preliminarily completed by some ROU's academics to check if the online version worked smoothly and was user-friendly. <i>At this step, 15 ROU's academics were still commenting on the questionnaire. Their opinions were then noted for the final adjustment.</i>	15 ROU's academics. They are not the persons who joined in the 5 th step.	Vietnamese / online
9 th	The final version of the questionnaire was designed on SurveyMonkey (VO2) for a wide online survey <i>*All details were modified consistently in the final versions of the questionnaire (both English and Vietnamese, paper and online)</i>	The researcher	Vietnamese / online

The above testing procedure was considered an effective means of testing the validity of the questionnaire. According to Litwin (1995), there are several ways to test for the validity of a research instrument, such as face validity, content validity, criterion validity, concurrent validity, predictive validity and construct validity. This questionnaire was tested by content validity because some participants of this testing were knowledgeable in the field education. They provided good feedback that helped the researcher to modify the questionnaire.

Regarding reliability of the questionnaire, researchers are often advised to test reliability of an instrument using Cronbach's alpha value. According to Creswell (2008), Cronbach's alpha is one of the most popular reliability statistics used to determine the internal consistency or average correlation between items of questions in a research instrument.

However, Cronbach's alpha was not applied to the questionnaire of the present research because this questionnaire is not a single instrument consisting of one unique concept, as other single well-established instruments are. Rather, this questionnaire consists of many different concepts and sub-concepts, such as intrinsic motivation, extrinsic motivation, job satisfaction, research behaviours, and research climate. Items in each sub-concept were generated from different sources in the literature. Therefore, I decided that it was not totally precise if a Cronbach alpha value was used to determine the reliability of this questionnaire. The reliability of the questionnaire was confirmed through the testing of separate scales (three scales) of the questionnaire. The scales' reliability will be presented clearly in Section 5.3.1.3.1 (Table 5.7, page 114) and Section 6.3.1.2 (Table 6.2, page 145).

4.4.1.4 Procedure for Data Collection

The procedure for data collection consisted of three stages: 1) recruiting participants, 2) collecting online responses, and 3) processing data.

4.4.1.4.1 Recruiting Participants

The process of participant recruitment consisted of four steps as described in Table 4.14.

Table 4.14

Steps in Participant Recruitment

Step	Task	Conductor
1	Requesting a list that contained names and email addresses of all academics at the six colleges of ROU	An administrative staff member at ROU's Department of Personnel ¹⁹ and the researcher
2	Sending an invitation and a link to the questionnaire survey, to the email addresses of 1,239 academics out of 1,393 people in the sample size.	The researcher
3	Following up the responses in order to remind those who had not yet participated, every two weeks. In the reminder, I re-emphasised the importance of this study and asked for their participation.	The researcher
4	Downloading all data	The researcher

4.4.1.4.2 Collecting Responses

After three months since the date I sent the first invitation, there were 609 academics who participated in the survey. Among them, 526 academics completed the questionnaire fully and their responses were used for analysis. Whereas, there were 83 participants who did not fully complete the questionnaire, so their unfinished responses were excluded from the analysis. Table 4.15 describes the representativeness of the sample.

Table 4.15

Descriptions of the Sample and Its Representativeness

College	Population	Target population	Fully completed participant	Percentage of response rate
College of Technology	420	383	167	43.60%
College of Economics	249	225	96	42.67%
College of Education	288	246	78	31.71%
College of Foreign Language Studies	240	230	123	53.48%
Junior College of Technology	144	110	41	37.27%
Junior College of Information Technology	52	49	21	42.86%
Total	1,393	1,239	526	42.45%

¹⁹ as mentioned in Table 4.5

4.4.1.4.3 *Data Processing*

Data were firstly downloaded into Microsoft Excel sheets, and then imported to the IBM Statistical Package for Social Sciences (SPSS) for analysis.

4.4.2 **Data Analysis**

This correlational research 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). It was a means of presenting raw data in a meaningful way that allowed for a simple interpretation of the data. However, this analysis does not generalise the data to a larger group of the population. Therefore, inferential analysis was used.

Inferential analysis makes reference or predictions to the whole population that the sample represents (Field, 2013). In order to generate these references and predictions, several tests of significance were undertaken. Factor analysis, correlational analysis, and linear regression analysis were employed in this research. The analysis was conducted in the following order:

First, factor analysis was done to decide clean data and best-related items for analyses. This analysis aimed to delete unrelated items in the questionnaire. Exploratory factor analysis is an analytical tool which helps researchers to explore the interrelated latent variables by reducing a large number of variables to a smaller number of interrelated variables (Tabachnick & Fidell, 2013). 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 correlational analysis and the regression analysis. Second, the correlational analysis was conducted to preliminarily examine the relationship between the independent variables and the dependent variables. Lastly, the regression analysis was run to determine factors that significantly impact the research productivity of ROU's academics.

The above explanation is just an overview of the data analysis for quantitative data. The explicit data analysis procedures and processes for each individual research question will be clearly articulated during Chapter Five, Six, and Seven where are pertinent to data presentation and analysis.

4.5 **Limitations of the Study**

Although this study applied a mixed-method approach which has many advantages as mentioned, some limitations were taken into consideration:

First, the semi-structured interviews were conducted in Vietnamese so the themes and quotations have been translated into English. This process was time-consuming. The language of the translated findings might not be natural, although the findings were translated precisely.

Second, the survey was conducted online from a distance—between Australia and Vietnam, so this might have caused difficulties for some participants who did not understand the questions or ideas in the questionnaire when they were answering the online questions.

Third, the questionnaire has many questions that might have caused some discomfort in participants when responding. They might have been responding quickly without well considering their answers.

Fourth, from the conceptual framework of this study, I assumed that the study has a particular and direct line of reasoning from research environment to research motivation, from research motivation to research behaviours, and then from research behaviours to research productivity. However, such direct lines of reasoning did not occur completely as predicted. The outcome in each analysis was affected by many other factors that existed around them and in the context of ROU.

4.6 Summary

In this chapter, I have accounted for the research approach, research designs, data collection, and data analysis. In each part, I have explained the rationale as to why an approach, a design, or a method of data collection has been chosen to collect data in this study. The research material was also described and explained carefully. In addition, the consideration of research ethics has been addressed. The results of the data analysis are presented and discussed in Chapters Five, Six, and Seven of this study.

Chapter 5

Data Presentation and Discussions of Factors Influencing Research Motivation of Academics

5.1 Introduction

This chapter presents the qualitative and quantitative results related to research question one: *What are the individual and institutional factors that impact the research motivation of academics at the Research-Oriented University in Vietnam?* Qualitative results are presented in five factors. Quantitative results are presented through descriptive statistics and inferential statistics.

5.2 Data Presentation and Discussions of Qualitative Analysis

5.2.1 Data Presentation

The thematic analysis identified five factors that influenced the research motivation of ROU's academics: 1) teaching load, 2) scholarly resources, 3) research funding, 4) professional meetings, and 5) research climate. The order of the factors presented here does not reflect any hierarchy or level of importance. Although the results are presented separately in block quotes, they do not represent exact or direct words (word by word) that respondents mentioned; rather, they reflect the ideas, opinions, and viewpoints of respondents that were mentioned through the in-depth interviews.

5.2.1.1 Teaching Load

The data reflected that teaching and research are compulsory for academics at ROU. ROU placed pressure on academics to increase their research productivity, and academics have understood the importance of research to their knowledge development and teaching quality. However, the results revealed that many academics were teaching so many hours that they did not have time for research. Many respondents indicated that their teaching load was much higher than the standard number of teaching hours that have been regulated by the Ministry of Education and Training (MOET), as mentioned in Table 2.6. For example:

I have to teach many courses per semester, so I have to spend many hours in preparing lessons, lectures, and marking papers. Although I am aware of the importance of research, I cannot find sufficient available time for research activities as I would have expected. (SL3)

The standard teaching hours for an academic at my level [lecturer] are 260 teaching hours per year. But I currently have to teach about 1,000 hours per

year. There are five staff members in my academic area, but three of them are studying a postgraduate course in France. Therefore, I have to teach many hours due to this staff shortage. (L3)

In order to undertake research, I need a continuous period of quiet time for reading material and for writing. However, it is really hard at this time as I have to teach many hours at the college and at a satellite campus of the university which is located in another province. (SL5)

In my department, everybody is overworked because we have to teach English to all students of this university and of some other institutes located in other provinces. (L7)

I am a junior academic and have little teaching experience. However, I have been assigned different classes. So, I have worked really hard to prepare teaching lessons. I do not even have the weekend to relax in. (L8)

A few respondents reported a high level of research motivation and research productivity. However, they had to temporarily stop undertaking research because of a heavy teaching load at the university (obligation to teaching), and financial encumbrance (preference to teaching).

I am very busy with teaching from undergraduate to postgraduate level. I want to reduce some teaching hours to write journal articles and books, but am unable to do so because there is no one who can replace me to do my jobs at present. (P)

I have published four refereed papers (Vietnamese), many non-refereed articles in local newspapers and disciplinary magazines, four reference books and five textbooks. But since getting married, I have stopped writing for three years. Instead, I spent time in teaching many hours to earn the family's living. However, when I am financially stable, I will continue my research passion. (SL1)

Some respondents had few teaching hours due to the small number of enrolled students in their disciplines. This means that they did not earn enough money for their living. Therefore, most of their time was also spent on teaching at other private institutions or at home to augment their income. Some responses are as follows:

My husband and I used to be research active during our study in Russia, where we obtained a Bachelor, a Master's, and a Doctoral degree. However,

most of our time now is spent in teaching private courses which prepare students for the national examination so they can get into a university. We have few teaching hours at the college. The basic salary is too low, and meets only 40% of our monthly basic living expenses [one couple and a child]. We have not got a house and are still living in a rental flat. (L9)

I have quite a few teaching hours at the college. Besides, my free time is also spent on private classes at home, in which I teach the Vietnamese language to foreign students who are studying at this university. (L5)

Some respondents who did not teach many hours because they were managerial staff perceived that ROU's academics had a heavy teaching load.

A heavy teaching load is common for almost all academics at this university because the university has a very high number of undergraduate students (AP2). My daughter has just become a lecturer of this university for a year. She is in a period of probation but has been assigned many classes of different subjects. (AP1).

The responses indicated that most academics were busy with teaching so they did not have sufficient time for research. This included those who had a high level of research motivation such as P and SL1. This matter cannot be avoided in the context of a teaching-intensive university like ROU. Some academics were allocated a small number of teaching hours because there were few student enrolments in their disciplines. However, these people had to find alternative sources of income to support their lives, such as teaching at private institutions (L9, L5, and L10). The researcher observed that although academics 'complained' about their heavy teaching load, they were happy to teach, because their remuneration was increased when they taught many hours.

5.2.1.2 Scholarly Resources

Scholarly resources such as reference books and academic journal articles are crucial for researchers. However, the researcher observed that ROU's libraries did not meet the research demands of academics because of limited resources. All participants reported a shortage of scholarly resources that reduced their research motivation.

The university's libraries just meet the minimum reading demands of undergraduate students. The libraries do not have many good and updated

resources for research. Sometimes, I have an idea but cannot develop it into a research topic because I cannot find materials. (L3)

I love reading books but there are few reference books available in the libraries. If the libraries had more resources, many other academics and I would be intrinsically motivated to do research. (L1)

Most books in the libraries are old and out of date. My postgraduate students have also complained about this reference book shortage many times. (P)

Respondents emphasised the necessity of having reasonable access to scholarly journals to keep abreast of new research findings in the world and to update their knowledge. In particular, they emphasised the importance of international journals and research databases.

Libraries do not have scholarly databases which academics can access freely.

The libraries have limited access to a few databases only. If we want to obtain papers in such databases, we have to pay for the service, which is costly. (L2)

We need international journal papers. They are important for writing the literature review of a study, but they are not available. It is likely that the university does not have subscriptions with journals' publishers. We even have not been able to access domestic journals, including the science and technology journals of this university. How can we do research productively? (L2)

I often ask my colleagues who are studying overseas to download refereed journal articles for my research because they are not available in the libraries and I am not able to spend money buying them. My monthly salary is just enough to buy about eight papers [\$30USD each paper]. (SL2)

In order to publish a manuscript in an international journal, a researcher must read many international journals. It is not only to learn the knowledge within them, but also to learn and imitate the writing style of a peer-reviewed paper. Unavailable resources in this university negatively influence our productivity. (L7)

In order to cope with the limited scholarly resources, some departments have set up their own mini libraries which serve the internal demands of their academics and students. This method was reported to be effective and motivated academics to engage in research. However, such self-established libraries respond to just some demands for books, but not for scholarly journals.

My department has just been allocated a spare room after several years of submitting a request for one. The department will use it to establish an

internal library for academics and students of the department. Academics and students can contribute books to it, which will make it very useful and help it to serve the reading demands of departmental academics and students. (SL1) My department has called for book contributions from all academics. We have collected many good books and displayed them in our seminar room. Everyone can visit the room to read books. The college's leaders highly appreciate this departmental initiative. (L6)

Academics who return from overseas study contribute some books and journal papers that they downloaded when they were abroad, to my department. These are put in the meeting room of the department for reference. There are some valuable materials which support the research activities of academics in the department. (SL2)

The results showed that all participants recognised the importance of scholarly resources for their research. Some departments have self-supplied books and copies of journal papers. It is a good initiative, but not all departments can arrange such a library. It is predicted that if the libraries provided sufficient scholarly resources for academics, the latter would be more motivated to undertake research.

5.2.1.3 Research Funding

Research funding was one of the most important factors that motivated academics to engage in research. Sufficient funding for research contributes to both the quantity and the quality of research outputs. All respondents reported that the research funds provided by the university were too small to motivate them to undertake research.

The university provides a small amount of funding for each research project. It is not enough to complete the project so it has not motivated me, nor many other academics at this university. (L8)

The research fund of VND 15 million [USD 650] for a research project at the university level might be enough for academics in the fields of Social Sciences, but not for me. In my field of engineering, such an amount is too small because I have to do experiments. The funding support does not meet research expenses, so I do not want to apply for funding. (L11)

I have to ask my friends who are working in the chemical industry to give me some chemicals to do my experiments because the university's laboratories

do not have them. However, I cannot ask for their support forever, so sometimes I do not have motivation to do research. (SL4)

The research fund is small, which is not attractive. Instead of doing a research project, I can spend that amount of time on doing other things, such as designing and supervising house constructions, from which I can earn much more money. (L2)

Some other respondents indicated that they wish the university to sponsor publication fees (in cases where a fee is required) because the fee is usually too high.

I always submit my manuscripts to cost-free publishers. Although they do not charge for text, they charge for coloured objects and figures. I want to put many coloured figures, diagrams, and pictures in the manuscripts but I have had to delete most of them because I do not have money to pay the fees. (P)

The university always encourages staff to publish papers in international journals, but the university does not provide support for publication fees.

I used to suggest this matter to leaders, but they have not made any decisions regarding this. (AP1)

Some respondents were aware of the benefits of conference participation and presentation. However, it is very hard to seek funding support to attend a conference, even a conference in Vietnam. The difficulty in seeking funding support demotivates academics to engage in research.

When I was still single, I spent my money on attending conferences. But since I got married, I cannot afford the expenses for conferences anymore. (SL1)

I have been accepted to attend and present at several international conferences. But I have never been funded for such activities. Whenever I asked for funding support, the college's leader promised that he would consider me for future funding, but I continued to receive such "vain promises" when I submitted further requests later on. (L6)

The above opinions show concerns about the levels of research funding that ROU's academics can access. Even though academics had some degree of research motivation, the limited research funding reduced their research motivation. The data reported that if research funding was sufficient and made academics satisfied with the amount of funding support, they would be motivated to engage in research.

5.2.1.4 *Professional Meetings*

Professional meetings were defined as departments' academics meetings to share knowledge and discuss research matters, research seminars, or research workshops which enhance research skills and capabilities of academics. Such professional meetings are very important in an academic environment. Each meeting is not only an opportunity for academics to discuss research matters but also a chance in which to learn from each other. Interactions between academics at professional meetings such as workshops, research seminars, and work-in-progress seminars help them to develop ideas and encourage them to research further. However, respondents reported that such activities were seldom organised in their departments.

I think the department should organise regular academic meetings which specifically focus on research-related topics, and not administration. Such meetings are rarely organised in my department because people are busy with teaching. (L7)

Some seminars to share research experiences and skills are necessary. The department and university should invite new senior academic researchers to come and share their experiences. (L4)

I am a new academic and I do not have any research experience. My research capability is still very weak. The department, college, and university should provide ongoing research seminars and professional workshops for academics, especially young and/or junior academics like me. (L8)

When I was studying overseas, I often attended research seminars. But since I have returned to Vietnam, such practices do not exist because people are too busy and the department does not have enough funds to organise them. (L2)

Although departmental leaders agreed that professional meetings are necessary, they do not have time to organise the meetings.

When I first become a head of my department, I organised monthly meetings with academics to discuss research matters and share ideas. But over time, I could not maintain this practice because I am very busy with a heavy teaching load, managerial tasks, and postgraduate supervision. (P)

Our discipline meets twice per semester, but most meetings focus on administrative work. There is little time for discussing research matters. We do not have time to organise more meetings for research only. (SL5)

From the perspective of quality, some respondents were not satisfied with the quality of any professional meetings which have been organised by their departments.

Academics need research workshops and seminars to be organised professionally so that each opportunity provides benefits for participants. In my opinion, although the number of workshops and seminars which have been organised is small, the quality of such workshops is not high enough. (SL3) Sometimes I have to attend a research seminar because I have been assigned to do so by my department's leaders as one of my responsibilities. I am not interested in research seminars because they are a bit boring. (L7)

It would be better if the department or college invited experienced researchers from other universities or research institutes, both nationally and internationally, to present. We want to learn knowledge and research skills from them. (L4)

The above ideas indicate that academics recognised the importance of professional meetings if they were well, and regularly, organised. Respondents particularly emphasised the quality of research workshops and seminars because such ones can improve their research skills and research networking. It is predicted that through such meeting opportunities, academics would learn from each other and this would lead to greater collaboration in research. Regular professional meetings will stimulate the research motivation of academics.

5.2.1.5 Research Climate

Research has indicated the importance of a research climate within every academic department and the whole university. The data reflected that respondents recognised the importance of a positive (good) research climate within their departments because it might increase their research motivation.

I used to enjoy a positive research climate when I was studying a master's degree in France. My supervisor had a lab and he encouraged good collaboration among the HDR student community. He established a relationship between academics, post-doctorates, and postgraduate students. We worked effectively in such a supportive community. (L2)

When we do not have regular professional seminars and workshops, a good research climate within a department is really necessary. The more that the

academic staff support each other in a department, the more likely it is that their research motivation will increase. (L1).

I wish all academics in my department had a low teaching load, so that we had time to discuss and share research-related ideas. I really need advice from experienced academic researchers to improve my research skills, but I cannot ask them because most of them are busy. (L7)

A positive research climate is useful for early career academics, and if one prevails, junior and less-skilled academics can learn from senior academics. Receiving regular support from senior colleagues will increase the research skills as well as the research self-efficacy of junior academics.

Two years ago, a lecturer in my department who had a PhD from overseas established an interest group to share knowledge and support junior academics like me. He was enthusiastic in helping us. Members were interested in joining such a supportive and interactive environment. (L1)

Being a new graduate, I want to work in a department which has a good research climate. I want to see many people involved in research so that their research performance and outcomes motivate junior academics like me. (L7)

Few respondents mentioned that a research climate in a department is influenced by culture and the relationship among academics.

A department in which academics are able to express ideas is very important for increasing research motivation. When I was studying overseas, people in the group of my supervisor shared ideas freely and respected each other, despite differences in age and degrees. At that time, I was only a master's student, but members respected my ideas. (L2)

Being a new academic, I do not dare to raise ideas in my department because most of the academics in the department were my teachers. It is difficult to discuss or debate something. (L11)

It is clear that ROU's academics recognised the importance of a positive research climate as a means of transmitting research motivation to all academics, especially the early career academics and those with little research experience. If everyone has opportunities to express ideas and receive advice, and if one's ideas are respected by others, academics will be more motivated to research. However, the data indicated that a good research climate does not seem to exist in the departments

of respondents. Therefore, it can be claimed that their research motivation has been impacted by this lack.

5.2.2 Discussions of Qualitative Analysis

The data reflected that ROU's academics perceived the importance of research as part of their duties. Although some academics have research motivation, several barriers, such as shortage of scholarly resources, have reduced their motivation. Bentley (2014) indicated that academics' research motivation and publishing outputs were heavily influenced by institutional support. Such support can be found in the provision of sufficient time, research funding, and resources with which to engage in research activities. It can be seen that the current low level of research motivation of ROU's academics is because they have had a heavy teaching load. However, it is problematic if ROU suddenly reduces the teaching load for academics in anticipation of their spending more time on research. Because the current basic salary does not provide sufficient financial security for academics, they obviously have to teach many hours to earn a living. The evidence is that some academics have a low teaching load at the college but do not spend more time on research. They have to teach many more hours at other institutions or at home to secure their lives. Furthermore, while ROU does not provide academics with sufficient support in terms of scholarly resources and research funding, the academics themselves cannot spend their small salary on activities such as buying books, attending conferences, and publishing papers²⁰. All of these difficulties are actual barriers that ROU's academics have experienced. It appears that if the structure of payment is reviewed and potentially offers good salaries to meet the minimum living standards of academics (Chen et al., 2006; Levitan & Ray, 1992), and if the research policy is reviewed to offer good support for academics in terms of resources and funds (Lertputtarak, 2008; Sulo et al., 2012), ROU would be able to expect its academics to improve terms of their research motivation.

Regarding the lack of professional meetings such as research seminars and workshop, it is a great concern for ROU's academics and leaders. Such seminars and workshops are very necessary and important to develop research skills and research capability of academics. Through such professionally academic activities, academics

²⁰ ROU also collects publication fees from authors for their publications in the Journal of Science and Technology, published by the University.

not only learn good knowledge of the field from their colleagues and participants, but also get more experience in doing research and publishing. The benefits of networking with others or research collaboration always contribute to the success and productivity of academics. Becoming a researcher is a long journey which academics accumulate their knowledge, research skills (for example, writing a research report, analysing data), or research management (for example, how to effectively manage a research project) through workshops and seminars. Such activities are regularly organised at universities in the West or developing countries such as Australia. It is possibly the case that the leaders of ROU are aware of the benefits of research workshops and seminars, but that the university does not have enough research funds to organise such activities professionally and regularly. The university has tried its best to organise some, but their limited budget constrained them from inviting experienced researchers and good presenters from other institutions nationally or internationally. As already mentioned in Chapter Two, the research fund of ROU depends primarily in two sources: the small annual research funding from the Government and the small tuition fee paid by students (which is very low, about USD 400 - USD 500/year for undergraduate programs). Such small budget causes difficulties for the university in its everyday operation of teaching, research, services, and others.

From among the five factors that influence research motivation among ROU's academics, it is predicted that in order to successfully enhance the research motivation of academics, a good research climate within each department and across the university would be the most important factor. A good research climate is a place in which academics support and mentor each other to achieve their research goals, despite age, rank, and qualification. Smeby and Try (2005) indicated that a good research climate will enhance the research motivation of academics and encourage them to spend more time on research. The research behaviours of people in that environment might motivate other academics. Ramsden (1998b, p. 23) indicated that "active research departments, with a strong culture of research quality and support for staff to develop research careers, produce more publications for their size than less active ones". So, in cases where academics are provided with much time to do research, regular professional meetings, and much research funds, such conditions are found just necessary, but not sufficient, to motivate academics. Of equal important, a good research climate in which academics have opportunities to

meet, discuss, and share knowledge with colleagues as well as to collaborate with each other in undertaking research, is extremely necessary to motivate academics to undertake research.

The above findings indicate that ROU has not yet established a good teaching and research policy that encourages, motivates, and supports its academics in research activities. The calls for an increase in research motivation are rhetoric if ROU does not provide good support for academics. These qualitative results were used as a framework to further explore the quantitative study, the results of which are presented in the following section.

5.3 Data Presentation and Discussions of Quantitative Analyses

This section presents results of the quantitative analyses and discussions of the results. In the results section (5.3.1), before presenting key findings that come from the regression analysis, results of data screening, descriptive analysis, exploratory factor analysis, and correlation analysis will be presented. These analyses were a preliminary scrutiny to ensure that data were clean and good for the regression analysis. Data were analysed using the Statistical Package for Social Science (SPSS), version 22, for Microsoft Windows.

5.3.1 Data Presentation

5.3.1.1 Data Screening

Data screening was conducted to ensure that data were clean for descriptive and inferential analyses. First, a screening to exclude incomplete responses was done. The 526 fully completed responses were imported into SPSS for analysis. Second, a screening to check if there was a consistency in Likert scale's values between Survey Monkey and SPSS was conducted. For all questions from 10 to 18, the scale's option that indicated the strongest positive choice, such as strongly agree, very important, or strongly influential, was assigned the largest value in SPSS (see Appendix 4b for the Inversion of scale). Also, the 'N/A' value in questions 12 and 14 were recoded as 'Missing' (N/A does not make any contribution to the analysis when calculating the mean and standard deviations of a factor, so it was set as missing). Lastly, the number of publishing outputs which were primarily self-reported by respondents was checked. Some miscalculations relating to the total number of publications (sole-authored + co-authored) were found. So, a decision was made that a new variable for each type of publication was computed by calculating (adding) the sole-authored and co-authored output of each type.

5.3.1.2 Descriptive Statistics

Descriptive statistics of gender, age, academic rank, professorship level, highest qualification, and level of teaching were run to examine representativeness of the sample of this study. The total number of participants is 526 people out of 1,393 people in the population. Presentations are in the following tables.

Table 5.1

Participants' Gender

Colleges	Men <i>Frequency (%)</i>	Women <i>Frequency (%)</i>	Total <i>Frequency (%)</i>
College of Technology	119 (71.7%)	47 (28.3%)	166 (31.6%)
College of Economics	47 (49.0%)	49 (51%)	96 (18.3%)
College of Education	40 (51.3%)	38 (48.7%)	78 (14.8%)
College of Foreign Language Studies	20 (16.1%)	104 (83.9%)	124 (23.6%)
Junior College of Technology	25 (61%)	16 (39%)	41 (7.8%)
Junior College of Information Technology	7 (33.3%)	14 (66.7%)	21 (4.0%)
Total	258 (49%)	268 (51%)	526 (100%)

Table 5.1 shows that the variance between males and females was different at the College of Technology (CT) and College of Foreign Language Studies (CFLS). While the ratio between male and female academics of CT was 119:47, the ratio of CFLS was contrary, 20:104. The number of males at CT was the highest among the colleges. It demonstrated a characteristic of a technology institute: it had many male academics. In contrast, CFLS had the highest number of females, reflecting the feminised characteristic of teaching. The difference in the numbers of male and female academics might influence the research productivity of the colleges because previous studies found that male academics were often more research productive than their female colleagues.

Table 5.2

Participants' Academic Rank (Lectureship)

Colleges	Lecturer <i>Frequency (%)</i>	Senior lecturer <i>Frequency (%)</i>	Superior lecturer <i>Frequency (%)</i>
College of Technology	139 (83.7%)	22 (13.3%)	5 (3.0%)
College of Economics	69 (71.9%)	27 (28.1%)	0
College of Education	63 (80.8)	15 (19.2)	0
College of Foreign Language Studies	99 (79.8)	25 (20.2%)	0
Junior College of Technology	38 (92.7%)	3 (7.3%)	0
Junior College of Information Technology	21 (100%)	0	0
Total	429 (81.6%)	92 (17.5%)	5 (1.0%)

The academic rank (lectureship) in Vietnam has three levels: lecturer, senior lecturer, and superior lecturer. Table 5.2 shows that a majority of academics were holding the lowest level as lecturers (429 people). Only the College of Technology had five superior lecturers, as this college has been considered the leading member of ROU in terms of both teaching and research. Academics who are promoted to the superior lecturer level must have an outstanding profile of teaching and research. The number of senior lecturers at the College of Education and at the College of Foreign Language Studies was almost similar.

Table 5.3

Participants' Professorship Level

Colleges	Associate professor <i>Frequency (%)</i>	Professor <i>Frequency (%)</i>	Total
College of Technology	17 (10.2%)	1 (0.6%)	18 (3.4%)
College of Economics	7 (7.3%)	0	7 (1.3%)
College of Education	3 (3.8%)	0	3 (0.6%)
College of Foreign Language Studies	0	0	0
Junior College of Technology	0	0	0
Junior College of Information Technology	0	0	0
	27 (5.1%)	1 (0.2%)	28 (5.3%)

Table 5.3 shows that only the College of Technology, College of Economics, and College of Education had high profile academics. The College of Technology had one professor. That college also had the highest number of associate professors (17 people) who participated in this study. It was followed by the College of Economics (seven people) and College of Education (three people). The College of Foreign Language Studies had two associate professors, but they did not participate

in the survey so there was no information that appeared in the description. Two junior colleges did not have any high profile academics.

Table 5.4

Participants' Highest Qualification

Colleges	Bachelor	Master's	Doctorate
	<i>Frequency (%)</i>	<i>Frequency (%)</i>	<i>Frequency (%)</i>
College of Technology	25 (15.1%)	85 (51.2%)	56 (33.7)
College of Economics	12 (12.5%)	57 (59.4%)	27 (28.1%)
College of Education	11 (14.1%)	45 (57.7%)	22 (28.2%)
College of Foreign Language Studies	25 (20.2%)	90 (72.6%)	9 (7.3%)
Junior College of Technology	10 (24.4%)	27 (65.9%)	4 (9.8%)
Junior College of Information Technology	11 (52.4%)	10 (47.6%)	0

Table 5.4 showed that at all colleges, the percentage of academics who hold a Bachelor degree is high, ranging from 12.5% at the College of Economics up to 52.4% at the Junior College of Information Technology. The number of participants who hold a Master's degree at all colleges was over 50%. It was noted that the College of Foreign Language Studies (CFLS) had the highest number of participants who hold a Master's degree (72.6%). The College of Technology had the highest number of academics who hold a Doctoral degree (33.7%) while CFLS had only 7.3% of participants holding a Doctoral degree. The two junior colleges had few staff who hold a Doctoral degree, but had a high percentage of Bachelor and Master's degree holders.

In summary, the descriptive statistics show variations in gender, academic rank, professorship level, and highest qualification of participants among the six colleges of ROU. The variations even exist among the four senior colleges because of the different nature of their disciplines as well as the opportunities for promotion and postgraduate training. For example, the College of Technology always has more opportunities in postgraduate training (foreign universities often offer many scholarships for postgraduate training overseas in sciences). So, the College of Technology always dominates others in terms of higher ranks of academics, higher professorship levels, and highest qualifications. The variations in such background information of participants predict differences in research productivity among the academics themselves, and among colleges of ROU in general.

5.3.1.3 *Exploratory Factor Analysis*

The purpose of this exploratory factor analysis 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. This section firstly presents decisions that were made before conducting Principal Axis Factoring analyses (PAF), and secondly presents results of the final Principal Axis Factoring. Thirdly, the reliability of scales which were created by the PAF is presented.

5.3.1.3.1 *Examination of Suitability of Data and Criteria for Principal Axis*

Factoring

Before conducting principal axis factoring analyses, decisions related to the five following areas were made after appropriate examinations: a) sample size, b) method of extraction, c) number of extracted factors, d) method of rotation, and e) criteria for deleting a variable.

a. Sample size: According to Tabachnick and Fidell (2013), correlation coefficients would be more reliably estimated when having a sample size of at least 300. Thompson (2004) advised that, for factor analyses, the ratio between the number of participants (N) and the number of measured variables (p) should be at least 3:1 ($N:p$). In this study, having the sample size of 526 ($N = 526$) and the ratio approximately 20:1, such requirements were deemed met.

b. Method of extraction: The principal axis factoring was used as a method of data extraction. According to Thompson (2004), principal axis factoring is often used when it is assumed that there are measurement errors in the data. PAF is different from another method of extraction which is principal components analysis (PCA). Using PCA, researchers assume that the score on measured variables has perfect reliability and the communalities among variables are all equal to one (Thompson, 2004). Such assumptions are not realistic, especially in social sciences. Therefore, principal axis factoring was chosen for this study.

c. Number of extracted factors: 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. Therefore, the eigenvalue of greater than one was set for all PAFs in this study.

d. Method of rotation: Rotation is used in factor analysis to accommodate the correlations between extracted factors. According to Field (2013), when no rotation

is used, the assumption being made is that factors are uncorrelated. As that assumption is unlikely to be the case of this study, rotation of factors in the solution was used. Regarding the method of rotation, the oblique rotation (direct oblimin) was used because this method produces factors which contain items that are well correlated to each other. This method has been specially used as a common method in social sciences which involves examination of human behaviours, as in the present study. According to Tabachnick and Fidell (2013), the number of rotation times will maximise the opportunities of loading well-connected variables together. In order to increase the opportunity for a computer to search for optimal solutions which create reliable factors, I increased the default setting of rotation times of SPSS from 25 to 50 for all PAFs of this study.

e. Criteria for deleting a variable: Regarding the criteria for removing a variable, any variable which has a small factor loading of below .4 was removed. Also, any variable that had cross loadings with other variables was carefully examined to decide case by case to determine if it needs removing.

The above decisions have been made thoroughly for all principal axis factoring analyses in this study.

5.3.1.3.2 Results of Principal Axis Factoring Analysis

This section presents the results of two principal axis factoring analyses. Because research question one of this study involved two constructs, which were mentioned in the conceptual framework, research environment and research motivation, two PAFs were conducted in order to create two scales. The first scale was named 'Research Environment Scale' and the second scale was named 'Research Motivation Scale'.

Research Environment Scale

The Research Environment Scale (RES) was a result of two PAFs. Initially, a PAF was run with 25 measured variables (items of the questionnaire) related to the research environment. Seven factors (sub-scales) were identified, based on rotation converged in 21 iterations, accounting for 58.71% of variance. Among the 25 variables, 12J and 12B (as mentioned in the questionnaire) had low loadings ($< .4$), and 12A was not theoretically coherent with the content of a factor, so three of them were deleted at this point.

In the second PAF, the 22 remaining variables were entered into the analysis. Six factors were extracted based on rotation converged in 6 iterations, accounting for

59.37% of variance. All items had a good loading (> .5). All other factor analysis criteria were upheld: the Kaiser-Meyer-Olkin measure of sampling adequacy was good (.80), and the Bartlett's test of sphericity was significant ($\chi^2(231) = 4054.02, p < .05$). Items were correlated to at least one other item by at least .4. The communalities of variables commonly ranged from .42 to .81, excepting 15D and 12F which had a low value (< .4). However, it is predicted that variables 15D and 12F were meaningful in the context of this study, so it was decided that they should be retained. Consequently, RES consists of six extracted factors (or sub-scales). Factors, factored variables, and variables' loading are presented in Table 5.5.

Table 5.5

Factors of PAF for the Research Environment Scale

Factored variables	Extracted Factors						
	Satisfaction with the university's research policy	Scholarly resources	perceived barrier	Collaboration readiness	Positive research climate	Salary and research infrastructure perceived	Self-efficacy perceived barrier
Q_17.E_The research fund provided by ROU for research projects at university level	.836						
Q_17.D_The research fund provided by ROU for research projects at college level	.831						
Q_17.C_The supporting fund provided by ROU for attending international conferences	.747						
Q_17.B_The supporting fund provided by ROU for attending domestic conferences	.734						
Q_17.F_The reward policy for academics who have good research outputs	.720						
Q_17.A_The supporting fund provided by ROU for publishing articles in peer-reviewed international journals	.718						
Q_12.E_Lacking international refereed journal articles		.826					
Q_12.D_Lacking domestic refereed journal articles		.785					
Q_12.C_Lacking books		.686					
Q_18.C_Colleagues who have been trained overseas				.900			
Q_18.B_Colleagues of a lower degree/rank				.894			
Q_18.A_Colleagues of a higher degree/rank				.834			

Factored variables	Extracted Factors		
	Satisfaction with the university's research policy	Scholarly resources perceived barrier	Collaboration readiness
	Positive research climate	Salary and research infrastructure perceived	Self-efficacy perceived barrier
Q_15.B_People are supportive in helping others do research	-.862		
Q_15.A_Almost all academics are committed to research	-.681		
Q_15.C_Regardless of people's age, rank and title, their research ideas are respected by others in my department	-.627		
Q_15.D_The department head can influence the research productivity of myself and other academics.	-.528		
Q_12.I_Lacking office facilities for research		.791	
Q_12.H_Lacking research equipment (laboratory, ...)		.744	
Q_12.G_Lacking funding support for attending conferences		.647	
Q_12.F_Having low salary		.515	
Q_12.K_Having a low proficiency of a foreign language			-.804
Q_12.L_Having a low research capability			-.640

* Suppression of loadings < .2. Literally, there was no cross loading among factored variables.

Among the extracted factors, it is noted that three barrier factors reflected perceptions of participants about relevant areas, including 1) scholarly resources perceived barrier, 2) salary and research infrastructure perceived barriers²¹, and 3) self-efficacy perceived barrier. The self-efficacy perceived barrier reflected subjective evaluation of participants about their research capability and proficiency in a foreign language (English).

Research Motivation Scale

The Research Motivation Scale (RMS) was a result of two PAFs. Initially, a PAF was run with 14 measured variables related to motivation of participants to do research. Four factors were identified based on rotation converged in 6 iterations,

²¹ Salary and research infrastructure seem not relevant to combine in one factor. However, the variable related to salary was well loaded in this factor and it is important in this study. So, it could not be deleted.

accounting for 53.38 % of variance. Among the 14 measured variables, 11I and 11E had low loadings (< .4), so they were removed from the analysis.

In the second PAF, the 12 remaining variables were entered into the analysis. Four factors were extracted based on rotation converged in 7 iterations, accounting for 58.29% of variance. All items had a good loading (> .4). All factor analysis criteria were upheld: the KMO measure of sampling adequacy was good (.80) and the Bartlett's test of sphericity was significant ($\chi^2(66) = 2491.01, p < .05$). Items were correlated to at least one other item by at least .4. The communalities of variables commonly ranged from .49 to .78, excepting 10A which had a low value (.24). However, it was decided to retain the item for theoretical reason (the item related to the extent to which participants valued the importance of research). Consequently, the research motivation scale consisted of four extracted factors (or sub-scales). The factors, factored variables and variables' loading are presented in Table 5.6.

Table 5.6

Factors of PAF for the Research Motivation Scale

Factored variables	Extracted Factors							
	Extrinsic motivation	Intrinsic motivation	Status	Normative motivation				
Q_11.A_ Being promoted	.823							
Q_11.B_Getting a professorship	.776							
Q_11.D_Getting better salary	.776							
Q_11.C_Getting a managerial appointment	.745							
Q_11.G_Satisfying a personal need to contribute to the field		.864						
Q_11.H_Satisfying a personal need for creativity or curiosity		.830						
Q_11.F_Satisfying a personal need to stay current in the field		.691						
Q_11.J_Achieving peer recognition				.806				
Q_11.K_Getting respect from students				.789				
Q_10.C_Doing research enhances my teaching quality							.712	
Q_10.B_Doing research increases my knowledge							.705	
Q_10.A_Doing research is the most important task of academics							.444	

* Suppression of loadings < .2. Literally, there was no cross loading among factored variables.

The previous studies which investigated the research productivity of academics measured two types of research motivation: extrinsic motivation and intrinsic motivation to undertake research (Chen et al., 2006; Chen et al., 2010). These two types were typically similar to the classification of motivation of human

beings in the theory of motivation (Beck, 2004). Interestingly, the principal axis factoring analyses of the present study explored two more types: "Status Motivation" and "Normative Motivation".

Regarding Status Motivation to undertake research, factored variables indicated that academics who have status motivation to undertake research might expect to be acknowledged, recognised, or praised by students, colleagues, and department's heads/university's leaders for their research achievement. Such acknowledgement, recognition, and appraisal provide more motivation for academics to engage in research.

Regarding Normative Motivation to undertake research, factored variables indicated that academics who thought that research was an important role of academics had this kind of motivation. They also believed that doing research and having research publication would improve their knowledge, and teaching effectiveness. In a deeper sense, research can be understood as an obligation that academics have to undertake, because their research improves their teaching quality. Being a lecturer, the most important responsibility is to successfully complete teaching tasks/missions with high quality in terms of student learning outcomes. Therefore, those who have normative motivation to undertake research might think about their teaching quality.

In general, status motivation and normative motivation are potentially important new constructs applicable to understanding the research motivation of academics in general or at least in the context of ROU.

5.3.1.3.3 Reliability of Two Scales

Reliability of a research scale is always a matter of concern before it is used for analysis. The evaluation of reliability of a scale is the process of examining the internal consistency of variables contained in a factor of the scale. Cronbach's coefficient alpha was used to calculate the internal consistency of the ten extracted factors of two scales. The alpha values are presented in Table 5.7.

Table 5.7

Reliability Coefficients of Extracted Factors of Two Scales

Scale	Extracted Factor	Number of factored variables	Reliability coefficient (α)
RES	1. Satisfaction with the university's research policy	6	.902
	2. Scholarly resources perceived barriers	3	.820
	3. Collaboration readiness	3	.896
	4. Positive research climate	4	.780
	5. Salary and research infrastructure perceived barriers	4	.793
	6. Self-efficacy perceived barrier	2	.684
RMS	1. Extrinsic motivation	4	.861
	2. Intrinsic motivation	3	.849
	3. Status motivation	2	.784
	4. Normative motivation	3	.619

A reliability coefficient (Cronbach's alpha) greater than .7 is normally acceptable (Cronbach, 1951). A value between .6 and .7 might be questionable. As the alpha values of self-efficacy perceived barrier and normative motivation were .684 and .619 respectively, the correlations between each factor and the total score of the factor were examined as recommended by Field (2013). According to Field, if a factor which has a corrected factor-total correlation larger than .3, its reliability is recognised despite its alpha being smaller than .7. The examination showed that the corrected factor-total correlation value of self-efficacy was .377 and that of normative motivation was .521. The values were satisfied according to the recommendation of Field (2013), so these factors were deemed to be sufficiently reliable to use for inferential analyses of this study.

5.3.1.4 Correlation Analysis

Correlation analysis was used to examine the correlation between six factors of the research environment scale and research motivation. The variable "Research motivation" here was a new aggregate variable which was created by computing the mean of the four extracted motivation factors: extrinsic motivation, intrinsic motivation, status motivation, and normative motivation. This newly-created variable was necessary for this correlation analysis as well as the regression analyses

in order to seek answers for the first research question. The Pearson correlation coefficients and significant values are presented in Table 5.8.

Table 5.8

Correlations between Six Factors of the Research Environment Scale and the Aggregate Research Motivation

		Satisfaction with the university's research policy	Scholarly resources perceived barriers	Collaboration readiness	Positive research climate	Salary and research infrastructure perceived barriers	Self-efficacy perceived barrier
Research Motivation	Pearson Correlation	.047	.146**	.087*	.135**	.212**	.093*
	Sig. (2-tailed)	.278	.001	.047	.002	.000	.040
	N	526	509	526	526	512	489

Table 5.8 shows that five factors of the research environment scale, except satisfaction with the university's research policy, were significantly positively correlated with the research motivation of ROU's academics, $p < .05$. Regarding the first hypothesis of this research question that *There is no correlation between a positive research climate within a department and the research motivation of ROU's academics*, the result showed a positive correlation between a positive research climate and research motivation ($r = .135$, $p = .002$). In a department which has a positive research climate, the latter will stimulate support and collaboration between colleagues through particular research behaviours. It is predicted that the more academics support each other, or receive support from colleagues, including departmental leaders, the higher the motivation to do research, they have.

Regarding the second hypothesis *There is no correlation between ROU's academics' satisfaction with the university research policy and their research motivation*, the correlation analysis showed no relationship between satisfaction with the university research policy and research motivation. This result was a little different from that of previous studies which concluded that job satisfaction of employees has correlation with their work motivation, and that it leads to better performance and productivity of staff in an organisation (Locke, 1969; Oshagbemi,

2003). The results indicated that the research motivation of ROU's academics might be affected by other factors in the context of the university as well as by personal characteristics of academics. The satisfaction itself did stimulate work performance of employees in industry, but it does not necessarily enhance the research motivation of academics in the present study.

Finally, in relation to the third hypothesis that *There is no correlation between any type of research barriers and the research motivation of ROU's academics*, the results revealed that all three barriers were significantly positively correlated to research motivation. Normally, barriers will suppress the research motivation of a person, but in this case, the perception of barriers may come after the research motivation. In other words, the barriers were the perception of participants during their engagement in research activities. It is noted that the barriers in this study reflect psychological perceptions of ROU's academics. Question number 12 in the questionnaire asked respondents *if they were experiencing any obstacles*. If the answer was a yes (they were experiencing obstacles), respondents were asked to indicate to what extent the obstacle negatively impacted their research productivity. In this case of positive correlations between barriers and research motivation, it can be understood that the more academics were involved in research activities, the more frustration they experienced due to the lack of scholarly resources (books and journals), research funds, and research infrastructure.

The correlation results showed the importance of a positive research climate to enhance the research motivation of ROU's academics. The positive correlation between barriers and research motivation does not mean that ROU should create many more barriers in order to increase the research motivation of its academics. In this case, the results revealed that such barriers as shortages potentially existed at ROU. But, only those who are often involved in research activities and those who have conducted research, perceived the shortages as barriers.

5.3.1.5 Regression Analysis

Regression analysis was the main inferential statistical analysis used to seek answers for research question one. The analysis used personal characteristics including age, gender, academic rank, highest qualification, and highest level of teaching as control variables for a series of the hierarchical multiple regressions.

5.3.1.5.1 Checking the Assumptions

Prior to conducting the hierarchical multiple regression (HMR) analysis, two basic assumptions: extreme univariate outliers and multicollinearity, were examined in order to avoid potential influences of extraordinary cases on the HMR's regression model.

Regarding outliers, Cook's distance and Mahalanobis distance of the first HMR were examined to see if there was any outlier in the data. The result of Cook's distance showed that the maximum value was just .054. It could be a concern when a Cook's distance is greater than 1 (Field, 2013). The result of Mahalanobis distance revealed concerns because the value of nine cases (9/526) was greater than 25 (it should be smaller than 25 if a sample size of about 500) (Field, 2013). So, such cases were excluded from the dataset before another HMR was undertaken. Results of the second HMR were good for both Cook's and Mahalanobis distance. So, there was no concern for outliers.

Regarding multicollinearity, an examination of correlation between independent variables and the dependent variable revealed that the correlations are acceptable (all values were smaller than .8 but not highly correlated) (Field, 2013). The VIF and Tolerance statistic values were within the accepted limits which are VIF: from .3 to .9 and Tolerance: from 1.0 to 3.1 (Field, 2013; Pallant, 2011). So, there was no concern for multicollinearity. The Histogram and Normal P-P Plot of Regression Standardised Residual below show the satisfaction of normality and linearity of the data.

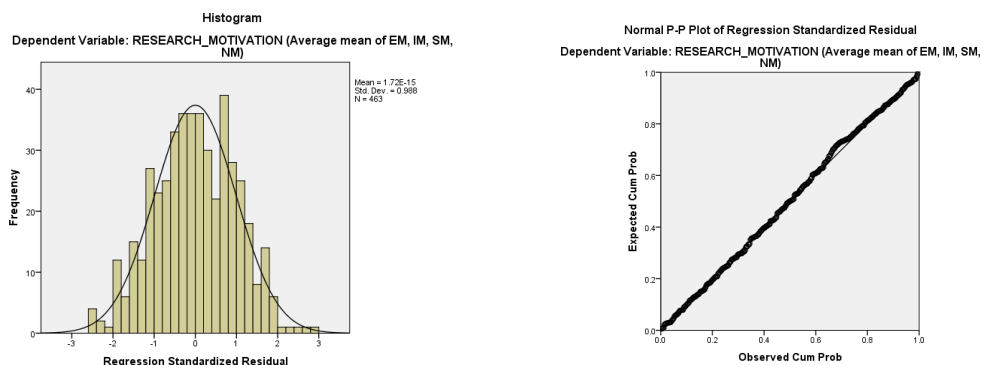


Figure 5.1 Histogram and normal P-P Plot

5.3.1.5.2 Hierarchical Multiple Regression Results

The results of the HMR are presented in separately single tables²² labelled: variables entered the regression, descriptive statistics, correlations, model summary, ANOVA, and coefficients. In the coefficient table, the standardised coefficients were chosen to report thoroughly in this study because “standardised coefficients are not dependent on the units of measurement of the variables” (Field, 2009, p. 239).

Table 5.9

Variables Entered the Regression for the Research Motivation

Model	Variables Entered	Method
1	Highest level of teaching, gender, academic rank, highest qualification, age	Enter
2	Scholarly resources perceived barriers, self-efficacy perceived barrier, salary and infrastructure perceived barriers	Enter
3	Collaboration readiness, positive research climate	Enter
4	Satisfaction with university's research policy	Enter

Table 5.9 shows personal variables of academics and factors of the research environment scale (RES). Variables/factors were entered into the HMR in four steps. At step one, five personal variables were entered into the model. They were considered control variables for this HMR. Six RES factors were entered gradually at steps two, three, and four aligning with three research hypotheses in order to see the different contributions of each group of factors to research motivation of academics.

²² The tables were formatted, aiming to provide clear, sufficient and necessary information needed for discussion of the research question only.

Table 5.10

Descriptive Statistics – the Research Motivation

	Mean	Std. Deviation	n
Research Motivation	2.8476	.47236	463
Age	35.57	9.528	463
Gender	1.51	.500	463
Academic rank	1.18	.393	463
Highest qualification	2.05	.628	463
Highest level of teaching	2.16	.689	463
Scholarly resources perceived barriers	2.9777	.79333	463
Salary and infrastructure perceived barriers	2.8418	.86973	463
Self-efficacy perceived barrier	2.3844	.87109	463
Collaboration readiness	3.4593	.53336	463
Positive research climate	2.8315	.59486	463
Satisfaction with university's research policy	2.3351	.60595	463

Table 5.10 shows the mean and standard deviation of each variable/factor. As the description is a part of the HMR, the valid sample size was only 463. The demographic information indicated the following interpretations: many young and female academics participated in this survey. Most participants were lecturers, held a Master's degree, and taught at undergraduate level.

Table 5.11

Correlations – the Research Motivation

	Pearson Correlation	Sig. (1-tailed)
Research Motivation	1.000	.
Age	.009	.421
Gender	-.218	.000
Academic rank	.104	.013
Highest qualification	.153	.000
Highest level of teaching	.108	.010
Scholarly resources perceived barriers	.179	.000
Salary and infrastructure perceived barriers	.207	.000
Self-efficacy perceived barrier	.082	.039
Collaboration readiness	.096	.019
Positive research climate	.143	.001
Satisfaction with university's research policy	.097	.019

n = 463. Significance level: .05

Table 5.11 shows the correlations between research motivation and 11 predictor variables. The results indicated that almost all factors, except age, were significantly correlated with research motivation. Among them, only gender had a negative correlation with the research motivation. Age had no correlation with the research motivation. Highest qualification had the highest correlation coefficient value of .153, followed by highest level of teaching, with .108, and academic rank, with .104. For the RES factors, they were all positively correlated with the research motivation. As the results of the correlation analysis above, three barrier factors also had positive correlations with research motivation. A positive research climate was more important than the other two factors because it had the highest coefficient of .143, followed by satisfaction with the university's research policy which had .097, and collaboration readiness at .096. These results confirmed the importance of a positive research climate in a department, one where academics support, and collaborate with, each other in research activities.

Table 5.12

Model Summary – the Research Motivation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F	df1	df2		
1	.316	.100	.090	.45067	.100	10.107	5	457	.000	
2	.374	.140	.125	.44187	.041	7.131	3	454	.000	
3	.402	.162	.143	.43724	.022	5.831	2	452	.003	
4	.417	.174	.153	.43460	.012	6.505	1	451	.011	2.027

Table 5.12 showed the model summary of the HMR. There were four models entered into the equation. Model one referred to the first stage in the hierarchy when only five personal variables were used as control factors. It explained 10% of the variation in the research motivation, and was significant at .000. Model two referred to when three barrier variables were added into the equation. The barrier variables explained an additional 4.1% (R Square change = .041), and the model was significant at $p = .000$. Model three referred to when another two RES factors were entered. It explained another 2.2% of the variation in the outcome and also was significant at $p = .003$. The final model referred to the fourth stage, when the last variable was entered into the equation; and all predictor variables contributed to the overall prediction of the research motivation. The R Square was .174 and indicated that 17.4% of the variability in the research motivation was accounted for by the

factors in the final model. It is apparent that the personal variables in the first model accounted for 10% of the variation in the outcome. However, when six factors of the RES were added gradually to the equation, this value increased from .10 to .174 or 17.4% of the variation in the dependent variable. Therefore, we can tell that the RES factors as predictor variables, account for an additional 7.4%. The adjusted R Square of the overall model was .153, and indicated that if this model was derived from the whole population of ROU, it would account for approximately 2.1% less variance in research motivation. In general, the overall model was successful in predicting the level of research motivation among ROU's academics. The Durbin-Watson value was acceptable at 2.027 (closer to 2) as recommended by Field (2013). The Durbin-Watson value confirmed that the assumption of independent errors, such as outliers and multicollinearity, had been met in this HMR.

Table 5.13

ANOVA – the Research Motivation

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.264	5	2.053	10.107	.000
	Residual	92.819	457	.203		
	Total	103.082	462			
2	Regression	14.441	8	1.805	9.245	.000
	Residual	88.642	454	.195		
	Total	103.082	462			
3	Regression	16.670	10	1.667	8.720	.000
	Residual	86.412	452	.191		
	Total	103.082	462			
4	Regression	17.899	11	1.627	8.615	.000
	Residual	85.183	451	.189		
	Total	103.082	462			

Table 5.13 shows the results of the analysis of variance, which indicate that there was a significant effect of all predictor variables entered into the HMR, on the level of research motivation among ROU's academics. The F-ratio (11, 451) was 8.615, and the model was significant ($p = .000$). Also, it is noted that the value of F for all other Models – one, two, and three – were also highly significant ($p < .001$). So, we can tell that the predictor variables for this HMR can contribute to the prediction of the outcome. Significant factors are shown in the coefficients Table 5.14.

Table 5.14
Coefficients²³ – the Research Motivation

Model		Standardised Coefficients Beta	t	Sig.
4	(Constant)		6.884	.000
	Age	-.266	-3.505	.001
	Gender	-.167	-3.589	.000
	Academic rank	.214	3.184	.002
	Highest qualification	.199	3.392	.001
	Highest level of teaching	.008	.143	.887
	Scholarly resources perceived barriers	.167	3.533	.000
	Salary and infrastructure perceived barriers	.127	2.502	.013
	Self-efficacy perceived barrier	.002	.047	.962
	Collaboration readiness	.021	.461	.645
	Positive research climate	.113	2.417	.016
	Satisfaction with university's research policy	.120	2.551	.011

Table 5.14 presents the model parameters of the fourth model of the regression. It is to be noted that only parameters that relate to standardized coefficients of the final model are presented and discussed. Furthermore, standardized beta values tell the importance of a predictor in the model (Field, 2013). The result showed that eight out of ten predictor variables/factors were statistically significant. Age ($\beta = -.266$) and gender ($\beta = -.167$) were negatively significant to the research motivation. Academic rank ($\beta = .214$) and highest qualification ($\beta = .199$) showed a positive correlation with the research motivation. Regarding the environmental factors (institutional factors), four factors were statistically positive to the research motivation, including scholarly resources perceived barriers ($\beta = .167$), salary and research infrastructure perceived barriers ($\beta = .127$), satisfaction with university's research policy ($\beta = .120$), and positive research climate ($\beta = .113$).

5.3.2 Discussions of Quantitative Analyses

The regression analysis found that age, gender, academic rank, highest qualification, positive research climate, satisfaction with the university's research policy, scholarly resources (perceived barriers), and salary and research infrastructure (perceived barriers) have significant influences on the research

²³ To comply with the length of this thesis, only values of Model 4 (the final model in the HMR) are reported.

motivation of ROU's academics. The discussion will initially reveal the influences of the four personal characteristics on the research motivation of ROU's academics; and then the influences of four institutional factors of the research environment scale, on the research motivation of ROU's academics, will be presented in alignment with the three research hypotheses.

The age of ROU's academics showed a negative correlation with their motivation to undertake research. This indicated that their research motivation decreased as they got older. This finding conflicts with the results from Perry et al. (2000), who found that older academics were more productive (have a high level of research motivation) than their younger counterparts. However, the finding was similar to that of Goodwin and Sauer (1995) and Hedjazi and Behravan (2011), when they found that the research productivity had an upside-down U-shape. A possible explanation for a decrease in research motivation of ROU's academics was that, at a teaching-intensive university like ROU, academics get more teaching experiences as they became more experienced. In spite of having a low qualification (mostly a master's degree), older academics were always considered senior staff, and they had to teach many courses. For this reason, their research motivation was reduced because they did not have time to spend on research activities. Furthermore, some of them were engaged in administrative tasks in the department or at a higher level of the university, which consumed most of their time. Therefore, their research motivation decreased as they get older.

Regarding gender, the negative correlation between gender and research motivation in this study can be interpreted as saying that the male academics of ROU were more motivated to do research than their female colleagues. The reason for this is because of the fact that males had a smaller number in the coding (number 1), and females a bigger number in the coding (number 2); so, when gender increased from 1 (males) to 2 (females), the research motivation decreased²⁴. This resulted in the finding that female academics often produced less research publication than males. The result is confirmed by some previous studies (Kaya & Weber, 2003; Zhang, 2010). The finding seems to be reasonable in the social context of Vietnam where

²⁴ This is just a dichotomy in the data determined by which sex gets coded with the higher number. If male was coded a number 2, the correlation between gender and research motivation would have been positive.

women are responsible for undertaking all housework and looking after children. It is not in all, but in most Vietnamese families, that such responsibilities are those of a wife and/or a mother, and they consume a lot of time. Family-related jobs usually occupied a large amount of time and energy for females. This practice might be different from practices in the Western context where there is equality between both men and women in doing housework-related activities, resulting in the fact that Western females can spend more time on research and they might be as productive as their male peers (Webber, 2011a).

Regarding academic rank and educational qualification, the positive correlation between rank and qualification with research motivation confirmed the findings of the previous studies of Boakye-Dankwah (1992) and Sulo et al. (2012). In Vietnam, having a high qualification²⁵ is one of the requirements for being prompted to the higher academic rank of senior lecturer or superior lecturer. Academics are also required to have some research publications in order to receive a promotion in rank. The higher the rank and qualification they obtain, the more disciplinary knowledge as well as research skills they might accumulate. It is predicted that people who have undertaken a postgraduate qualification such as a master's degree by research or a doctoral degree, will have more research skills and research experiences than those with just a bachelor or a master's degree by coursework. More importantly, it is recognised that in most cases, the research capability of academics who were trained at an overseas university, especially in developed countries such as Australia, is better than that for those who were trained in Vietnam. That is the reason why every year (since 2008), the Government of Vietnam has spent a significant amount of the national budget in sponsoring 1,000 academics from public colleges and universities to study a master's and doctoral program at high-ranking universities in 50 countries (X. V. Nguyen, 2015). About 60% of scholarship holders have been trained at a doctoral level, and 40% at master's level. Interviewees indicated the importance of a high qualification when they mentioned that academics who had a high qualification, especially a doctoral degree, play an important role as research leaders in their departments.

²⁵ In Vietnam, many universities are recruiting new graduates who just hold a Bachelor degree to become academics.

In short, the above results indicate that at ROU, the research motivation of academics decreases when they get older; academics who are male, who hold a higher ranking, and who have a high qualification, are more motivated to undertake research than female staff and staff with a lower ranking and qualification.

In relation to the four factors of the research environment which were positively correlated with research motivation, the discussions will be presented in accordance with each research hypothesis.

5.3.2.1 Research Hypothesis One

H₀1: There is no correlation between a positive research climate within a department and the research motivation of ROU's academics.

The regression results revealed that a positive research climate was positively correlated to research motivation of academics ($\beta = .133, p = .016$). As indicated in the principal axis factoring, the factor named 'Positive Research Climate' was measured by four factored-variables (items), as follows.

Table 5.15

Descriptive Statistics of Positive Research Climate

	Minimum	Maximum	Mean	Std. Deviation
Q_15.A_ Almost all academics are committed to research	1	4	2.60	.815
Q_15.B_ People are supportive in helping others do research	1	4	2.68	.753
Q_15.C_ Regardless of people's age, rank and title, their research ideas are respected by others in the department	1	4	2.92	.785
Q_15.D_ The department head can influence the research productivity of academics by being a great exemplar of research behaviours	1	4	3.17	.796

The four variables were more or less similar to the common characteristics contributing to a positive group climate which have been intensively reviewed in a study of Bland and Ruffin (1992) and confirmed in many other studies (Bland et al., 2005; Smeby & Try, 2005). Through the variables, it was apparent that building a positive research climate in a department was very important to increase the research

motivation of academics. Any department that had a positive research climate indicated that academics of that department had a high commitment to research and that there was good collaboration between staff. Through the lens of organisational commitment (Mowday et al., 1979), it can be predicted that commitment to the research of academics is one of the most important factors which positively impacts on their research attitudes and behaviours. When committed to research, academics demonstrate their high levels of research motivation. Their motivation might fall within one of the four categories of motivation which have been explored in this study. It might be intrinsic motivation, extrinsic motivation, normative motivation, or status motivation.

When experiencing any of the research motivation types above, academics can demonstrate different research behaviours in order to contribute to a good research climate in the department. They can work together, support each other, and collaborate together in a harmonious atmosphere within the department. The idea of a harmonious atmosphere incorporates the notion that academics support, respect, and value the ideas of every member. Only in such positive climate, can the research motivation of academics and their creativeness be enhanced. The support and collaboration could occur in many ways, such as through mentorship between senior and junior academics, co-authorship between colleagues who have the same research interest, co-authorship between junior and senior academic researchers aimed at helping junior academics develop their research skills, or just simply through sharing knowledge and scholarly resources with colleagues. All of these activities create a trust between academics in the department. It helps them get more knowledge, research skills, and confidence in doing research. Such actions, it has been found, were likely to help/support in achieving the research goals of each person, and the goals of a department. When academics work together toward research goals, their collaboration increases mutual respect for each other, despite age, gender, rank, or qualification differences. They learn from each other as well as help each other overcome challenges in research (if any). All of the benefits of a positive research climate go to enhance research motivation for academics, especially those who are junior and have few research experiences.

These findings showed the importance of having a positive research climate in all departments. The university should take into account the importance of

building such a climate across the university and of maintaining it forever in order to enhance the research motivation of all academics.

5.3.2.2 Research Hypothesis Two

H₀2: There is no correlation between ROU's academics' satisfaction with the university's research policy and their research motivation.

The regression results showed that satisfaction with the university's research policy was positively correlated to the research motivation of ROU's academics ($\beta = .120, p = .011$). The factor of satisfaction with the university's research policy was measured by six variables as described in Table 5.16.

Table 5.16

Descriptive Statistics of Satisfaction with the University's Research Policy

	Minimum	Maximum	Mean	Std. Deviation
Q_17.A_Satisfied with the funding support provided for publishing papers in international journals	1	4	2.35	.741
Q_17.B_Satisfied with the funding support provided for attending domestic conferences	1	4	2.40	.715
Q_17.C_Satisfied with the funding support provided for attending international conferences	1	4	2.19	.764
Q_17.D_Satisfied with the funds provided for research projects at college level	1	4	2.33	.782
Q_17.E_Satisfied with the funds provided for research projects at university level	1	4	2.32	.761
Q_17.F_Satisfied with the reward policy for good research outputs	1	4	2.48	.794

The variables in Table 5.16 were used to explore the reaction of staff toward the research policy of the university regarding whether or not the university provided sufficient funding support for conference attending and publication fees (if a fee was required). The regression analysis found that the research motivation of ROU's academics would increase if they were satisfied with the university's research policy. However, the mean values in Table 5.16 indicated that ROU's academics were only moderately dissatisfied with the research policy of ROU regarding all measured

variables (all mean values were just a little bit higher than 2). Research indicated that research funding was an important factor and was considered as a type of physical resource contributing to the success in research of academics (Bland & Ruffin, 1992). Babu and Singh (1998) emphasised that academics must have adequate access to research funding to complete their research. A sufficient fund can be considered as a good payment for the effort and time that academics have spent on research activities.

These results are similar to the qualitative results, with participants in this quantitative analysis showed that they recognised the benefits of attending research conferences, especially the international ones, but they were not able to find funding to support this. Blackburn et al. (1991) and Ramsden (1998b) indicated that opportunities to socialise with other people, for example at a conference, not only improve knowledge of academics but also increase their research confidence, which turns into their motivation to undertake research. This benefit can be gained very much through contact with experienced international researchers. Also, through the conferences, academics can establish research relationships for future collaboration.

Studies relating to behaviours of employees in organisations and of academics in higher education institutions have indicated a relationship between the levels of people's satisfaction with policies of organisations/institutes and their work performance (effectiveness). In the case of ROU, as the amount of money that the university funds for a research project has been very small (as mentioned and analysed in the qualitative data) and has been considered insufficient to conduct research, academics have not been highly motivated to research. However, it is fortunate that the academics did not indicate that they were totally dissatisfied with the university's policy. It is possible that they understood the financial difficulties of the university. In this situation, they have to accept the policy's context in order to maintain their job, but they are not actively engaged in research activities.

In order to increase the level of research motivation, leaders of ROU need to carefully think about the current research policy and find solutions which can improve the level of satisfaction of all academics. Ramsden (1998a, p. 54) indicated that satisfaction with reward systems is a good correlate of research productivity and that "dissatisfied staff are around half as productive as satisfied ones". If ROU does not improve this policy, academics will be able to continue accepting the current situation for a short time, but in the longer term, when the requirement for research

productivity is increased, the current research policy might create strong levels of dissatisfaction among the academic community. When their expectations are not met, academics just engage in research at a minimum level in order to meet the minimum requirements of research productivity.

This finding indicates that making academics satisfied with the university's research policy is necessary to enhance their research motivation. It is agreed that there is no policy which can satisfy all people. But at least, the university should meet the minimum expectations of academics and offer them more opportunities to develop their research capability, otherwise, their engagement in research activities will just be an unwilling reaction to the pressure from the university; and if this should occur, the quality of any publications will not be high.

5.3.2.3 *Research Hypothesis Three*

H₀₃: There is no correlation between any type of research barriers and the research motivation of ROU's academics.

The factor analysis resulted in three types of barriers and they related to: scholarly resources; salary and research infrastructure; and self-efficacy. In opposition to the research hypothesis, the regression analysis found that scholarly resources ($\beta = .167, p = .000$) and salary and research infrastructure ($\beta = .127, p = .013$) had positive correlations with the research motivation of ROU's academics. As already mentioned, these factors were supposed to be actual barriers which demotivated academics from engaging in research activities. However, this analysis was not possible to measure actual barriers related to resources, salary, and equipment because such things may be good or sufficient for some people, but bad or insufficient for some others. Therefore, our items in the questionnaire survey were used to measure perceptions of participants in relation to such matters. The following tables show descriptive statistics of variables which were measured in each factor.

Table 5.17

Descriptive Statistics of Scholarly Resources Perceived Barriers

	Minimum	Maximum	Mean	Std. Deviation
Q_12.C_Lacking books	1	4	3.19	.824
Q_12.D_Lacking research articles in domestic refereed journal articles	1	4	2.88	.857
Q_12.E_Lacking research articles in international refereed journal articles	1	4	3.09	.869

Table 5.18

Descriptive Statistics of Salary and Research Infrastructure Perceived Barriers

	Minimu m	Maximum	Mea n	Std. Deviation
Q_12.F_Having low salary	1	4	3.14	.879
Q_12.G_Lacking funding support for conferences	1	4	3.14	.836
Q_12.H_Lacking research equipment	1	4	3.10	.981
Q_12.I_Lacking office facilities	1	4	2.86	.954

Through the descriptive statistics, it is noted that almost all participants indicated that they had experienced such barriers when they were doing research. The values above three indicated that participants chose 'moderately influential' in the related items. This level was just lower than the highest level of 'strongly influential' listed in the scale. It is noticeable that the barriers which were seriously perceived by academics were the ones which often significantly contribute to the success and high quality of a research output.

Regarding scholarly resources, the results confirmed the findings of previous studies (Bland & Ruffin, 1992; Lertputtarak, 2008; H. T. L. Nguyen, 2014) and of the qualitative analysis undertaken. Scholarly resources are always important for researchers because the resources provide wide and updated knowledge for researchers. Through books and journal articles, particularly the international refereed journal articles published in the high-ranking journals of the world, researchers can understand what has been done in their field globally, and what needs to be further studied. Good and updated resources also provide researchers with a general knowledge about the field, which is very necessary for writing up a literature review of a study (Teodorescu, 2000). However, this study observed that ROU currently does not have any subscription to international databases, refereed journals, and publishers through which its academics can access and find materials for their research. It is even worse that domestic research papers which are published by academics of ROU, other universities, and research institutes in Vietnam have not been made available for reference. Most domestic publications are internally circulated within the universities and institutions. So, there were many difficulties for academics in seeking research materials.

The findings showed that although ROU wanted to become a research university by 2020, its libraries have not met minimum demand in research material for academics. New ideas for research often arise after reading material. Based on such initial ideas, academics develop their research. Therefore, the role of scholarly resources is very important in academic research. Highly experienced academic researchers can do nothing without good sources of material for reference. Therefore, it is obvious that the shortage of scholarly resources at ROU has caused many barriers for academics when they do research. Only those who conducted research could perceive the barriers.

Of equal importance, sufficient research infrastructures provide opportunities for researchers to conduct their studies successfully. Before actually becoming involved in research behaviours, having sufficient research infrastructure encourages the research motivation of academics, as mentioned by Bland and Ruffin (1992). Special attention in this discussion will focus on research equipment, because other matters such as funding support for conferences was addressed previously and low salary will be discussed in the next chapter. Research equipment is very necessary for researchers in sciences and technology because all researchers in those fields need to experiment and/or simulate before writing a result. However the reflection of ROU's academics via the interviews and personal communications revealed that ROU has not provided sufficient access to research equipment for academics. The following evidence has been taken into consideration. First, when academics submitted a research proposal and suggested the university buy equipment and related chemicals to conduct experiments, the university could not meet their demand for them immediately because of its limited budget. After a period, when the equipment became available, it did not meet the demands of the study anymore because of the now outdated technology. Second, although the university sometimes received research equipment as donations from other governments and foreign universities, in many cases, although the equipment was new in the context of Vietnam, it was old and outdated compared with the state of technology globally. Third, the university had several laboratories but academics were not allowed to use the equipment for free. Instead, academics had to pay a fee. Fourth, the available equipment was for all academics, but there were no chemicals for using with the equipment. Anyone wanting to use the laboratories had to buy chemicals themselves

(as indicated by the respondent SL4 above). All of these things have created barriers which reduce the research motivation of academics.

In short, these barriers were perceived by academics who used to engage in research. Even if academics have a high level of research motivation, if the barriers exist for a long time, their research motivation will decrease. The findings rejected the null hypothesis above.

5.4 Summary

This chapter has identified individual and institutional factors that have influences on the research motivation of ROU's academics. Regarding the individual factors, the study found that young academics, male academics, academics who hold a high rank, and academics who obtained a high qualification, had higher levels of motivation to undertake research than their colleagues whose such characteristics were opposite. Among the four factors, a high qualification can cause an increase in the research motivation of academics. So, ROU should encourage and support academics to study a postgraduate program, especially at doctoral level in an overseas university. The other factors (age, gender, and academic rank) cannot be causes of research motivation. They just have association with the outcome. The university cannot dismiss old academics, change the gender of academics from male to female, or promote all academics to the highest rank in order to make them more motivated to research. The findings provide information to ROU's leaders so that they can have suitable strategies and policies to stimulate the research motivation of academics whose age, gender, and academic rank are different.

Regarding the institutional factors, the study found teaching load, professional meetings, research climate, scholarly resources, research funding, salary, research infrastructure, and the university's research policy were associated with the research motivation of academics. It seems that all factors are important because of the role of each one in enhancing research motivation.

Although the self-efficacy perceived barrier was not significantly correlated with the research motivation of ROU's academics, it is worth noting it as a matter of concern because previous studies have indicated that research self-efficacy is very important in promoting research motivation (Blackburn et al., 1991; Lertputtarak, 2008). However, the insignificant correlation that occurred in this analysis was possibly caused by a cultural effect in the context of Vietnamese people. The reality at ROU indicated that a majority number of ROU's academics have not become

engaged in research; so, they have never found themselves facing self-efficacy barriers such as those which measure proficiency in a foreign language and research capacity. If they really engaged in research activities, especially writing manuscripts for an international journal, they might immediately find that they have a low proficiency in a foreign language and low research capacity. It is observed that the culture of hesitation which wants to hide weakness, is widely spread in Vietnam. So, this insignificant result might be culturally caused by hesitation in revealing personal weaknesses of participants. They did not claim that they have a low research capability and low proficiency in a foreign language despite the reality being completely opposite.

Chapter 6

Data Presentation and Discussions of Factors Influencing the Research Behaviours of Academics

6.1 Introduction

This chapter presents results related to research question two: *What are the research motivational factors that impact the research behaviours of academics at the Research-Oriented University in Vietnam.* In the qualitative analysis, research behaviour is a general term to indicate the engagement of academics in undertaking research. It can be commonly understood that academics have high research motivation so they spend time on doing research, with no indication of a specific behaviour. However, in the quantitative analysis, research behaviour has been defined as being of three specific types: 1) research collaboration, 2) postgraduate supervision, and 3) weekly research hours. These three types of research behaviour were used in regression analyses aligning with three hypotheses of research question two. Similarly to the reminder made in Chapter Five, the presentation of qualitative results and discussions is narrowed to a reasonable scale because the predominant analyses for identifying factors that impact the research behaviours of ROU's academics, are in the quantitative analyses.

6.2 Data Presentation and Discussions of Qualitative Analysis

6.2.1 Data Presentation

The thematic analysis of the data found three factors that have an influence on the research behaviours of ROU's academics: 1) salary, 2) research group, and 3) postgraduate training. The order of factors presented here does not reflect any hierarchy or level of importance. Although the results are presented separately in block quotes, they do not represent exact or direct words (word by word) that respondents mentioned. Rather, they reflect the ideas, opinions, and viewpoints of respondents that the respondents conveyed through the in-depth interviews.

6.2.1.1 Salary

Salary was the factor that was mentioned by all respondents because of the low level of their current salary earning. Respondents showed their awareness of undertaking research as part of their everyday responsibilities in their careers. Most of them agreed that they would spend time participating in research activities if their salaries were satisfied and they could financially support their lives. However, this

research observed that the low salary of respondents hindered them from exercising positive research behaviours.

Respondents indicated that while the university did not provide sufficient scholarly resources, facilities and funds for research, they could not spend their limited salaries on research activities such as conference participation or on buying scholarly resources.

Attending conferences is a beneficial way of broadening knowledge by updating new knowledge from presenters. I used to attend many conferences during my time studying in Russia. Currently, the funding for conferences is very limited at this university. So, I wish my salary were higher so that I could have some extra money to self-sponsor my conferences. (L11)

When I was single, I used to spend my personal money to go to conferences and workshops. Since I got married, I have not been able to afford it because the small salary has to cover many expenses in the house. (SL1)

I used to buy a lot of books when I was studying for a doctoral degree overseas because I received a scholarship from the Australian government. Since 2005 when I returned to Vietnam, I have only bought a few books because of my limited budget. (SL5)

My discipline is technology, which requires me to read international journal articles when doing research. However, I am not able to buy such scholarly papers. I often just read paper abstracts, which does not give me a full understanding about that research. (SL4)

Some respondents said that if they received a higher pay rate, they would reduce their number of teaching hours and spend more time on research activities.

My husband and I have set up an interest group to share knowledge with some colleagues and students. However, if we had sufficient finances and did not have to worry about finance, we would invest more effort and time in the interest group. (L9)

When you do not have to worry about living expenses, you can concentrate more on doing research. (L4)

The above results indicated how financial incentive has been considered important for ROU's academics in order to engage in research activities. Although respondents did agree that research was an important function that all academics

should be involved in, financial constraints reduced their engagement in doing research.

6.2.1.2 Research Groups

Joining in a research group has been noted as an opportunity for academics to share knowledge, discuss research ideas, or collaborate in a specific research task. Members of the group can learn from each other as well as motivate/encourage each other to engage in research. The data reflected that ROU has established nine research groups called Teaching-Research Team (TRT). These groups have operated well and produced some good teaching and research outputs. However, nine TRTs just focused on several disciplines and possibly did not meet the demand for participation from academics in other disciplines. Respondents were aware of this matter and suggested that ROU should formally establish some more research groups.

If there were a research group in my discipline, it would be very useful. I used to join a research group when I was studying for a master's degree in the United Kingdom. It creates good chances for every member to learn from each other. (L8)

I see that the TRTs were provided funding support and facilities by the university, so they have some advantages. It seems that members of the TRTs are very supportive in helping each other, therefore they are research productive. I wish we had a TRT in my discipline. (SL3)

The collaborative environment in a research group creates research motivation for all members. The university is examining applications of some groups to formally establish more research groups. (AP2)

Common reasons that academics often use as an excuse for not engaging in research are shortages of time and research resources. The reasons are reasonable but more importantly, academics lack research skills, including me. Joining in a research group or TRT is a good way to improve research skills. (L7)

Some respondents perceived that being a member of a research group has some advantages in terms of the internal support from group members and the support from the university when applying for a research grant.

In my experience, members of a research group have the same research interests, so they can help each other to prepare an application for a research

grant; so, if it is well-prepared, it will have a high possibility of being accepted. (L10)

It is easier for a teaching-research team, than an individual academic, to apply for a research project within and beyond the university. Therefore, it can be seen that members of TRTs often have more research outputs than others. (AP2)

Although many respondents acknowledged the contributions of research groups (teaching-research teams), it was not easy for the university to simply establish many more groups or teams. The establishment depended on the university's budget and facilities for research. Also, the university lacked qualified academics who could maintain the operation of the groups.

I submitted an application to establish a research group in Maths for nearly a year. The university is considering the suggestion because it relates to funds that the university should regularly provide for the group. A research facility for the group is also a matter of interest. (L6)

In order to establish a research group like the TRTs, there must be some doctorates on the foundation board. They must be research productive and be able to lead the research activities of the group. Currently, many disciplines do not have enough doctoral academics. (AP1)

While waiting for the establishment of more research groups, some respondents set up their own interest groups with colleagues and students to share knowledge and undertake research.

I have formed my own teaching and research group since I finished my master's degree overseas. The group includes good undergraduate students who have research ambitions. I guide them to do research gradually to become good researchers when they graduate. They also assist me with some things in my research. (L3)

I and some academics set up an interest group a year ago. Now the group has 10 people, including academics and postgraduate students. We are self-supported. Members encourage each other to conduct research in order to meet the minimal research requirement of the university. (L9)

The data indicated the value of research groups in promoting the engagement of academics in research. It is a platform through which academics can practice research skills together and become more effective in research through the experiences of colleagues.

6.2.1.3 *Postgraduate Training*

Postgraduate training is one of the significant characteristics of a research university. The number of postgraduate programs and postgraduate students reflect the ranking of the university. This becomes critical in the context of ROU.

Although ROU has been increasing the scale²⁶ of postgraduate training in recent years, such training still needs further development.

It is necessary to recruit more qualified master's and doctoral students. They significantly contribute to the scholarly environment of the university.

Academics who are involved in postgraduate training and supervision will automatically become productive in research. (P)

Currently, the number of doctoral programs is still small. A research university must have many doctoral programs. (SL4)

The ranking of the university will be increased if it has many postgraduate training programs and students, particularly doctoral students. (SL2)

I have not been assigned to teach at postgraduate level yet. However, there are some postgraduate students who are studying in my department and who participate in the interest group which I set up for my undergraduate students. It is worth having discussions with them. (L3)

Respondents indicated that postgraduate students can be a source of stimulation, in the way they coerce academics to brainstorm regularly in order to answer students' questions. In that way, academics actively engage in research.

A few postgraduate students actually have research passion. Most of them are Maths teachers so they have good attitudes to learning and research.

Teaching them is challenging so I have to continually update disciplinary knowledge and research skills. (L6)

Doctoral students sometimes ask about something which I have not encountered before. So, I have to continually improve my knowledge by doing research. I am more confident in class if I know more. (SL5)

When supervising postgraduate students, you must do research to be competent in your field. You cannot ignore research while you require

²⁶ Some new postgraduate training programs have been opened in recent years. The number of postgraduate students also increases gradually.

students to do research. I have a group of master's students who regularly work together. We learn a lot from each other. (L6)

The research collaboration between academics and postgraduate students through co-authorship in research will expand the research productivity of students and academics.

Most research universities have a large number of full-time postgraduate students. It is easier and more concentrated for full-time students to study and collaborate with academics in doing research. (P)

I published one paper in a high-ranking international journal with my supervisors when I studied a master's degree in France. I recognised that the collaboration between full-time postgraduate students and supervisors is very beneficial for students and academics. Therefore, this university should require that master's students study fulltime on campus to increase interactions between students and supervisors. (L2)

When I studied a doctoral program at Hue University [in Vietnam], I chose to study full-time at the university although the program was part-time. My supervisors and I co-authored some publications, including articles published in internationally prestigious maths journals. It is very difficult for part-time students to do so. (L6)

From another point of view, postgraduate students can also be good assistants who can offer assistance to supervisors when they do research.

There are some tasks in a research project which I cannot do because I do not have enough time. My master's students help me with some things, for example data collection or experiments. They are good research assistants. (SL4)

I used to be an assistant for my supervisor during my master's and doctoral programs in Australia. My supervisor chose a group of good students to assist him in research. I got much valuable experience from doing experiments in the lab and giving the results to him. (SL5)

The above results showed that respondents recognised the importance of postgraduate training. They experienced the benefits that academics can gain from teaching and supervising postgraduate students in their knowledge development and research productivity.

6.2.2 Discussions of Qualitative Results

The analysis found three significant factors that will positively enhance the research behaviours of ROU's academics: 1) receiving a higher salary than the current level, 2) being involved in a research group, and 3) being involved in postgraduate training and supervision. The above results reflected a connection between the research motivation and the research behaviours of ROU's academics.

First, the current pay rates for academics were very low which did not support their lives. The standard salary for academics was extremely low compared with that for academics in other countries. At present, a new Bachelor degreed person who is recruited into a university and holds a lecturer's position, receives a basic salary of USD 183 per month (level 1), while those with a Master's degree receives USD 146 per month (level 2), and those with a Doctoral degree earn USD 164 per month (level 3) (Chính Phủ, 2013)²⁷. These levels of salary were consistently similar for all academics in institutions in Vietnamese Higher Education without considering whether an institution was a teaching-intensive or research-oriented university. Furthermore, salary was paid based on the qualification that academics obtained. Therefore, it is observed that an academic who obtained a Bachelor degree received the same salary as his/her university friend teaching at a primary school (with a slight variation in allowance because of differences in environment and in the nature of the jobs). In contrast, academics in other countries have high salaries. For example, according to Altbach, Reisberg, and Pacheco (2012), in Australia in 2012, a new academic at entry level received USD 3,930 (associate lecturer-level A) and senior academics (senior lecturer-level C) earned USD 7,499 per month. These pay rates were even lower than the rates that academics in Canada, Italy, South Africa, India and the USA received.

Because of the salary being exceedingly low, ROU's academics had to teach additional hours at the university²⁸, and at other institutions (if any), or at home (private tutoring). The more they taught, the more they earned. This matter can be

²⁷ The standard salary will be increased every three years by the difference between the two levels. Salary increases regularly every three years if academics do not have any punishment. Academics still keep an academic rank for years, until they take an examination to upgrade to a higher level of academic rank.

²⁸ The pay rate for an extra hour of teaching ranges from 150.000 - 200.000 (≈ USD 7.1 - 9.5)

explained by using Maslow's hierarchy of needs, which consists of five basic needs: physiological, safety, love, esteem and self-actualisation (Maslow, 1943). Through this model, it can be seen that academics in Vietnam were still at the lowest level of the hierarchical pyramid, while Western academics might be at level five, which is self-actualisation. Being at the lowest level because of having a low salary, Vietnamese academics focused more on teaching and did not have a high level of intrinsic motivation to undertake research. The research fund was small so academics might not be extrinsically motivated to undertake research too. From the lens of organisational commitment, it is apparent that the low salary has eroded ROU's academics' affective commitment to the research goals of ROU. Currently, it is possible that a majority of academics have normative commitment²⁹ and/or continuance motivation³⁰ to undertake research only.

This finding came as no surprise in the local context of Vietnam, but it raised an alert to policy makers and educational leaders in Vietnam as well as at ROU. If the government wants to develop ROU as a research university, academics must be paid appropriately. It is unreasonable to expect academics to both teach many hours and do research so that the university can achieve its 'political mission' assigned by the authorities, rather than its scholarly mission.

Second, the research group and its variations such as interest groups, special interest group, or teaching-research team (TRT) has become important in all institutions of higher education (Raston, 1998; Teodorescu, 2000). Lewis (2008) considered research groups as social networks or academic networks where group members learn from each other, get each other's advice, and particularly collaborate in research. The results indicated that ROU's academics valued the advantages of being a member of a research group. It provides opportunities for ROU's academics, at all levels of experience and research skills, to get together in order to share their ideas, receive support from colleagues in terms of advice or mentoring, and do research together. The data showed that many of ROU's academics had a low level of research capability and research self-efficacy because a large number of them (84.2%) have not been trained at a doctoral level where they would receive formal

²⁹ Undertaking research as an obligation

³⁰ Considering benefits gained from the research. If the benefit is too small, academics will not do research.

training in research skills. Therefore, by becoming members of a research group, inexperienced academic researchers will be supported, advised, and even mentored by experienced persons. This collaboration, in some ways, was similar to the research training scheme called academic supervision, which is currently carried out by research universities in the West; for example, Griffith University in Australia. At Griffith University, junior academics are supervised by senior academics (generally level D and E) in the first three years of their career at the university. This scheme has aimed to improve performance of new academics in all areas of teaching, research, and service. The practice supports Griffith University in developing and maintaining its high performance teaching and research culture (Griffith University, 2015). The support from members of groups helps to enhance the research confidence, research efficacy, and research motivation of all group members, and that leads to an engagement in research.

Regarding the suggestions related to an increase in numbers of postgraduate students, the data showed that ROU's academics had accurate awareness of the importance of postgraduate training programs and students. A research university is characterised by the number of highly qualified postgraduate programs on offer, and the number of students, including elite students, who are studying at the university. The contribution of postgraduate students to the scholarly learning climate of a university cannot be denied; training postgraduate students can be considered as a means of increasing the disciplinary knowledge of academics and their research productivity through their postgraduate teaching and supervision (Austin, 2002; Marsh & Hattie, 2002).

The research observed that the latest number of postgraduate training programs and postgraduate students (especially the doctoral students) of ROU was still limited. As of 2014, ROU had 32 master's programs and 17 doctoral programs, with the numbers of students at 3,357 and 181 respectively, compared with 78,485 undergraduate students (ROU, 2014a, 2014b).

However, it has not been easy for ROU to increase the number of postgraduate programs and students yet, because of its limited numbers of highly-qualified human resources. Currently, the number of academics who hold a doctoral degree across this university is only 15.8% (as of June 2013), which is low compared with its training mission. With this limited resource and the limited capacity of academics, ROU cannot open as many more postgraduate programs as it wants to do.

In recent years, many academics of ROU have been sent abroad for training at master's and doctoral level. It is predicted that ROU will have a high and qualified number of academics in at least the next ten years to serve the postgraduate training missions of the university.

In summary, the above findings send the urgent message to the leaders and policy makers of ROU and the Ministry of Education and Training of Vietnam that if they want to build ROU to become a research university by 2020, it is crucial to adjust the current policies related to salary and research funding allocation. Also, the Government of Vietnam should provide more scholarships for ROU's academics to be trained overseas, especially at doctoral level. If the above three matters are satisfied, academics might be motivated to engage in research and have publications.

6.3 Data Presentation and Discussions of Quantitative Analyses

This section presents results of the quantitative analyses and discussion of the results. Results of the exploratory factor analysis and correlation analysis will be presented first, and then key findings which came from the regression analysis come at the end.

6.3.1 Exploratory Factor Analysis

This section presents the results of principal axis factoring analysis. There were two scales utilised for the regression analysis in this chapter: the Research Motivation Scale³¹ and the Research Behaviour Scale.

6.3.1.1 Research Behaviour Scale

The Research Behaviour Scale (RBS) was a result of two principal axis factoring (PAF). The first PAF was run with 10 measured variables related to research behaviours mentioned in the questionnaire. Two factors (sub-scales) were identified based on rotation converged in six iterations, accounting for 49.17% of variance. Among the 10 variables, three variables (13F-discussing with academics from other universities in Vietnam, 13G-discussing with researchers from foreign universities, and 13H-supervising undergraduate students to write theses) had a low loading (<.4) so they were removed from the list of measured variables.

In the second PAF, seven remaining variables were considered in the analysis. Two factors were extracted based on rotation convergence in four iterations, accounting for 59.41% of variance. All items had a suitable loading (> .6). All other factor analysis criteria were upheld: the Kaiser-Meyer-Olkin measure of

³¹ This scale was created in Chapter Five

sampling adequacy (.79), and the Bartlett's test of sphericity, which was significant ($\chi^2(21) = 1613.94, p < .05$). Items were correlated to at least one other item by at least .4. The communalities of variables ranged from .50 to .70. Finally, the research behaviour scale consisted of two extracted factors: Research Collaboration and Postgraduate Supervision. Two factors, their variables, and variables' loading are presented in Table 6.1.

Table 6.1

Factors of Principal Axis Factoring and Loading Values of the Research Behaviour Scale

Factored variables	Extracted Factors	
	Research Collaboration	Postgraduate Supervision
Q_13.B_Seeking advice from experienced colleagues to improve research capability.	.866	
Q_13.A_Discussing with colleagues to find research ideas.	.827	
Q_13.C_Asking colleagues to review manuscripts.	.738	
Q_13.D_Collaborating with colleagues to do research.	.663	
Q_13.E_Giving feedback on manuscripts of colleagues.	.612	
Q_13.I_Supervising master's students to write theses.		.830
Q_13.J_Supervising doctorate students to write dissertations.		.739

* Suppression of loadings <.2. Literally, there was no cross loading among factored variables.

The factor named "Research Collaboration" included five variables related to pro-active activities which ROU's academics might do regularly as a preparation for their research or as a way to improve their research skills. The items indicated a multi-directional collaboration between academics: asking for advice from colleagues to develop research ideas and skills, giving advice to colleagues, or collaborating with colleagues to do research. All these behaviours are important in enhancing their research skills, and in building a supportive and collaborative research climate within the university departments.

The factor named "Postgraduate Supervision" consisted of two variables that reflected the significant contribution of postgraduate supervision to enhancing the research performance and the research productivity of ROU's academics. At

Master's and Doctoral level, the interaction between postgraduate students and academics might be considered a two-way interaction that brings benefits for both students and academics in terms of research outputs.

These two factors were used as dependent variables in the regression analysis. From the conceptual framework of study, it was predicted that these two research behaviours would be impacted by the research motivation of academics. It might be an extrinsic motivation, intrinsic motivation, normative motivation, and/or status motivation to undertake such research behaviours.

6.3.1.2 Reliability of the Research Behaviour Scale

In order to evaluate the reliability of the scale, the Cronbach's coefficient alpha was used to calculate the internal consistency of two extracted factors. The alpha values are presented in Table 6.2.

Table 6.2

Reliability Coefficients of Scale's Factors

Factors	Number of factored variables	Reliability coefficient (α)
1. Research Collaboration	5	.857
2. Postgraduate Supervision	2	.750

The alpha values of two factors were greater than .7 which was acceptable (Cronbach, 1951). It indicated that there was sufficient internal consistency among the variables which combined the factors. So, two factors were reliable to use in further inferential analysis.

6.3.2 Correlation Analysis

Correlation analysis was done between four types of research motivation and three research behaviours of ROU's academics. Besides two newly created research behaviours (research collaboration and postgraduate supervision), there was another single research behaviour named "Weekly research hours" which was originally designed in the questionnaire. It was used in this correlation analysis as well as in the regression analyses afterward. Pearson correlation coefficients and significant values are presented in Table 6.3.

Table 6.3

Correlations between Research Motivation and Research Behaviours

		Research Collaboration	Postgraduate Supervision	Weekly Research Hours
Extrinsic motivation	Pearson Correlation	.039	.159**	.051
	Sig. (2-tailed)	.377	.000	.244
Intrinsic motivation	Pearson Correlation	.266**	.117**	.196**
	Sig. (2-tailed)	.000	.007	.000
Status motivation	Pearson Correlation	.112*	.089*	.094*
	Sig. (2-tailed)	.010	.041	.031
Normative motivation	Pearson Correlation	.285**	.142**	.236**
	Sig. (2-tailed)	.000	.001	.000

N = 526.

The correlation analysis revealed that intrinsic motivation, status motivation, and normative motivation were positively correlated with all three research behaviours. On the contrary, extrinsic motivation reported only one correlation with postgraduate supervision. Interestingly, the data showed a common pattern in the correlations between intrinsic motivation, status motivation, and normative motivation and three research behaviours. Specifically, they had the strongest correlation with research collaboration, then with weekly research hours and lastly with postgraduate supervision.

Another interesting finding from the results was that extrinsic motivation was correlated with postgraduate supervision only. Furthermore, among the four types of research motivation which had correlations with postgraduate supervision, extrinsic motivation scored the largest coefficient value ($r = .159$, $p = .000$). The results showed that among the four types of research motivation, status motivation always had the least influence on all three research behaviours.

In general, the correlation results initially supported the prediction of this study that the research behaviours of ROU's academics were influenced by their research motivation. The more ROU's academics became motivated to research, the more frequently they collaborated with colleagues, supervised postgraduate students, and spent time on undertaking research.

6.3.3 Regression Analysis

Three regression analyses were conducted to test three hypotheses. Results are presented in three sections aligned with the hypotheses. The results presented below are those of the second (final) regression analysis, where the assumptions of univariate outliers and multicollinearity were satisfactory. In the first regression analysis, the assumptions of univariate outliers and multicollinearity were examined by checking the values of Cook's distance and Mahalanobis distance. Some variables that caused the assumptions to be unsatisfactory were excluded from the dataset before the second regression analysis was run in order to avoid the outliers. The assumption of multicollinearity was satisfactory³²

6.3.3.1 Research Hypothesis One

H₀1: There is no correlation between any type of research motivation and research collaboration of ROU's academics.

6.3.3.1.1 Results

This hierarchical multiple regression (HMR) was conducted to identify which types of research motivation of ROU's academics impacted the behaviour of research collaboration. Personal characteristics including age, gender, academic rank, highest qualification, and highest level of teaching were used as control variables in the HMR. Variables were entered into the regression in three steps. At step one, five personal variables were entered into the model. At step two, two research behaviours: postgraduate supervision and weekly research hours were entered into the model. Lastly, four types of research motivation were entered into the regression to form the final model. The model summary, ANOVA, and coefficients are presented in tables below.

Table 6.4

Model Summary of Research Collaboration

Model	R		Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
	R	Square				F	Change	df1	
1	.377	.142	.133	.58734	.142	16.424	5	497	.000
2	.426	.181	.170	.57476	.040	11.997	2	495	.000
3	.487	.238	.220	.55699	.056	9.023	4	491	.000

³² Related details are not presented here because of the thesis's limited length.

Table 6.4 illustrates the summation of the HMR three models which determined factors influencing research collaboration. Model one explained 14.2% of the variation in research collaboration and was significant at $p = .000$. Model two explained an additional 4.0% and was significant at $p = .000$. Model three explained another 5.6%, in which the R Square accumulated to a total of 23.8% of the variance in research collaboration and was also significant at $p = .000$. The final model's result meant that 23.8% of the variability in research collaboration was accounted for uniquely by the factors in the final model. The adjusted R Square was .220, which indicated that if this model was derived from the whole population of ROU, it would account for approximately 1.8% less variance in research collaboration. In summary, the overall model was successful in predicting the influences of factors entered for the regression on research collaboration of ROU's academics.

Table 6.5

ANOVA – Research Collaboration

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.330	5	5.666	16.424	.000
	Residual	171.451	497	.345		
	Total	199.781	502			
2	Regression	36.256	7	5.179	15.679	.000
	Residual	163.525	495	.330		
	Total	199.781	502			
3	Regression	47.454	11	4.314	13.905	.000
	Residual	152.327	491	.310		
	Total	199.781	502			

Table 6.5 indicates that there was a significant effect from all predictor variables considered in the regression on research collaboration. The final model's F-ratio (11, 491) was 13.905, and the model was significant at $p = .000$. This F value was considered a way of strengthening the significance of the final model. Specific coefficient values are presented in Table 6.6.

Table 6.6

Coefficients – Research Collaboration

Model		Standardized Coefficients Beta	t	Sig.
1	(Constant)		22.360	.000
	Age	-.269	-3.757	.000
	Gender	-.278	-6.527	.000
	Academic rank	.107	1.649	.100
	Highest qualification	.259	4.680	.000
	Highest level of teaching	.006	.113	.910
2	(Constant)		20.599	.000
	Age	-.210	-2.952	.003
	Gender	-.230	-5.343	.000
	Academic rank	.094	1.470	.142
	Highest qualification	.191	3.370	.001
	Highest level of teaching	-.071	-1.207	.228
	Postgraduate Supervision	.123	2.105	.036
	Weekly research hours	.193	4.527	.000
3	(Constant)		7.319	.000
	Age	-.190	-2.696	.007
	Gender	-.191	-4.423	.000
	Academic rank	.082	1.298	.195
	Highest qualification	.172	3.075	.002
	Highest level of teaching	-.051	-.896	.371
	Postgraduate Supervision	.100	1.766	.078
	Weekly research hours	.135	3.176	.002
	Extrinsic motivation	-.123	-2.812	.005
	Intrinsic motivation	.134	2.875	.004
	Status motivation	.044	.990	.323
	Normative motivation	.140	2.979	.003

Table 6.6 presents the standardized coefficients, beta values, t values, and significant values of factors in all models but the focus will be on factors of the final model. The data showed that among the personal factors, while age and gender were negatively correlated with research collaboration, qualification was positively correlated with the outcome.

The results showed that intrinsic motivation ($\beta = .134$, $p = .004$) and normative motivation ($\beta = .140$, $p = .003$) were positively correlated with research collaboration. In contrast, extrinsic motivation ($\beta = -.123$, $p = .005$) was negatively

correlated with the outcome. It is noted that normative motivation had the largest beta value among the three significant research motivational factors.

Other control variables that were significantly correlated with research collaboration: weekly research hours ($\beta = .135$, $p = .002$), highest qualification ($\beta = .172$, $p = .002$), gender ($\beta = -.191$, $p = .000$), and age ($\beta = -.190$, $p = .007$).

6.3.3.1.2 *Discussions*

Seven predictors of research collaboration belonged to three groups of variables: motivational factors, behavioural factors, and personal factors. Such factors were significant to predict the frequency at which ROU's academics might do the following five activities: a) discussing with colleagues to find research ideas, b) seeking advice from experienced colleagues to improve research capability, c) asking colleagues to review manuscripts, d) collaborating with colleagues to do research, and e) giving feedback on manuscripts of colleagues.

Regarding the significance of intrinsic motivation and normative motivation, through the factored variables of these two factors, it was easy to understand why they had such positive correlations with research collaboration. ROU's academics were intrinsically motivated to being involved in research collaboration because they wanted to satisfy their personal need to stay current in the field, to contribute to the field, and for creativity or curiosity (Chen et al., 2006). Similarly, academics who had normative motivation considered research as the most important task of academics, so they engaged in it to increase disciplinary knowledge and teaching quality. Normatively motivated academics also considered research as a responsibility or obligation that they have to do (see Table 5.6 in factor analysis). All factored variables indicated that such motivated academics recognised the benefits of research to their personal career development and teaching quality. Being intrinsically and normatively motivated to research, in particular to research collaboratively, ROU's academics had much passion to do collaboration in research. They took every opportunity to learn from colleagues, to help colleagues, or to co-author with colleagues through collaborative research activities. Blackburn et al. (1991) indicated that if academics have chances to communicate or socialise with each other, their research competence will be increased, which then continually motivates them to engage in many other research activities. The collaborative research activities would only occur in a department which has a supportive (good) supportive research climate (Bland & Ruffin, 1992). In such a department,

experienced academic researchers and academics who had a high qualification should become research champions for everyone in the department to follow. Bland et al. (2005) particularly emphasised the role of the departmental leaders in creating a positive research climate within the department. All of these behaviours will promote intrinsic motivation and normative motivation for the research of academics.

Regarding extrinsic motivation, the result reported that when the level of extrinsic motivation increased, ROU's academics were less frequently collaborating with their colleagues. Previous studies, such as those by Smeby and Try (2005) and Chen et al. (2006), indicated that academics who were highly motivated to research would engage more in research activities and then produce more publications. These researchers did not identify exactly the type of research motivation that academics had. The factor analysis in this study discovered that ROU's academics were extrinsically motivated to research because they wanted to have the following four external rewards: 1) to be promoted to senior lecturer or superior lecturer, 2) to be granted the title of associate professor or professor, 3) to have a higher salary, or 4) to be appointed to a managerial position at department, college, or university level.

Research productivity has become one of the key characteristics of job promotion, salary increase, and professorial appointment at universities globally. So, the above-mentioned four rewards were often very competitive. Some of ROU's academics might not want to share research ideas with others (through research collaboration) or to help others have publications. This is because they are afraid of losing competitive opportunities to be promoted to a higher academic rank / professorship, or to increased salary. Furthermore, the practice of being given research credits (points) in Vietnam can be used to explain this hesitation. In Vietnam, every co-author of a research paper is attributed an equally divided percentage of a credit given to the paper. For example, an international peer-reviewed paper in a highly prestigious journal is credited for one point. If there are four co-authors in that paper, each person will be received only 0.25 point. However, this practice does not apply to research members who participate in a research project. In a research project, only the chief investigator will be granted a full credit, while no other team members have any acknowledgement. Therefore, there are two possible reasons for the negative correlation between extrinsic motivation and research collaboration at this point. On one side, some academics who do research for extrinsic rewards try to do have solo research outputs in order to

get a full credit which can be used for their promotion or rewarding purposes. On the other side, few people want to collaborate with academic researchers who are the chief investigators in a research project because their participation is not rewarded.

Regarding the factor of weekly research hours, its positive correlation with research collaboration indicated that the more hours ROU's academics allocated to their research activities, the more likely that they would use such allocated time for research to discuss with colleagues, get advice from colleagues, and to collaborate with others. Sadler (1999) emphasised the importance of regular hours which academics spend on research in order to create high research productivity. It is possible that when academics spend an appropriate amount of time for research, their research ideas will automatically emerge and be developed. Consequently, they become more research productive.

In relation to qualification, the result reaffirms the finding in Chapter Five that ROU's academics who hold a higher qualification always have a higher level of research motivation than others. The qualitative findings above in this chapter also found that higher qualified academics were very active in research, for example they self-established their own interest groups to share knowledge, support each other, and do research together to meet the requirements of ROU. Rodgers and Neri (2007) found that higher degree holders are often very productive, especially in the first five years after they graduated from a postgraduate program. This finding of Rodgers and Neri exactly reflects the cases of academics who self-established interest groups as mentioned (L3, L6, and L9). So, it is apparent that when academics obtain a high qualification, especially a doctoral degree, they are more likely to collaborate with other colleagues in research. They are better equipped than their colleagues in terms of both disciplinary knowledge and research skills. Also in the qualitative findings, some respondents who have been trained at doctoral level overseas in a highly developed country will normally have higher research expertise, skills, and self-efficacy than respondents who studied domestically³³. These qualified academics also often play key roles in research projects, or are at the cutting edge in the research field of their discipline. They also contribute significantly to the research climate of a department (Smeby & Try, 2005).

³³ This is not absolutely the case because there are some people who have a domestic degree who are better than people returning from overseas.

Regarding gender, male academics of ROU engaged more frequently in the socialisation of research, exchange of ideas, and collaboration with colleagues than their female colleagues. This confirmed the finding of Lewis (2008) that there are gender differences in the way that males and females value the benefits of networking. The findings were similar to that which was found in Chapter Five too: those female academics of ROU had a lower level of research motivation than their male counterparts did. Previous studies have also proved that female academics were less productive in research than their male colleagues did because of their familial responsibilities that result in limited time for research.

Regarding age, the results indicated that when academics get older, the frequency of their research collaboration with colleagues decreases accordingly. This is true because this research found that old³⁴ academics at ROU had a lower level of research motivation than their young colleagues (see Chapter Five). From a positive viewpoint, it is possible that older academics at ROU had sufficient research experiences and skills, to the extent that they no longer wanted to be involved in any research collaboration such as seeking advice from colleagues or getting their manuscripts reviewed by others. At that age, they may be able to execute research independently and publish papers as sole authors without collaborating with others. This prediction is not always the case for all old academics, however, because research experiences and skills can only be obtained if academics have regular engagement in research activities despite their old age.

ROU's academics are motivated in different ways to perform research collaboration. Each way applies to a particular type of person depending on their goals and purposes at a specific period in their academic life. If ROU's leaders are able to recognise the types of research motivation which exist in each academic, they will have specific solutions to increase academics' research motivation in the future.

6.3.3.2 Research Hypothesis Two

H₀2: There is no correlation between any type of research motivation and postgraduate supervision of ROU's academics.

6.3.3.2.1 Results

Standard regression analysis was chosen to identify which types of research motivation of ROU's academics impact the behaviour of ROU's academics'

³⁴ The adjective 'old' was used just to indicate age of academics, without any bias.

postgraduate supervision. Before the standard regression, an HMR had been previously tried³⁵, but the final model, which could not identify the significance of research motivational factors, was not significant; so, the standard regression was conducted. The model summary, ANOVA, and coefficients of the standard regression are presented and discussed below.

Table 6.7

Model Summary – Postgraduate Supervision

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change
						F Change	df1	df2	
1	.204 ^a	.042	.034	.84331	.042	5.676	4	521	.000

a. Predictors: (Constant), Normative motivation, Extrinsic motivation, Status motivation, Intrinsic motivation.

Table 6.7 shows that this single model explained only 4.2% in analysing postgraduate supervision and was significant at $p = .000$. The result indicates that the model can be used to predict the frequency with which academics do supervise postgraduate students. The adjusted R Square of .034 meant that if this model was derived from the whole population of ROU, it would account for only 3.4% of the variation in postgraduate supervision. In summary, the overall model was successful in predicting the influences of its factors on postgraduate supervision of ROU's academics.

Table 6.8

ANOVA – Postgraduate Supervision

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	16.146	4	4.037	5.676	.000
	Residual	370.525	521	.711		
	Total	386.671	525			

Table 6.8 shows the significant effect of all types of research motivation as predictors of postgraduate supervision. The F-ratio (4, 521) was 5.676, and the model was significant at $p = .000$. This means that without the influences of other factors, four research motivational factors can be used to predict the outcome if they stand alone. In predicting the frequency of postgraduate supervision, there are many other factors in the university environment which have a strong effect on the

³⁵ This point is discussed in the conclusion.

outcome, not only types of research motivation. Motivation is a means to an end in this case. Specific coefficient values are presented in Table 6.9.

Table 6.9

Coefficients – Postgraduate Supervision

Model	Standardised Coefficients Beta	t	Sig.
(Constant)		.555	.579
Extrinsic motivation	.136	2.915	.004
Intrinsic motivation	.043	.873	.383
Status motivation	.004	.092	.926
Normative motivation	.104	2.147	.032

Table 6.9 shows that extrinsic motivation and normative motivation were positively correlated with postgraduate supervision. They were statistically significant at $p = .004$ and $p = .032$ respectively. Extrinsic motivation played a more important role in prediction of the outcome than normative motivation ($\beta = .136$ vs $\beta = .104$). Intrinsic motivation and status motivation did not make any contribution in this case. In general, the results indicated the importance of research motivation in the engagement of ROU's academics in postgraduate supervision.

6.3.3.2.2 Discussions

Postgraduate supervision in this study related to the two following activities of academics: 1) the frequency of academics' supervision of Master's students when they are writing a thesis and 2) the frequency of academics' supervision of Doctoral students when they are writing a thesis. Before discussing the contribution of extrinsic motivation and normative motivation to postgraduate supervision, it is necessary to examine the descriptive results of two factored-variables to see the frequency with which ROU's academics engaged in postgraduate supervision.

Table 6.10

Descriptive Statistics – Variables of Postgraduate Supervision

Variables	Min (Never)	Max (Often)	Mean	Std. Deviation
1. Frequency of supervising master's students to write theses	1	4	1.58	1.099
2. Frequency of supervising doctoral students to write theses	1	4	1.29	.795

$N = 526$.

Table 6.10 shows that the mean of master's student supervision was 1.58 and the mean of doctoral student supervision was 1.29. These values were small when

compared with the maximum value of each variable. The values indicated that ROU's academics seldom engaged in postgraduate supervision. The standard deviation was considered large compared with the mean. This result revealed that there were great differences in the frequency with which participants supervised postgraduate students (as in Figure 6.1).

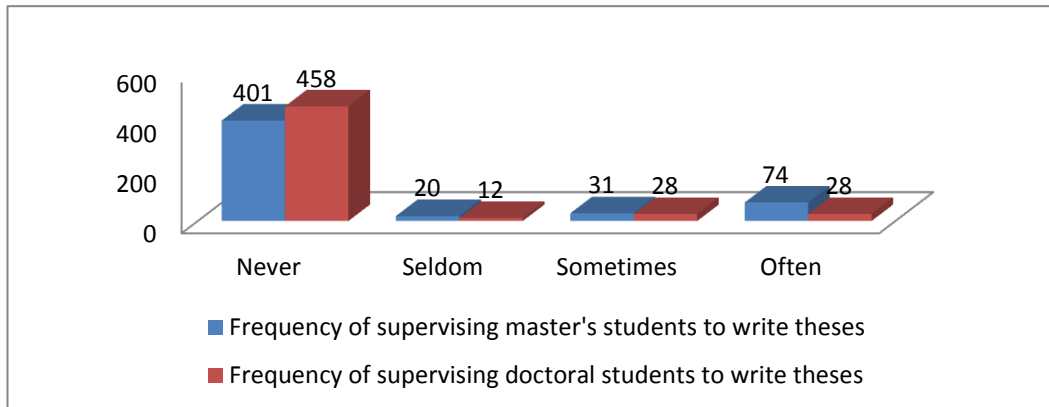


Figure 6.1 Frequency of postgraduate supervision

Figure 6.1 reveals that 401 of ROU's academics who participated in this study (76.2%) have never supervised a Master's thesis. The number of ROU's academics who have never supervised a Doctoral thesis was 458 (87.1%). If the numbers of people in both categories who responded with 'seldom' was added together, the total number of ROU's academics who have never supervised a postgraduate student would be higher. Looking at the data, someone could easily conclude that ROU's academics were not intrinsically motivated to supervise postgraduate students.

However, it must be remembered that in order to supervise postgraduate students, an academic must hold a Doctoral degree. In some fields at ROU in which there were not enough Doctoral holders to supervise Master's students, some academics who obtained a Master's degree overseas were allowed to supervise domestic Master's students. As previously indicated, the number of Doctorate holders in the sample for this study was just 118 persons (22.4%)³⁶. Although this number of qualified academics is already been low, not all of the 22.4% were eligible to supervise postgraduate students, despite their high levels of motivation to supervise. The reasons were that not all Doctorate holders have research experience, supervision experience, and competent knowledge of their disciplines. Many of

³⁶ The percentage of Doctoral academics of the whole university is much lower, only 15.4%.

them might have just finished a Doctoral degree. They themselves were even not able to undertake research independently. Actually, most Doctoral graduates are just novice researchers, and they need to learn more from other experienced colleagues and actively do research in order to become experienced researchers.

Regarding the significant correlation between extrinsic motivation of ROU's academics and postgraduate supervision, looking through factored variables which constituted this factor, it can be predicted that some academics supervised Master's and Doctoral students because they wanted to be promoted to a higher rank, get a professorship, be appointed to a managerial position, or get a higher salary. To some extent, this prediction is true because postgraduate supervision is one of the important criteria for calculating research credits (points) when applying for a promotion from lecturer to a higher academic rank such as senior lecturer or superior lecturer, or for a professorship title such as associate professor and professor. In practice, in Vietnamese Higher Education, when an academic has a high academic rank and/or a professorship title, the person might easily be appointed to a managerial position at department, college, or university level. They will have many benefits from such appointment, such as a higher salary and other income opportunities. That is the reason why some academics try to be research productive: to obtain a doctoral degree, and/or to get a professorship title as a mean of being promoted to a high position in the management of the university. However, their research productivity often decreases after they get a promotion or a new appointment for two reasons. First, they are too busy with the responsibilities in the management and do not have time for research anymore. Second, they have obtained the goal, for example a title of professor for life, so they do not devote time and effort for research anymore. Furthermore, at ROU specifically, and at all universities in Vietnam in general, the payment which academics receive is positively correlated with the number of postgraduate students they supervise. The more students they supervise, the higher the income they will receive.

Regarding the significant correlation between normative motivation of ROU's academics and postgraduate supervision, the factored variables of this factor revealed that ROU's academics supervised postgraduate students because they thought research was the most important task of academics in higher education. Engagement in supervision can increase their knowledge and enhance their teaching quality. The descriptive statistics of these factored variables are presented in Table 6.11.

Table 6.11

Descriptive Statistics – Variables of Normative Motivation

	Min (Strongly disagree)	Max (Strongly agree)	Mean	Std. Deviation
1. Doing research is the most important task of academics	1	4	3.32	.707
2. Doing research increases my knowledge	1	4	3.79	.438
3. Doing research enhances my teaching quality	1	4	3.63	.552

N = 526.

Through the mean of three variables in Table 6.11, it can be seen that participants recognised the importance of doing research. For that reason, some people were normatively motivated to postgraduate supervision. Through postgraduate supervision, academics continually update their knowledge to provide good guidance to students. Through self-learning activities which academics conducted to serve their supervision, they improve their knowledge and teaching quality. Sometimes, the interaction between academics and students can bring intellectual benefits for both. For example, postgraduate students can be sometimes good research assistants for supervisors in a research team. In other cases, postgraduate students can do experiments (as the interviewee SL4 indicated above), review literature review, collect data, or even analyse data. Supervisors might be so busy that they cannot do everything related to a research project, so they need research assistants. This practice is very common in the field of sciences, engineering, and technology. In some other cases, supervisors do not necessarily know how to use certain equipment, or apply a specific data analysis approach (quantitative or qualitative), but their students might have some mastery of such matters. It is clear that such activities might bring benefits for both students and academics in the course of postgraduate supervisions. Wegener, Meier, and Ingerslev (2014) believed that postgraduate supervision has great benefits for both academics and students.

Another reason for the significant correlation between normative motivation and postgraduate supervision was the shortage of highly qualified academics at ROU. In order to supervise postgraduate students, academics must hold a doctoral degree and have research experiences as well as supervision experiences. While ROU was short of Doctoral holders, at the same time, the academics had to supervise

many postgraduate students. Their behaviour in this context can be seen as normative commitment to the research goal of the university.

In short, the results displayed how the level of extrinsic motivation and normative motivation of ROU's academics influenced the behaviour of postgraduate supervision. However, having research motivation is just a necessary condition and not sufficient. It does not mean that anyone who has high motivation to supervise postgraduate students will be allowed to do so or will be able to do so. Supervision of postgraduate students requires ROU's academics to have good research skills, research experiences, and experiences in supervising students.

6.3.3.3 Research Hypothesis Three

H_{03} : There is no correlation between any type of research motivation and the weekly research hours of ROU's academics.

6.3.3.3.1 Results

This HMR was conducted in order to identify which types of research motivation of ROU's academics impact the behaviour of the factor, the weekly research hours. Seven variables were entered into the analysis in three steps. At step one, five personal variables were entered into the model as control variables. At step two, two research behaviours, research collaboration, and postgraduate supervision, were entered into the model because they have internal correlation with weekly research hours. At step three, four types of research motivation were entered into the last model. The model summary is below.

Table 6.12

Model Summary of the Weekly Research Hours

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.215 ^a	.046	.037	11.45839	.046	4.872	5	501	.000
2	.260 ^b	.068	.055	11.35177	.021	5.728	2	499	.003
3	.318 ^c	.101	.081	11.19257	.033	4.574	4	495	.001

a. Predictors: (Constant), Highest level of teaching, gender, academic rank, highest qualification, age

b. Predictors: (Constant), Highest level of teaching, gender, academic rank, highest qualification, age, research collaboration, postgraduate supervision

c. Predictors: (Constant), Highest level of teaching, gender, academic rank, highest qualification, age, research collaboration, postgraduate supervision, status motivation, intrinsic motivation, extrinsic motivation, normative motivation.

Table 6.12 shows the summary of three models that determined factors influencing the weekly research hours of academics. Model one explained 4.6% of the variation in this behaviour and was significant at $p = .000$. Model two explained an additional 2.1% and was significant at $p = .003$. The final model explained another 3.3%, which accumulated a total of 10.1% of the variance in the weekly research hours and was also significant at $p = .001$. The final model's adjusted R Square was .081 which meant that if this model was derived from the whole population of ROU, it would account for 2% less variance in the dependent variable. In summary, the overall model was successful in predicting the influences of personal and motivational factors on the number of hours which academics would spend weekly for research activities.

Table 6.13

ANOVA – the Weekly Research Hours

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3198.098	5	639.620	4.872	.000
	Residual	65778.699	501	131.295		
	Total	68976.797	506			
2	Regression	4674.263	7	667.752	5.182	.000
	Residual	64302.533	499	128.863		
	Total	68976.797	506			
3	Regression	6966.375	11	633.307	5.055	.000
	Residual	62010.422	495	125.274		
	Total	68976.797	506			

Table 6.13 indicated that all three models were significant and confirmed their contribution to the outcome. The final model had the F-ratio value $F(11, 495) = 5.055$, and was significant at $p = .000$. Because the weekly research hour variable was a continuous variable, through the F-ratio value, we can assume that on average, an academic spends about 5.055 hours for research per week.

Table 6.14

Descriptive Statistics – the Weekly Research Hours

	N	Min	Max	Mean	Std. Deviation
The weekly research hours	526	.00	90.00	11.6863	11.74987

Table 6.14 reveals that there were some academics that did not spend any time on research, while some spent many hours on research, with some indicating up to 90 hours per week. The value of 90 hours per week seemed to be an outlier.

However, when examining the number of hours which such academics spent on teaching, I found that their teaching hours were extremely low or zero. As a result, it was predicted that such academics were studying a fulltime postgraduate program, so that they self-reported that they spent many hours on research. However, in the analyses, these extreme values were left out to ensure the appropriateness of results. Significant factors and coefficient values of regression models are presented in Table 6.15.

Table 6.15

Coefficients – the Weekly Research Hours

Model		Standardised Coefficients Beta	t	Sig.
1	(Constant)		6.265	.000
	Age	-.203	-2.708	.007
	Gender	-.136	-3.037	.003
	Academic rank	.009	.129	.897
	Highest qualification	.145	2.511	.012
	Highest level of teaching	.013	.235	.814
2	(Constant)		2.146	.032
	Age	-.170	-2.250	.025
	Gender	-.103	-2.210	.028
	Academic rank	.001	.009	.993
	Highest qualification	.116	1.910	.057
	Highest level of teaching	.041	.650	.516
	Research Collaboration	.156	3.333	.001
	Postgraduate Supervision	-.055	-.858	.391
3	(Constant)		-1.508	.132
	Age	-.130	-1.697	.090
	Gender	-.061	-1.296	.196
	Academic rank	-.015	-.215	.830
	Highest qualification	.089	1.470	.142
	Highest level of teaching	.043	.701	.483
	Research Collaboration	.102	2.113	.035
	Postgraduate Supervision	-.068	-1.081	.280
	Extrinsic motivation	.006	.117	.907
	Intrinsic motivation	.095	1.896	.059
	Status motivation	.026	.540	.589
	Normative motivation	.129	2.521	.012

The final model in Table 6.15 indicates that only two factors were significantly correlated with the weekly research hours: normative motivation ($\beta = .129, p = .012$) and research collaboration ($\beta = .102, p = .035$). Intrinsic motivation was nearly significant because its $p = .059$ was just a bit above the .05 level.

6.3.3.3.2 *Discussions*

Regarding the significant correlation between normative motivation of ROU's academics and their weekly research hours, this might be due to academics having considered research as a means of increasing their knowledge, teaching quality, or as an obligation that they have to fulfil. Academics perceived the benefits of research to their teaching, which Brew (2003) called research-led teaching (which means they spent time to do research in order to support their teaching effectiveness and quality). Actually, academics' engagement in research activities is not only for getting external rewards such as promotion, but also for improving their disciplinary knowledge. Despite the debate about the role of teaching and research in a university, teaching is always a main function of academics at the university (Ramsden, 1998a). Doing research is a way to broaden the knowledge of academics, which assists the transfer of such knowledge to their lectures and makes their lectures more informed and interesting for students. By undertaking research, academics can convey new knowledge in the field or update their research results to students. The activities provide students with motivation to learn, as they are always updated with new information from lecturers. Student evaluation of teaching is mostly based on the quality of teaching that academics perform in classroom, and not on the research productivity of academics. For these reasons, Brew (2006, p. 144) confirmed that "there is no doubt that a strong clear statement of intent to integrate research and teaching in some way is the cornerstone of initiatives to develop inclusive scholarly knowledge-building communities within specific universities". Despite how productive in research, academics must deliver high quality lectures in class in order to increase student learning outcomes. In practice, there were some academics that were good at research but poor in teaching, so that they often received complaints from students. Accordingly, Grove (2015, p. 1) reported results from students in the UK who said that "lecturers with formal teaching qualifications are valued by students far more highly than those who are active researchers".

Additionally, the positive correlation between normative motivation of ROU's academics and their weekly research hours might come as a consequence of

the pressure given by ROU. According to university policies, doing research has become a compulsory function that academics have to execute, together with teaching and other administrative tasks (if any). In recent years, the university has tried solutions to change role expectations for academics from teaching-dominated to research oriented. The university placed increased pressure on academics to intensify their research activity. However, this study found that a large number of academics focused on teaching and were not really motivated to do research because of heavy teaching loads, low income from research being counterproductive to their teaching, the lack of support from the university, and no research climate within their departments. The university was operating as a teaching-dominated university where many academics were teaching-only staff. It was difficult to press them into suddenly engaging in research by spending more time on it. Recognising this fact, few departments have been building a supportive research climate within themselves, and have been continually supporting academics to achieve research missions by establishing research groups and offering working spaces on campus for academics. After the allocation of spaces for academics, such departments require academics to spend a certain number of hours every week working on campus for research activities. By doing it this way, staff share a research community together and increase their weekly research hours as required. However, because of the shortage of infrastructure and facilities, just a few departments can manage this matter, while many others cannot.

Regarding research collaboration, its correlation with weekly research hours confirmed the close relationship between two factors. Weekly research hours were seen as a significant predictor of research collaboration in Section 6.3.3.1. Research collaboration reflected activities that academics often do in preparation for their main research tasks. The activities consisted of a) discussing with colleagues to find research ideas, b) seeking advice from experienced colleagues to improve research capability, c) asking colleagues to review manuscripts, d) giving feedback on manuscripts of colleagues, and e) collaborating with colleagues to do research. The more academics want to be involved in such pro-research activities, the more they make time for it. Previous studies have indicated that collaboration between academics in a department would create mutual understanding and trust from each other as well as stimulate research motivation for them. It is predicted that such motivated academics will spend reasonable, as well as regular, amounts of time for

research every week in order to produce publications. Undertaking research is a demanding task which requires academics to allocate enough time for it in order to read materials, write a manuscript, and edit it. If these activities occur weekly, research habits will automatically be formed. Research is a tough task which requires hard work and persistence from academics. If there is a collaborative research climate in a department which academics feel excited to be part of, to share ideas, discuss ideas, and get advice from colleagues, academics will feel comfortable and motivated to collaborate with colleagues. Also, a department should organise regular research seminars or research groups via which academics can get together for discussion. In that way, they will spend more time on research, which leads to high research productivity as the outcome.

The results of this regression analysis determined that research collaboration and normative motivation were significant predictors of weekly research hours. It was believed that if ROU created a good research climate in every department, and provided good support for academics in terms of time to undertake research and facilities, academics would spend more hours on research activities in order to improve their teaching quality. Although intrinsic motivation was not significant for weekly research hours in this study, it is predicted that intrinsic motivation is also an important factor which can be used to predict the number of research hours of academics, but for some reasons it was not significant in this regression analysis. The engagement of academics in research activities will become more active and productive if they have intrinsic motivation, and not just normative motivation. Their passion and commitment to research activities will increase their productivity.

6.4 Summary

This chapter identified that a rewarding pay rate structure, the availability of research groups within the university, and the high number of postgraduate students at ROU, generally enhance research behaviours of ROU's academics. These qualitative findings were confirmed by the findings in the quantitative analyses that operationalised the concept of research behaviours into three particular behaviours: research collaboration, postgraduate training, and weekly research hours. Each of these behaviours was influenced by, or associated with, some type of research motivation and personal factors. The findings created the following pattern:

- Intrinsic motivation was associated with research collaboration only

- Extrinsic motivation was associated with both research collaboration and postgraduate supervision
- Normative motivation seems the most powerful predictor in the context of ROU because it was associated with all three research behaviours.
- Status motivation was a new type of research motivation which was explored by the factor analysis in this study, but it did not have any association with the research behaviours examined.

Although all types of research motivation are important, there is no doubt in saying that intrinsic motivation to undertake research might be the most important motivational factor to increase the engagement of ROU's academics in research. Academics who have research passion will always devote their time, resources, and effort to research. They might also be happy to support colleagues, for example by giving advice or reviewing a manuscript, in the department or in a research group. The qualitative findings also reflected that those who have intrinsic motivation, established interest groups to share knowledge with their colleagues and students. It is also particularly noted that only those who have intrinsic motivation significantly contributed to research collaboration. Then, research collaboration was considered as a good input for postgraduate supervision and weekly research hours.

Chapter 7

Data Presentation and Discussions of Factors Influencing the Research Productivity of Academics

7.1 Introduction

This chapter presents the findings related to research question three, *What are the research behavioural factors that impacted the publishing outputs from 2009 to 2013, of academics at the Research-Oriented University in Vietnam?* In particular, the research question was designed to determine the influence of three behavioural factors with respect to research: research collaboration; postgraduate supervision; and ROU's academics' weekly research hours spent on publishing outputs between 2009 and 2013. The publishing outputs were categorised as follows: 1) the total number of outputs that an academic published between 2009 and 2013; and 2) the total number of international refereed journal articles that an academic published between 2009 and 2013. The reasons for choosing these two categories of publishing outputs to measure as the research productivity of academics are explained below.

'Research productivity' is an umbrella term that is used to indicate a researcher's engagement in many forms of research activities, such as networking or discussing while attending academic conferences; being a reviewer for scholarly refereed journal articles; or developing publishing outputs. Given the scope of this study, only the publishing outputs were surveyed and analysed because they can be measured accurately through the self-reporting of academics, while the other forms of research productivity are difficult to measure or quantify. Furthermore, a goal of ROU is to change its academic identity from a teaching-focussed university to a research university by 2020 in order to compete with other universities in the Southeast Asian region. Therefore, ROU's academics need to increase both national and international publishing outputs in order to improve the research profile of the university. In particular, to achieve this purpose, ROU should focus on increasing its academics' output of international refereed journal articles. Although papers published in Vietnamese scholarly journals are peer-reviewed, they do not contribute to the wider field of international academia due to language of publication. In this study, only quantitative data were analysed to find results for research question three.

Inferential analyses were used, including one correlation analysis and two hierarchical multiple regression analyses.

In summary, because of the above mentioned reasons, the total number of publishing outputs and the total number of international refereed journal articles were used in the correlation analysis and hierarchical multiple regression analyses. The outputs were accumulatively counted for the 2009 to 2013 period. The three surveyed types of publishing outputs and their categorised publications are presented in Table 7.1.

Table 7.1

*Publishing Output Type and Categorised Publication*³⁷

Publishing output type	Categorised publication
Journal article	<ul style="list-style-type: none"> • International refereed journal article • Domestic refereed journal article
Research project ³⁸	<ul style="list-style-type: none"> • Ministry-level research project • University-level research project • College-level research project
Book	<ul style="list-style-type: none"> • Academic book • Academic book chapter • Academic textbook

7.2 Correlation Analysis

The bivariate correlation analysis was conducted primarily to test the relationship between the three independent variables and two dependent variables, before conducting the hierarchical multiple regression analyses. Pearson correlation coefficients and significant values are presented in Table 7.2.

³⁷ Both sole-authored and co-authored were counted; so, there were a total of 16 categorised publications that were surveyed.

³⁸ A project must be completed and have been officially accepted / approved by an authorised committee of ROU.

Table 7.2

Correlations between Research Behaviours and Publishing Outputs

		Total Publishing Outputs	Total International Refereed Journal Article
Research Collaboration	Pearson Correlation	.314**	.178**
	Sig. (2-tailed)	.000	.000
Postgraduate Supervision	Pearson Correlation	.491**	.311**
	Sig. (2-tailed)	.000	.000
Weekly Research Hours	Pearson Correlation	.240**	.229**
	Sig. (2-tailed)	.000	.000

N = 526.

The correlation analysis showed that all three types of research behaviour were positively correlated with two types of publishing outputs. Moreover, they were all highly statistically significant at $p = .000$. The results showed that postgraduate supervision had the strongest correlation with both the total publishing outputs ($r = .491$) and the total international refereed journal articles ($r = .311$). While research collaboration had a stronger correlation with the total publishing outputs ($r = .314$) than the weekly research hours did ($r = .240$), the weekly research hours scored a higher correlation with the total international refereed journal articles ($r = .229$) than research collaboration did ($r = .178$).

The significant correlations of the weekly research hours to both types of research outputs indicated the important role of this research behaviour. The more time academics spend on research, the more likely they will have a publication. The next section presents results of the hierarchical multiple regression analysis to identify which research behaviours influenced the total publishing outputs and the total international refereed journal articles.

7.3 Regression Analysis

Two hierarchical multiple regressions (HMR) were used to assess how research collaboration, postgraduate supervision, and weekly research hours could predict any influence on the total of publishing outputs and the total of international refereed journal articles after controlling for the influence of personal variables (age, gender, academic rank, qualification, and level of teaching). Preliminary analyses were conducted to minimise the degree of violation of the assumptions of outliers

and multicollinearity. The results indicated that the assumption of multicollinearity was satisfactory as three independent variables were either not correlated, or slightly correlated with each other. In case of any significant correlation existing, the correlation coefficient value was extremely small compared with the limitation of 0.8, which was defined by Field (2013). However, regarding the outliers, it was the researcher's decision to accept the existence of a few outliers because there was a large variation in the publishing outputs that were self-reported by the participants.³⁹

The following sections are the results of HMRs and discussion of the results. The terms 'variable' and 'factor' are used interchangeably through the sections to indicate predictor variables that were entered into the analyses.

7.3.1 Research Hypothesis One

H₀₁: There is no correlation between any type of research behaviour of ROU's academics and their total number of publishing outputs between 2009 and 2013.

7.3.1.1 Results

Variables were entered into the HMR in two steps. At step one, five personal variables were entered into the model as control variables. At step two, three research behaviours were added to the regression to form the final model. The model summary is as follows.

Table 7.3

Model Summary — the Total Publishing Outputs

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.581 ^a	.337	.331	6.91234	.337	52.933	5	520	.000
2	.645 ^b	.415	.406	6.51065	.078	23.048	3	517	.000

a. Predictors: (Constant), highest level of teaching, gender, academic rank, qualification, age.

b. Predictors: (Constant), highest level of teaching, gender, academic rank, qualification, age, weekly research hours, research collaboration, postgraduate supervision.

Table 7.3 illustrates the summation of HMR's two models. Model one explains 33.7% of the variation in the total publishing outputs and is significant at p = .000. Model two has an R Square = .415, meaning that it explains 41.5% of the

³⁹ Details of preliminary analyses are not presented here due to the word limitation of this thesis.

variation in the total publishing outputs and is also significant at $p = .000$. That R Square value indicates that 41.5% of the variability in the total publishing outputs is uniquely accounted for by all the variables from both blocks, not just from those included in the second step. However, the R Square change is .078, indicating that three research behaviours only explain an additional 7.8% of the variation in the total publishing outputs, even when the effects of the five personal variables are statistically controlled. The R Square change values indicate that the influence of three research behaviours on the total publishing outputs is much weaker than that of five personal variables (7.8% versus 33.7%). In general, the final model is successful in predicting the influence of variables on the total publishing outputs of ROU's academics.

Table 7.4

ANOVA – The Total Publishing Outputs

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12645.859	5	2529.172	52.933	.000
	Residual	24845.814	520	47.780		
	Total	37491.673	525			
2	Regression	15576.813	8	1947.102	45.935	.000
	Residual	21914.860	517	42.389		
	Total	37491.673	525			

Table 7.4 shows a significant effect of all predictor variables considered in the regression on the total publishing outputs. The final model's F-ratio (8, 517) is 45.935, and the model is significant at $p = .000$. This F value is considered to be a way of strengthening the significance of the final model. The coefficient values of variables shown in Table 7.5 help to identify the significant predictors of the total publishing outputs.

Table 7.5

Coefficients – The Total Publishing Outputs

Model		Standardised Coefficients Beta	t	Sig.
1	(Constant)		-.332	.740
	Age	-.084	-1.421	.156
	Gender	-.241	-6.548	.000
	Academic rank	.196	3.562	.000
	Highest qualification	.348	7.384	.000
	Highest level of teaching	.105	2.337	.020
2	(Constant)		-3.372	.001
	Age	.008	.140	.888
	Gender	-.158	-4.335	.000
	Academic rank	.131	2.480	.013
	Highest qualification	.241	5.187	.000
	Highest level of teaching	-.002	-.045	.964
	Research Collaboration	.122	3.343	.001
	Postgraduate supervision	.231	4.892	.000
Weekly research hours	.176	5.073	.000	

Table 7.5 shows that all research behaviours and three personal variables (gender, academic rank, and qualification) make a unique statistical contribution to the total publishing outputs. Gender is negatively correlated with the total publishing outputs ($\beta = -.158$, $p = .000$), just as it was with the research motivation in Chapter Five and the research behaviours in Chapter Six. The other five variables have significantly positive correlations with the outcome. It is noted that the Beta value of 'qualification' is highest among the five positively significant factors ($\beta = .241$, $p = .000$), indicating that 'qualification' (preferably a doctoral degree) has the greatest potential influence on the production of publishing outputs in general. The second greatest factor is postgraduate supervision ($\beta = .231$, $p = .000$), followed by weekly research hours ($\beta = .176$, $p = .000$), and academic rank ($\beta = .131$, $p = .013$). Surprisingly, research collaboration is the weakest predictor of the total publishing outputs ($\beta = .122$, $p = .001$). All these Beta values represent the unique contribution of each significant predictor variable when the overlapping effects of all other variables are statistically removed. The t-values of significant factors are large, indicating that the factors make a significant contribution to the model.

The regression model has improved the ability to determine the degree of influence of predictor variables on the total publishing outputs of ROU's academics. Since the total publishing outputs consisted of the academics' collective accounts of 16 different categorised publications (see Table 7.1), it is possible that each categorised publication will be influenced by either one of the three research behaviours or all of them.

7.3.1.2 Discussions

The following discussion will refer to all six significant predictors, with particular focus on three research behaviours: research collaboration, postgraduate supervision, and weekly research hours. The discussion begins with the three research behaviours before addressing the personal variables.

First, the positive correlation between research collaboration and the total publishing outputs indicates that the more ROU's academics collaborate with their colleagues through pro-active research activities, the more their research self-efficacy and research skills increase, which then leads to an increase in publishing outputs. A causal interpretation for that connection can be inferred from the ideas of Lambie, Hayes, Griffith, Limberg, and Mullen (2014), as they found that doctoral students who have a higher level of research self-efficacy are more interested in undertaking research than are others, and vice versa: those who have research publications will become more self-efficacious in research. Undoubtedly, such findings as those of Lambie et al. (2014) might be applicable to all ROU's academics because such pro-research behaviours can be considered as a form of mentorship between experienced academic researchers and inexperienced staff (Smeby & Try, 2005). Furthermore, Brew and Boud (1995, p. 269) state that "learning is an individual activity" but "research is a particular form of collaboration" (p. 269). In order to successfully undertake research, academics cannot work alone. Rather, being a member of a group, an association, or a community of practice, is really important in the current context of the highly competitive environment of higher education (Sulo et al., 2012). It was observed that when ROU's academics were involved in research collaboration with other colleagues in the department or in research association meetings, they showed 'mutuality of engagement' with others in order to individually improve their research self-efficacy, research skills and knowledge by learning from others in that community of practice (Wenger, 1998). This explains why the qualitative finding of Chapter five indicated that respondents

recognised the values of conference and workshop participation—because they could learn good things from presenters or other conference participants.

The data reported that research collaboration was a significant predictor of both postgraduate supervision and weekly research hours. This means that by becoming research competent as a result of actively engaging in pro-research behaviours, ROU's academics will spend more time on research activities and have opportunities to supervise postgraduate students, which in turn will increase their publishing outputs. A positive correlation between high levels of co-authorship and high number of publications was also found by Katz and Martin (1997).

Second, the positive correlation between postgraduate supervision and the total of publishing outputs indicated that the more frequently ROU's academics supervise Master's and Doctorate students, the more research outputs they will publish. As mentioned previously, the interaction between academics and postgraduate students improves research knowledge and skills of academics (they need to update their knowledge for transfer to students) and their publication numbers—mainly through co-authorship with students. The interaction between academic supervisors and postgraduate students is considered an activity that offers advice or mentorship to students. While the words 'mentoring' and 'advising' are interchangeably used to indicate supervision, Creighton, Creighton, and Parks (2010) have clarified the difference between the two terms. They stated that mentoring is an activity that involves a more personal and pastoral relationship between academics and students, which significantly improves the quality and quantity of a student's research, whereas advising, is restricted to questions relating to a particular research project or thesis of a student. Through their study, Creighton et al. (2010) discovered that the student–academic mentoring relationship was the most important factor in postgraduate students' successful completion of their degrees as well as in their becoming productive in research.

The data found that ROU's academics who were extrinsically and normatively motivated to research would engage in postgraduate supervision. So, it is causally predicted that such academics will try their best to mentor their students in order to help them successfully complete the degree. If students are well mentored by their supervisors, they will complete a thesis in due course and become productive researchers. Students' theses completions can be considered as types of research output that might strengthen their supervisors' research productivity profiles. But

more importantly, academics and students can co-author several outputs during the supervisory process. The qualitative data in Chapters five and six showed that some academics at ROU were aware of the significant benefits they had received when working with their supervisors during their postgraduate study. They had co-authored with supervisors to publish some high-ranking journal articles. As a result, both students and supervisors had publications. Postgraduate students play an active role as a research assistant for academic supervisors, assisting supervisors to undertake research. In general, through postgraduate supervision, ROU's academics might also develop their own knowledge, research skills and expertise because they have to continually research and renew their knowledge to stay abreast of the field.

The weekly research hours of ROU's academics were found to be positively correlated with their total publishing outputs. Chapter Six found that ROU's academics who were normatively motivated to research, were regularly engaged in research collaboration and spent regular hours every week on research activities that aimed to produce a research output, for example a journal article. Hu and Gill (2000) and Sulo et al. (2012) reported that higher numbers of publishing outputs are always positively associated with time spent on research. This confirms the findings of Kaya and Weber (2003) and Webber (2011b): that time spent on research is one of the most important factors in predicting research productivity.

Regarding qualifications, the data showed that although qualification was used as a control variable in the HMR, this variable had better capacity than all three research behaviours to influence the total publishing outputs of ROU's academics. The data also indicated that the higher the qualification academics obtained, the more frequently they engaged in research collaboration, postgraduate supervision, and research activities. Therefore, their publishing outputs increased as illustrated in Figure 7.1.

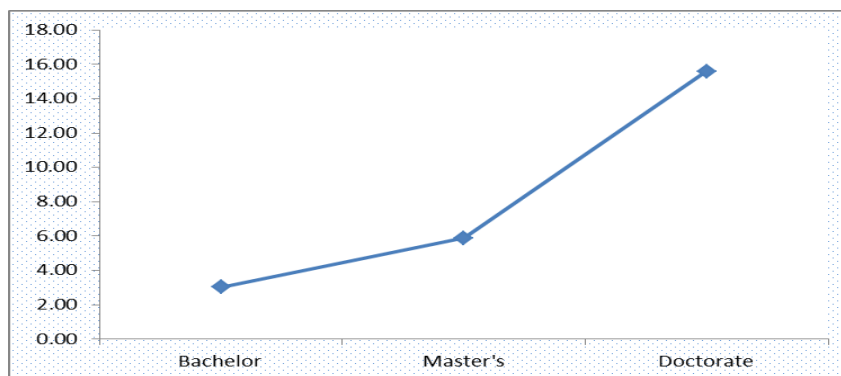


Figure 7.1 Total publishing output 2009 - 2013 by qualification

It was observed that ROU's academics with postgraduate qualifications, specifically the Doctorate degree, were more competent in research than were others. Further, it is predicted that postgraduate qualified academics' levels of research competence is increased if they have completed a postgraduate degree at an overseas research university where they received high quality training so as to become future productive academic researchers.

Regarding academic rank, it was found that the higher the rank an academic obtained, the more they have published. This finding was consistent with the findings in Chapters five and six, indicating that academic rank of ROU's academics was a significant predictor of their research motivation. Figure 7.2 illustrates the total publishing outputs of ROU's academics by academic rank.

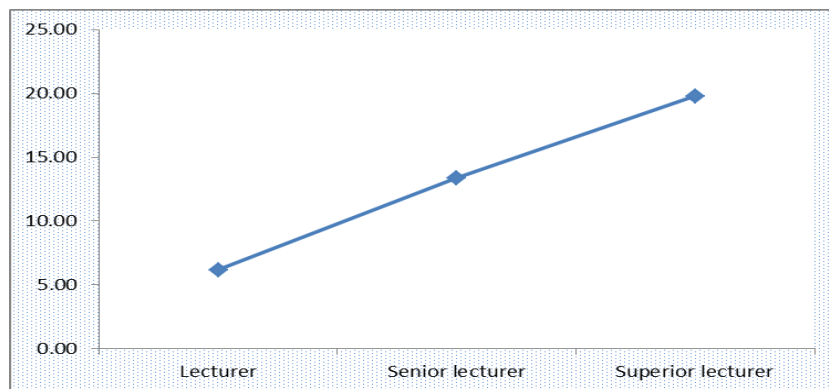


Figure 7.2 The total publishing outputs 2009 - 2013 by academic rank

The negative correlation between gender and total publishing outputs revealed that ROU's female academics were less productive in publishing research than male academics. This finding stems from the fact that female academics were found to be less motivated to undertake research than males (see Chapter Five) and less frequently collaborative with colleagues (see Chapter Six) than were male colleagues.

In summary, the results indicate that all three research behaviours significantly contributed to the total number of outputs of ROU's academics from 2009 - 2013. Among the three research behavioural factors, postgraduate supervision was the strongest predictor of total publishing outputs. However, taking into account all significant factors, qualification had the highest coefficient value for predicting total publishing output. This indicated that a high qualification, especially the doctoral degree, was the most powerful variable that could be widely used to predict the number of publishing outputs.

7.3.2 Research Hypothesis Two

H₀2: There is no correlation between any type of research behaviour of ROU's academics and their total number of international refereed journal articles published between 2009 and 2013.

7.3.2.1 Results

Variables were entered into the hierarchical multiple regression in two steps. At step one, five personal variables were entered into the model as control variables. At step two, three research behaviours were added to the regression to form the final model. The model summary is as follows.

Table 7.6

Model Summary of The Total International Refereed Journal Articles

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.482 ^a	.232	.225	2.09616	.232	31.464	5	520	.000
2	.521 ^b	.272	.260	2.04756	.039	9.326	3	517	.000

a. Predictors: (Constant), Highest level of teaching, gender, academic rank, highest qualification, age.

b. Predictors: (Constant), highest level of teaching, gender, academic rank, highest qualification, age, weekly research hours, research collaboration, postgraduate supervision.

Table 7.6 illustrates the summation of HMR's two models. Model one explains 23.2% of the variation in the total international refereed journal articles and is significant at $p = .000$. Model two has an R Square = .272, meaning that it explains 27.2% of the variation in the total international refereed journal articles and is also significant at $p = .000$. That R Square value indicates that 27.2% of the variability in the total international refereed journal articles is uniquely accounted for by all the variables from both blocks, not just those included in the second step. However, the R Square change is .039, indicating that three research behaviours only explain an additional 3.9% of the variation in the total international refereed journal articles, even when the effects of five personal variables are statistically controlled.

In general, the final model is successful in predicting the influence of variables on the total international refereed journal articles of ROU's academics. However, the influence of the three research behaviours on the total numbers of international refereed journal articles is much weaker than that of the five personal variables (3.9% versus 22.5%). Results of the analysis of variance are below.

Table 7.7

ANOVA – the Total International Refereed Journal Articles

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	691.235	5	138.247	31.464	.000 ^a
	Residual	2284.818	520	4.394		
	Total	2976.053	525			
2	Regression	808.536	8	101.067	24.107	.000 ^b
	Residual	2167.517	517	4.192		
	Total	2976.053	525			

Table 7.7 indicates that all predictor variables considered in the regression had a significant effect on the total numbers of published international refereed journal articles. The final model's F-ratio (8, 517) was 24.107, and the model was significant at $p = .000$. Coefficient values of predictor variables are shown in Table 7.8.

Table 7.8

Coefficients – The Total International Refereed Journal Articles

Model		Standardised Coefficients Beta	t	Sig.
	(Constant)		.202	.840
1	Age	-.243	-3.830	.000
	Gender	-.133	-3.367	.001
	Academic rank	-.028	-.480	.631
	Highest qualification	.506	9.966	.000
	Highest level of teaching	.034	.709	.479
2	(Constant)		-.629	.530
	Age	-.187	-2.954	.003
	Gender	-.088	-2.178	.030
	Academic rank	-.071	-1.207	.228
	Highest qualification	.437	8.447	.000
	Highest level of teaching	-.051	-.959	.338
	Research Collaboration	.008	.203	.839
	Postgraduate Supervision	.184	3.505	.000
Weekly research hours	.154	3.963	.000	

Table 7.8 reports that postgraduate supervision, weekly research hours, qualification, age, and gender made a statistically significant contribution to the total numbers of published international refereed journal articles. Postgraduate supervision, weekly research hours, and highest qualification were positively correlated with the total numbers of published international refereed journal articles.

In contrast, age and gender had a negative correlation with the outcome. Highest qualification had the highest Beta value ($\beta = .437$, $p = .000$), indicating that it had the greatest ability to predict the total numbers of published international refereed journal articles. Surprisingly, the Beta value of highest qualification was 2.3 times higher than the value of postgraduate supervision ($\beta = .184$, $p = .000$), and 2.8 times higher than that of weekly research hours ($\beta = .154$, $p = .000$). All these Beta values represented the unique contribution of each significant predictor variable, when the overlapping effects of all other variables were statistically removed. The t-values of significant factors were large, indicating that they made a significant contribution to the model. The regression model has improved the ability to determine the degree of influence of predictor variables on the total numbers of published international refereed journal articles of ROU's academics.

7.3.2.2 Discussions

The analysis has found five significant predictors influencing ROU's academics' total numbers of published international refereed journal articles from 2009 to 2013.

First, as with the total publishing outputs, there was a positive correlation between postgraduate supervision and the total number of international refereed journal articles. This finding confirmed the findings of previous studies (Austin, 2002; Marsh & Hattie, 2002) and the qualitative findings in this study that the involvement of academics in the supervision of postgraduate students can enhance the research productivity of academics. This researcher observed that there are some of ROU's academics who have obtained a Master's and/or a Doctoral degree and that this factor has significantly contributed to ROU's research productivity in terms of its total output of published international refereed journal articles in recent years. The academics with higher degrees have become key persons in ROU's research program and have motivated other academics in their departments. Although the number of ROU's academics able to publish internationally has remained small, they are gradually contributing to the research environment of this university. They are also the main forces in supervising postgraduate students and produce most of the international publications. This research has revealed that there are some academics at ROU who have co-supervised with overseas academics, mostly at universities in France. It is possible that such research collaboration between ROU and French universities provided good opportunities for ROU's academics to enhance their

research skills and capabilities, resulting in some instances in international refereed journal articles by the Vietnamese academics.

Furthermore, as discovered in the qualitative findings of Chapter 6, some academics have been very active in promoting research in the way they have established small interest groups to support their postgraduate students. Such groups have helped students exchange research ideas that potentially promote their research productivity. The benefits of the collaboration between academic supervisors and students in such research interest groups have been pointed to by Lee and Boud (2003).

In relation to weekly research hours, the results of this research have indicated that the more hours academics spend on research, the more international refereed journal articles they may be able to publish. Bentley and Kyvik (2012) and Sulo et al. (2012) also found that spending regular time on research and research productivity was significant. However, besides time for research, academics must have good knowledge of their field as well as be competent in research skills in order to produce an international journal article. Furthermore, 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, the probability of Vietnamese academics publishing many papers in international journals is low. Therefore, the factor of time for research alone is not sufficient to strongly contribute to any success in increasing the numbers of ROU's international publications. The success depends on a number of other factors.

Highest qualification was identified as the most influential factor affecting the total for international refereed journal articles, just as it was for affecting the total for publishing outputs. This result holds particularly true for those ROU's academics who have a Master's or a Doctorate degree from overseas. As they have indicated, they had opportunities to co-author with their supervisors during their study overseas. Supervisors' support and mentoring of students during postgraduate study is very important in building good research capabilities in students (academics). After obtaining their qualifications, they will continue to develop themselves in their fields. Furthermore, this particular researcher observed that among the newly recruited academics to ROU in recent years, some had good research profiles in terms of international publications because they had obtained their postgraduate qualification overseas. It is predicted that such qualified academics will be at the

frontline of their disciplines in the near future and make significant contributions to the research productivity of the university. The following figure illustrates the effect of obtaining a higher qualification on the number of international refereed journal articles produced between 2009 and 2013 by those ROU's academics who participated in the questionnaire survey of this study.

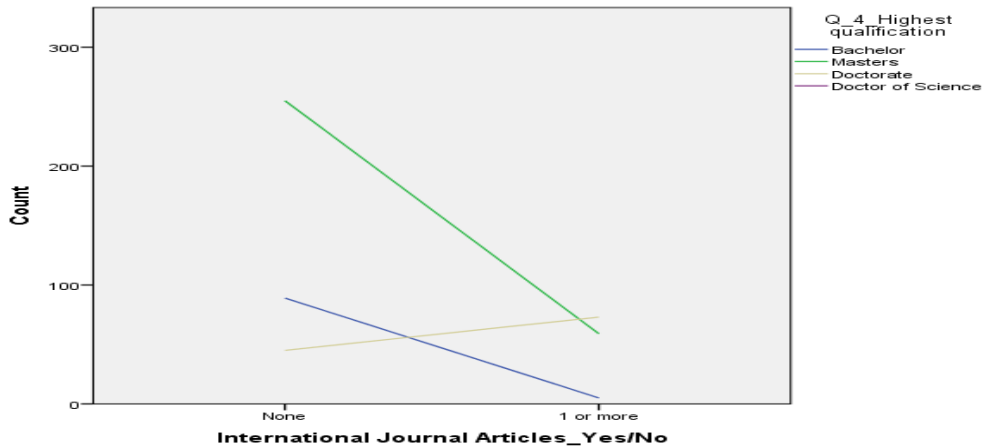


Figure 7.3 International journal articles vs qualification

Figure 7.3 shows that participants were divided into two groups: group one contained those who had not published any international refereed journal articles and group two included those who had at least one (one or more) international refereed journal article. The diagram indicates that the number of Doctorate graduates who have at least one or more international refereed journal articles increases gradually. Some master's graduates have at least one international refereed journal article, while bachelor's graduates have no international refereed journal articles. This illustration confirms the importance of higher qualifications among ROU's academics if ROU wants to increase its international publication profile.

Age was negatively correlated with the total for international refereed journal articles in this analysis, but did not have any correlation with the total publishing outputs in the previous analysis. Previous studies have found no consistency in the relationship between age of academics and their research productivity. Whereas Hedjazi and Behravan (2011) and Goodwin and Sauer (1995) found a decrease in the research productivity of academics as they aged, Perry et al. (2000) found an increase in research productivity despite an increase in age. The negative correlation between age and the total for international refereed journal articles in this study did not support the finding of Perry et al. (2000). As discussed in Chapters Five and Six, when ROU's academics got older, they might have moved into academic leadership roles which might have reduced their motivation to undertake research. Age was

also a factor that impacted on their academic mobility, reduced their capacity for international research collaboration, and affected their academic language writing.

The negative correlation between gender and the total international refereed journal articles was certain, because ROU's male academics were found to be more motivated to research and more frequently engaged in research activities than their female counterparts. Their publishing outputs in general, and the total international refereed journal articles in particular, were higher than those for female academics. This result was most accurate for the case of publishing an international journal article. It is much more time consuming to produce a manuscript for an international journal than for a domestic journal; and the fact is that almost all female academics in Vietnam in general, and at ROU in particular, are very busy with family responsibilities; so, they do not have enough time to spend on writing international refereed journal articles, compared with their male colleagues.

In brief, this discussion has presented possible explanations for the relationship between five significant predictors and the total numbers of international refereed journal articles published. Through the discussion, it can be seen that highest qualification has the strongest ability to predict the research productivity in all types of publishing outputs. This finding shows the significant contributions of highly qualified academics who have obtained a postgraduate qualification, particularly a Doctoral degree, from an international university. Their contributions to the research environment of ROU, to postgraduate supervision, and to the research profile of the university, are worthy.

7.4 Summary

This chapter has identified that the total number of publishing outputs published by ROU's academics from 2009 to 2013 was influenced by three research behaviours: postgraduate supervision ($\beta = .231$), weekly research hours ($\beta = .176$), and research collaboration ($\beta = .122$). However, only postgraduate supervision ($\beta = .184$) and weekly research hours ($\beta = .154$) were significantly correlated with the total number of international refereed journal articles published by ROU's academics in the same period. The findings showed the important contribution of postgraduate training programs and postgraduate students to the building of the research capability of ROU's academics. This contribution can be explained from two angles.

First, teaching and supervising postgraduate students requires academics to continually improve their knowledge remain up to date in their fields. The results

showed a correlation between ROU's academics' levels of teaching and their research motivation, research behaviours, and then publishing outputs. It can be seen that a majority of ROU's academics have been teaching at undergraduate level, because this university still has an extremely large number of undergraduate students. That leads to their significantly low levels of research productivity.

Second, when academics work in a supervisory team for postgraduate students, less experienced academics can learn from the experienced academics to develop themselves in terms of knowledge, research skills, and supervision experiences. At most universities, for example Griffith University, Australia, to become a principal supervisor, an academic must have supervision experience to be 'registered' as such. A less skilled academic may take up a position of associate supervisor, where the principal supervisor on the supervisory team provides mentorship. Through this process, they learn from each other and develop their research skills as well as research productivity for the future.

The results of this research also inform ROU's leaders that if the university wants to improve the research productivity of its academics, it needs to allocate sufficient time for academics to participate in research activities and it needs to create a research environment in which academics can be involved and share research ideas as well as get support from colleagues. Bentley and Kyvik (2012) and Migosi et al. (2011) indicated that time spent on research is always important in increasing the research productivity of academics, and that when academics have research motivation, they will spend more time on research. In contrast, if ROU does not provide academics sufficient time to do research, their research motivation will automatically and gradually diminish.

Apart from the research behavioural factors, the total publishing outputs and total numbers of published international refereed journal articles were also associated with academic qualification, academic rank, gender, and age. The great contribution of a postgraduate qualification, preferably a Doctoral degree, to enhance the research productivity of academics at all institutions, is noted. Highly qualified academics are good human resources and ROU should have strategic plans to develop and use them appropriately in order to avoid the 'drain brain' to another university or country in this era of widespread academic globalisation.

Chapter 8

Conclusions and Implications

8.1 Introduction

This research project investigated factors that influence the research productivity of academics at the Research-Oriented University in Vietnam. The study was conducted using semi-structured interviews and an online questionnaire. In this chapter, I summarise the findings of three research questions. From the findings, implications for policy design and implementation at the national level (the Government of Vietnam and the Ministry of Education and Training) and the local level (the Research-Oriented University) are presented. It is followed by implications for practice which are presented from a bottom-up direction: the individual level, departmental level, university level, and national level. I then address the limitations related to the sample size of this study, the construction of the research questionnaire, and the generalisability of the study to a wider population. From all of the above, I proffer suggestions for further research.

The following figure delineates the overarching research question and accompanying three research questions into three inputs of the research productivity of ROU's academics: individual and institutional factors, research motivational factors, and research behavioural factors.

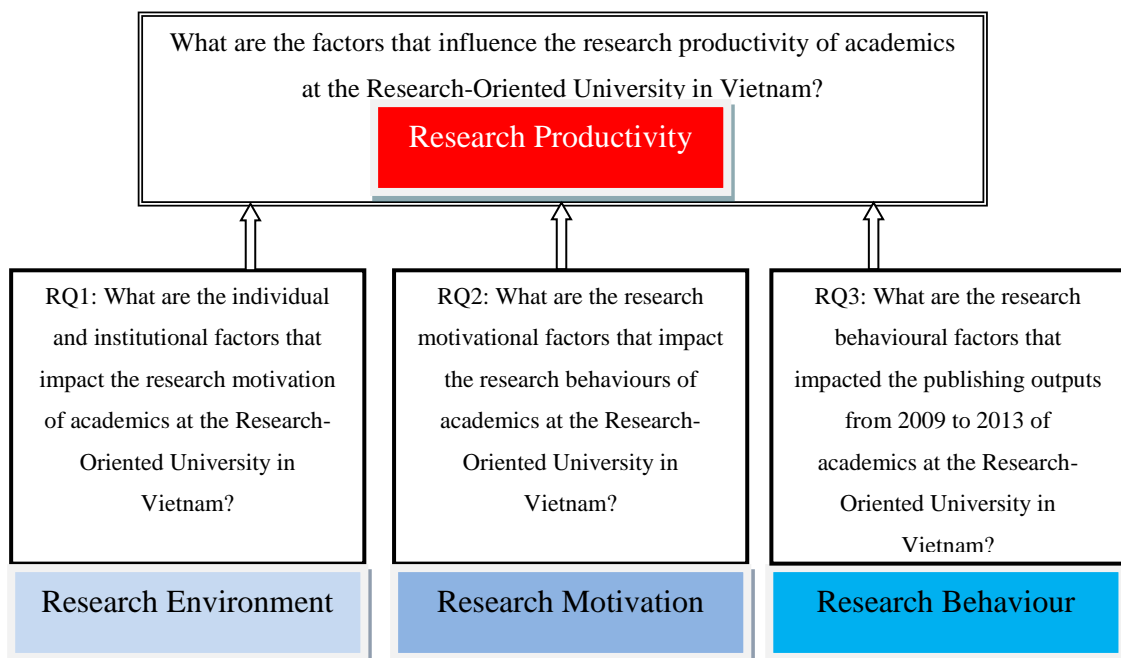


Figure 8.1 Delineation of research questions

8.2 Research Findings

This presentation of the research findings is divided into three sections with each section arranged around a research question.

8.2.1 Individual and Institutional Factors That Impact the Research

Motivation of ROU's Academics (RQ1)

8.2.1.1 Qualitative Findings

The qualitative analysis identified five factors that potentially impact the research motivation of ROU's academics:

- Teaching load – it was particularly noticeable that almost all respondents were experiencing a heavy teaching load. Moreover, they indicated that it was not only they who were experiencing a heavy teaching load, but also almost all ROU's academics were having that experience, excepting for some academics teaching at several departments where there was a small number of student enrolments.
- Scholarly resources – according to all respondents⁴⁰, ROU was severely short of scholarly resources such as reference books and academic journals, particularly of international refereed journals because the University had a limited budget for research⁴¹.
- Research funding – the limited research budget prevented ROU from buying scholarly resources; providing sufficient funds for research projects and professional activities of academics such as publication fees and expenses for conference participation.
- Professional meetings – respondents raised the need to have professional meetings such as research seminars and research workshops which help to improve their research skills and research capability.
- A positive research climate – respondents raised the important role of building and maintaining a positive research climate within a department in order to motivate their departments. However, the data

⁴⁰ Based on actual experiences of some respondents who have regularly done research or perceptions of those who have not done research regularly but perceived the existence of the shortage.

⁴¹ The budget for research at ROU is allocated annually by the Ministry of Education and Training and the Ministry of Sciences and Technology.

showed that such a climate was not really present in ROU's departments because most academics were busy with teaching, which resulted in little engagement in research.

When academics were experiencing a heavy teaching load, together with the shortages of resources, funding, and professional development, they were less motivated to research. The lack of a positive research climate was considered as a causal consequence.

8.2.1.2 Quantitative Findings

The quantitative analysis identified eight factors that can promote the research motivation of ROU's academics, including 1) being young, 2) being male, 3) obtaining a high qualification, preferably a doctoral degree, 4) being at a high academic rank, 5) working in a department which has a positive research climate, 6) being satisfied with the university's research policy, 7) having sufficient scholarly resources, and 8) receiving good salary and good research infrastructure. In the statistical analyses, the dependent variable (research motivation) was an aggregate factor which was created by computing the mean of extrinsic motivation, intrinsic motivation, normative motivation, and status motivation. These four types of research motivation were created by the factor analysis (see Chapter Five). Remarkably, *normative motivation* and *status motivation* were two new types of research motivation that have been explored in this study. There is no evidence indicating the existence of normative motivation and status motivation in all previous studies in the literature. Brief interpretations of the findings are presented in five points:

- The negative correlation between age and gender with the research motivation indicated that young and/or male academics of ROU are more motivated to research than old and/or female academics. However, it is impossible to prevent an academic from getting old and impossible to change the gender of an academic from female to male in order to make that person become more motivated to research. These statistical results found, are considered as evidence-based, and can be used for analysing practical implications of a policy that supports old and/female academics to maintain their research productivity.
- The higher degree and/or the higher the rank academics hold, the higher research motivation they have. It is reasonable that when academics obtain a

high qualification, particularly a doctoral degree, their research capability and self-efficacy must be high, which leads to a high level of research motivation. This result indicates that qualification is a cause for improving the research motivation of academics. If many of ROU's academics have been trained to doctoral level, they will be more motivated to research and be more productive than those who have obtained a bachelor and master's only. However, rank does not directly cause an increase in the research motivation of academics. If ROU promotes all unmotivated academics to a higher rank, or even to the top level which is professor, apparently they will not automatically become more motivated to undertake research. A promotion comes as a reasonably causal outcome of continuously high levels of research motivation. The more academics are motivated to do research, the more they will have good research outputs to get them promoted.

- The existence of a positive research climate within a department significantly motivates academics to do research. A positive research climate being a result of supportive and equal collaborations between academics of all age, rank, and qualification; or between academics and the department's leaders, academics enjoy it, and as a result of it, develop more confidence and motivation. The sharing of knowledge and research skills among academics helps them to achieve research goals.
- Participants perceived the shortage of scholarly resources and the insufficient salary and research infrastructure as serious barriers. The statistical results indicated that only academics who had a high level of research motivation perceived these shortages. It is possible that the more that motivated academics undertook research, the more they perceived such shortages as existing barriers at ROU. In contrast, academics who have never done research or who were not so motivated to try to do research, would not have perceived such barriers. These findings confirm the qualitative findings above. Some interviewees indicated that on the one hand, ROU did not provide them with enough reference resources, there being particularly severe shortages of international refereed journals; on the other hand, their salary was too low so they could not spend any amount of money on buying reference materials. Consequently, their research productivity is still low.

- The university's research policy is not good enough because it does not provide sufficient funds for doing a research project, attending a research conference, and paying a publishing fee (if required) while these sources of support can enhance the research motivation of academics. Qualitative interviewees did reflect that they were not satisfied with the university's research policy because the funding for research activities was so limited. This finding comes as a message to ROU's leaders that a satisfactory research policy is necessary to increase the research motivation of academics.

8.2.1.3 Summary

There are correspondences between the qualitative findings and quantitative findings in relation to the factors influencing the research motivation of ROU's academics. The factors were inter-correlated with each other and caused an apparent consequence which is the current low level of research motivation of academics across the University. The findings have the potential to inform ROU's leaders of specific remedies that could increase the research motivation of academics.

Significant factors are tabulated in Table 8.1. Both qualitative and quantitative findings are merged together and presented in two columns of individual factors and institutional factors. The factors are interpreted in such a way that they promote the research motivation of academics.

Table 8.1

Predictors That Increase Research Motivation

Individual factors	Institutional factors
1. Being young	1. Having a low teaching load
2. Being male	2. Attending frequent and good professional meetings
3. Being at a high academic rank	3. Working in a department which has a positive research climate
4. Obtaining a Doctoral degree	4. Receiving sufficient research funding for research projects and publications
	5. Being able to access sufficient scholarly resources
	6. Receiving a higher salary than the current level
	7. Being able to access sufficient research infrastructure
	8. Being satisfied with the university's research policy

8.2.2 Research Motivational Factors That Impact the Research Behaviours of ROU's Academics (RQ2)

8.2.2.1 Qualitative Findings

The following three research motivational factors were found to be associated with the research behaviours of ROU's academics:

- Salary - the matter of having a low salary was clearly raised as one of the factors that hindered academics from doing or being involving in research behaviours such as attending conferences, getting involved in group discussions, buying scholarly resources, or undertaking research. When the pay rate was not compatible with the devotion of academics, it obviously reduced their research motivation and research behaviours. The finding possibly reflected that ROU's academics were standing at the lowest level of the Maslow's hierarchy of needs: the basic needs (physiological needs) level (Maslow, 1943). All of these basic needs are related to having financial sufficiency to support their lives. If academics are forever deficient in any of these basic needs, they will not feel happy and will not have the economic security to concentrate on doing research.
- Research groups – recalling the findings of RQ1, which indicated that a positive research climate was important but not really available at ROU, there is a consistency here when the interviewees also suggested ROU should establish more research groups to provide opportunities for those who have research motivation. They found that a research group often has a positive research climate where they can share knowledge and collaborate together. Being members of a research group, academics can learn good things, such as research skills or skill to successfully manage a research project, from each other. The collaboration in such research communities of practice gradually develops the research capability of all group members (Blackburn et al., 1991; Teodorescu, 2000).
- Postgraduate training – the respondents acknowledged the significant contributions of having more postgraduate training programs and postgraduate students at ROU. In order to train postgraduate students, especially the doctoral candidates, to become qualified and independent researchers, academics continually update knowledge and improve research capability. As a result, academics will become more competent and

productive in research. Furthermore, when a postgraduate student completes a thesis, it is considered as a research output of the academic supervisor.

8.2.2.2 *Quantitative Findings*

The findings are summarised in accordance with the separate regression analyses for three research hypotheses.

H₀₁: There is no correlation between any type of research motivation and research collaboration of ROU's academics.

Three research motivational factors were found to be significantly correlated with research collaboration. Intrinsic motivation ($\beta = .134$) and normative motivation ($\beta = .140$) were positively correlated with research collaboration (for example, mentoring junior academics to do research or reviewing a manuscript for a colleague). From the view of organisational commitment theory (Mowday et al., 1979), the findings reflected that ROU's academics were involved in such activities because they had a high level of affective commitment and/or normative commitment to undertake research. These types of commitment are important and help ROU achieve its research goals because academics have research interest (passion) and/or are aware of their research responsibility to the University.

In contrast, extrinsic motivation ($\beta = -.123$) was negatively correlated with research collaboration. Those who are self-interested in what they gain when they engage in research collaboration with colleagues will withdraw themselves from an activity if that activity does not bring any benefit for them. These academics might think about external motivation (rewards) such as a promotion or an increase of salary. They are the 'lone wolf' academics that are trying to get ahead, get celebrated, or get promoted.

Besides, some other factors that were added into the regression analysis as control variables showed association with research collaboration. Academics' highest qualification and weekly research hours positively contributed to research collaboration. These findings are consistent with previous findings. Particularly, the data showed that a high qualification and weekly research hours were positively correlated with both intrinsic motivation and normative motivation. As already mentioned, intrinsically and normatively, academics often actively engage in research collaboration. In contrast, age and gender were negatively correlated with research collaboration. The results mean that old and/or female academics of ROU

were less frequently engaged in research collaboration than their peers who were young and/or male academics.

The findings confirmed that *research collaboration* was strongly influenced by the level of intrinsic motivation and normative motivation to undertake research. It is to be remembered that the negative correlation between extrinsic motivation and research collaboration does not mean that being extrinsically motivated to research is bad, and this type of motivation should not be promoted. In contrast, extrinsic motivation is also an important type which reflects the demands of obtaining external rewards at a specific time in the academics' lives. For example, an academic is trying to have publications in order to be promoted. Apparently, it is reasonable for that academic to have extrinsic motivation to research at that point. What is more important is how the university can transform his/her extrinsic motivation to intrinsic motivation after he/she has been promoted. This depends on the strategic policy of ROU.

H₀2: There is no correlation between any type of research motivation and postgraduate supervision of ROU's academics.

The data showed that the research behaviour *postgraduate supervision* was positively impacted by extrinsic motivation and normative motivation to research. Between two motivational factors, postgraduate supervision had a higher correlation with extrinsic motivation ($\beta = .136$) than with normative motivation ($\beta = .104$). It possibly means that ROU's academics have been supervising postgraduate students because of extrinsic rewards such as a promotion to a higher academic rank, professorship, or financial incentives. Actually, successfully supervising students to complete a thesis is one of the most important criteria for academic promotion. Regarding normative motivation, academics are normatively motivated towards postgraduate supervision because of two possible reasons. First, the engagement in supervision helps academic supervisors to improve knowledge and research skills because they have to continually update knowledge to provide good supervision. Second, it can be considered as an obligation or a moral responsibility that they have to do. As already presented, academic supervisors must have a doctoral degree to be eligible to supervise postgraduate students. While the number of doctoral academics has increased slightly, the number of postgraduate students has increased rapidly in recent years. At the time of this investigation in June 2013, only 15.8% of ROU's academics were holding a doctoral degree. This percentage does not meet the

requirements for postgraduate supervision of ROU; so many doctoral academics had to supervise many postgraduate students as their moral responsibility. This finding indirectly indicated that ROU should provide more opportunities for many academics to be trained at doctoral level in order to become qualified academic researchers and share the supervision load with their peers. When academics were intrinsically motivated to be involved in postgraduate supervision (but not normative or extrinsic as found in this study), it is predicted that the quality of supervision will be increased.

H₀₃: There is no correlation between any type of research motivation and the weekly research hours of ROU's academics.

Among the four types of research motivation, the analysis identified that only normative motivation ($\beta = .129$) was significantly correlated with weekly research hours of ROU's academics. This finding indicated that some academics spent time on research to improve their knowledge and support their teaching. This represents good behaviour in improving their teaching quality by application of a research-led teaching approach. From another angle, academics spent as many hours on research as necessary to fulfil the requirements made by the University in an academic year, so that they could avoid being penalised (deduction from salary of an academic if he or she does not meet research requirements per year). Additionally, as discussed in the previous section, academics might have to spend many hours in research to supervise many postgraduate students.

The remaining types of research motivation (intrinsic, extrinsic, and status motivation) did not contribute to predicting the number of weekly hours for research, possibly because a heavy teaching load, a low salary, and shortages in research resources reduced their research motivation. This information was not a statistical finding, but it can be inferred as a finding from the data. What I mean is that it warns leaders of the university that almost no academics had intrinsic motivation to research, even though intrinsic motivation is extremely important in building good researchers. Everything that originates internally, from whole-hearted passion, will last longer and better than otherwise. Intrinsic motivation to undertake research becomes more crucial in the context of the research university, towards which ROU has been shifting. Although the current normative motivation to undertake research

is fine and acceptable in the current context of the university, it would be better if the university could develop the intrinsic motivation of academics.

Besides normative motivation, research collaboration ($\beta = .102$) was a good predictor of weekly research hours. This statistical finding indicates a reasonable causal consequence that the more academics engage in research activities such as discussing a research matter with colleagues, or reviewing a manuscript for a colleague, the more they will make time to spend on such activities.

It is surprising that all other personal factors that were added in the hierarchical multiple regression analysis were not statistically correlated with the weekly research hours of academics. However, this might be caused by the shared variance among variables which make one strong variable eliminated the others. The result confirms the previous interpretations which I have made: that ROU's academics participated in research and regularly spent a number of hours on research activities because they were obliged to do so.

8.2.2.3 Summary

There are correspondences between qualitative and quantitative findings regarding the research motivational factors influencing the research behaviours of ROU's academics. The quantitative findings confirm and strengthen the qualitative findings. All findings are tabulated again in Table 8.2.

Table 8.2

Predictors of Research Behaviours

Qualitative Findings (Findings for general research behaviour)		
<ol style="list-style-type: none"> 1. Receiving a higher salary than the current level 2. Being involved in a research group 3. Being involved in postgraduate teaching and supervision 		
Quantitative Findings (Findings for three specific research behaviours)		
<i>Predictors of Research Collaboration</i>	<i>Predictors of Postgraduate Supervision</i>	<i>Predictors of Weekly Research Hours</i>
<ol style="list-style-type: none"> 1. Having high normative motivation 2. Having high intrinsic motivation 3. Having low extrinsic motivation 4. Spending sufficient weekly hours on research 5. Obtaining a Doctoral degree 6. Being male 7. Being young 	<ol style="list-style-type: none"> 1. Having high normative motivation 2. Having high extrinsic motivation 	<ol style="list-style-type: none"> 1. Having high normative motivation 2. Having regular research collaboration

Through Table 8.2, normative motivation is noted as the most common predictor that was significantly positively correlated with all three research behaviours. This is a consistent finding which has close connections with previous research findings in this area. The finding reflects the current situation at ROU: that most academics are motivated to undertake research because of the pressures exerted by the University (normative motivation) or moral responsibility. Some academics however, do have intrinsic motivation and extrinsic motivation. Particularly noticeable is status motivation. Although status motivation is a new research motivation type which was created in the factor analysis, no academics undertook research due to status motivation (to be recognised by peers and respected by students).

8.2.3 Research Behavioural Factors That Impact the Publishing Outputs of ROU's Academics (RQ3)

8.2.3.1 Quantitative Findings

Two regressions were conducted to identify research behavioural predictors of the research productivity of ROU's academics in terms of 1) the total publishing outputs published between 2009 and 2013, and 2) the total international refereed journal articles published in the same period.

H₀₁: There is no correlation between any type of research behaviour and the total publishing outputs published by ROU's academics between 2009 and 2013.

All three research behaviours were found to be positively correlated with the total publishing outputs of academics. Among them, postgraduate supervision was the strongest predictor of the outcome ($\beta = .231$), followed by weekly research hours ($\beta = .176$), and research collaboration ($\beta = .122$). The findings confirmed the importance of postgraduate supervision because it contributed to the research productivity of academics, through either sole-authorship or co-authorship with postgraduate students. Postgraduate supervision may be considered as an 'on the job' process during which both students and academic supervisors together explore new knowledge in the field. The success of postgraduate students also contributes to the research profile of academics. As ROU's academics were mostly teaching-focused and did not have frequent communication with colleagues, the weakest contribution of research collaboration to predict the total publishing outputs is an apparent consequence of limited engagement in research activities.

Additionally, highest qualification, academic rank, and gender revealed significant correlation with the total publishing outputs. While academic rank and highest qualification were positively correlated with the outcome, age had an opposite correlation.

H₀₂: There is no correlation between any type of research behaviour and the total international refereed journal articles published by ROU's academics between 2009 and 2013.

In this analysis, postgraduate supervision ($\beta = .184$) and weekly research hours ($\beta = .154$) were significant predictors of the total international refereed journal articles. Supervisors and postgraduate students can co-author manuscripts for

international refereed journals. Also, a junior academic who is involved in a supervisory team as an associate supervisor can learn from a senior academic who is a principal supervisor in the team. The finding reinforces the importance of postgraduate supervision in supporting and growing the research productivity of academics.

The number of hours that academics spend in undertaking research is important for producing research output. The more regular hours academics spend on research, the more opportunity they will have to produce an international refereed article. Cummings and Shin (2014) indicated that academics at research universities in Australia spend about 35.4 hours on research per week. The research hours for academics at non-research universities are lower than for their colleagues at the research ones but is at least 24 hours per week (see Table 3.1). This information indicates that ROU's academics must spend a sufficient number of hours per week on research if they want to produce international journal articles. Sufficient time for research is important, but it is more important if academics can maintain a regular amount of time for research and so build a research routine.

In this analysis, research collaboration did not make any contribution to prediction of the total international refereed journal articles. As mentioned, in order to produce an international refereed article, having research collaboration is not enough. It requires academics to invest more regular time to work on the research. So, it is not unusual to see that research collaboration dropped out in this regression analysis.

Additionally, highest qualification was positively correlated with the total international refereed journal articles while age and gender had a negative correlation with this outcome. A high qualification, especially a Doctoral degree, is always important in supporting the research productivity of academics.

8.2.3.2 Summary

The analysis showed that research behaviours were very important to predicting the publishing outputs. Among the significant factors, the powerful contribution of three predictors is noted: postgraduate supervision, weekly research hours, and highest qualification (preferably a Doctoral degree) because they were predictors of both the total publishing outputs and the total international refereed journal articles. Highest qualification was consistently found to be a good predictor of research motivation, research behaviours, and then research productivity of

academics. This consistency provides evidence for human resource management leaders of ROU. All predictors are tabulated in Table 8.3.

Table 8.3

Predictors of Publishing Outputs Published

The Total Research Outputs		The Total International Refereed Journal Articles	
1.	Postgraduate supervision ($\beta = .231$)	1.	Postgraduate supervision ($\beta = .184$)
2.	Weekly research hours ($\beta = .176$)	2.	Weekly research hours ($\beta = .154$)
3.	Research collaboration ($\beta = .122$)	3.	Highest qualification ($\beta = .437$)
4.	Highest qualification ($\beta = .348$)	4.	Age ($\beta = -.187$)
5.	Academic rank ($\beta = .196$)	5.	Gender ($\beta = -.088$)
6.	Gender ($\beta = -.241$)		

8.2.4 Summary of All Findings of Three Research Questions

The above findings of the three research questions indicated that ROU's academics have worked under limited conditions of research resources, research funding, and research time. Most of them have experienced a heavy teaching load because the university has been a teaching-focused institution. Research has been taken as an obligation (normative motivation) rather than because of a research interest and passion. Scholarly resources and research infrastructure are not sufficiently provided to support academics. Furthermore, there is little evidence indicating that a positive research climate prevailed in all departments. All of these reasons contributed to low research productivity in general, and as a consequence, a low representation of research disseminated in international refereed journals compared to that from other universities in Vietnam (see Table 2.10).

From the above findings, there are some features of unease.

First, it can be certain that intrinsic motivation to undertake research is the most important type of research motivation in order to complete a research goal. When academics are intrinsically motivated to do research, they will overcome all challenges to complete the task because they have a high level of affective commitment to the research goals of themselves and of the university. They devote time, effort, and even personal resources to contribute to the field or to satisfy their creativity or curiosity (Chen et al., 2006). The intrinsic motivation to do research was considered as a consumption of knowledge to satisfy learning ambition (Levin & Stephan, 1991). Therefore, any academic who has a high level of intrinsic motivation will demonstrate a high level of affective commitment to the research goals, which results in high research productivity. Of course, the other three types of

research motivation (extrinsic motivation, normative motivation, and status motivation) are also good, but they are not as significant as intrinsic motivation. An attitude which is internally nurtured and grown (intrinsic motivation) is always better and lasts longer than one which is externally influenced (extrinsic motivation). Similarly, academics will passionately undertake research in order to achieve the highest goals if they have high intrinsic motivation to do so rather than if they are obliged to do (normative motivation)—as the current reality is, at ROU.

Second, the data showed that intrinsic motivation was significantly correlated with research collaboration. Extrinsic motivation and normative motivation also had an influence on research collaboration, but they are not as important as intrinsic motivation. Any collaborative behaviour that is intrinsically motivated will have a better outcome.

Third, the data showed that research collaboration was a good predictor of postgraduate supervision⁴² and weekly research hours. In this case, it can be assumed that research collaboration was an important “input” for postgraduate supervision and weekly research hours.

Fourth, the data showed that postgraduate supervision and weekly research hours became good “inputs” for the total publishing outputs and the total international refereed journal articles, as identified.

From the above features, a predictive model of the research productivity of ROU's academics has been generated in Figure 8.2.

⁴² This result comes in another regression analysis from the data. See explanation in Section

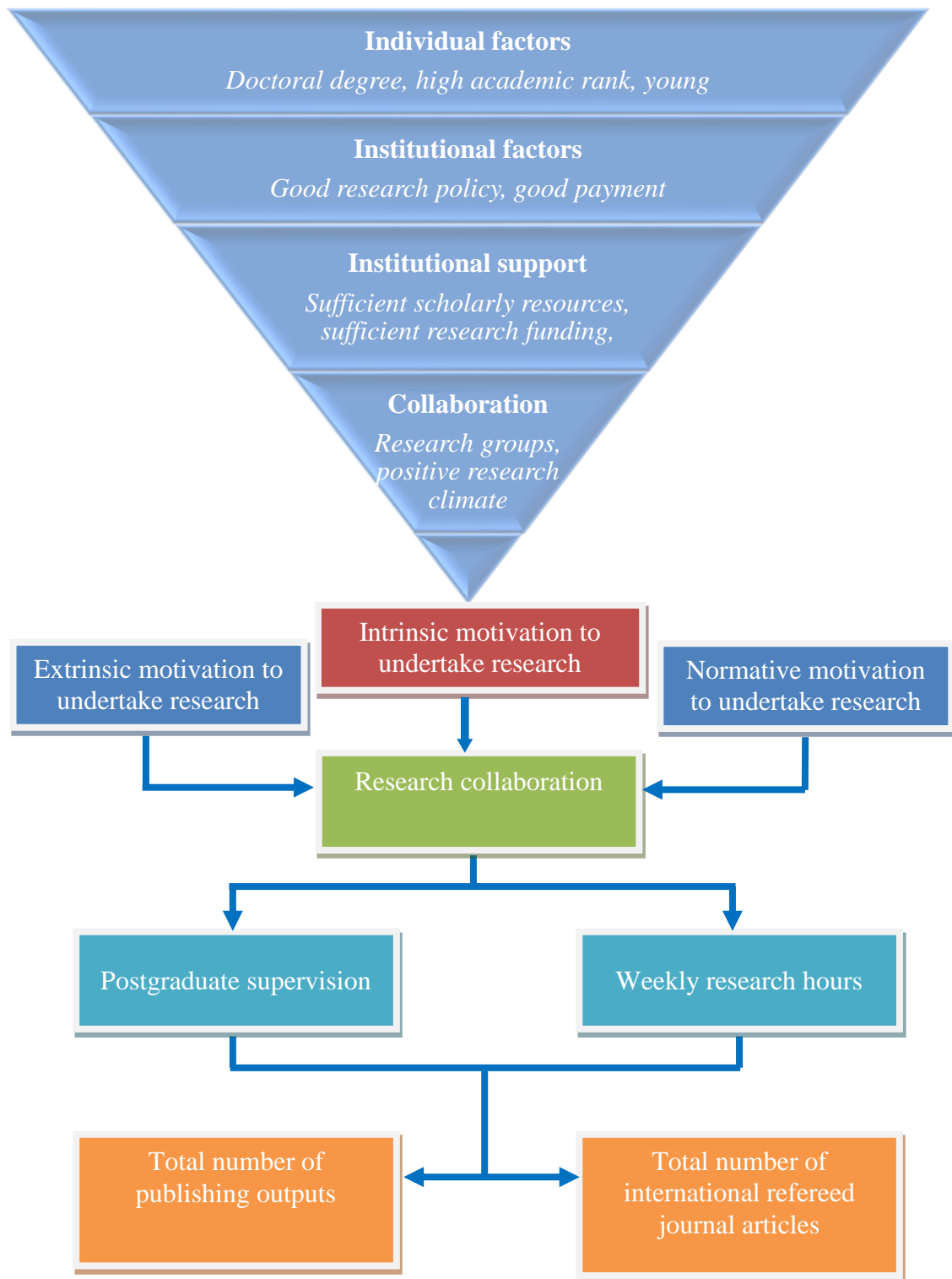


Figure 8.2 The predictive model of the research productivity of ROU's academics

This predictive model of the research productivity of academics shows the inter-connected relationships among individual and institutional factors, research motivational factors, and research behavioural factors in predicting the research productivity. Such connections indicate that there is no one independent factor that is able to answer the overarching research question of this study *What are the factors that influence the research productivity of academics at the Research-Oriented University in Vietnam?* The answers have been predicted through the connections between factors in each component of the conceptual framework. It is assured that the research productivity of academics will not increase unless all three inter-connected components “rotate simultaneously” as in Figure 8.3. If one of the components stops ‘working’ or ‘rotating’, the overall research productivity of academics will be impeded.

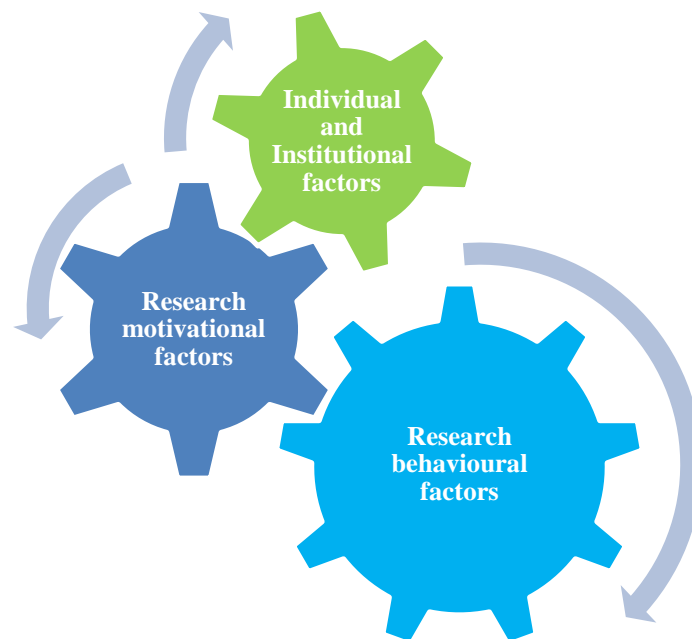


Figure 8.3 Operational mechanism of the conceptual framework

8.3 Implications

This study is the first of its kind to explore factors that influence the research productivity of academics at the Research-Oriented University, Vietnam. By identifying the factors which contribute to predicting the publishing outputs of academics, the study contributes to knowledge of the field on how to motivate academics to participate in research and disseminate research findings in terms of publications. This study considers the implications of the findings in two areas: implication for policy and implication for practice.

8.3.1 Implications for Policy

The findings of this study revealed that ROU's academics have experienced low research productivity due to shortages related to time provision for research, scholarly resources (books for research, both national and international academic journals), research infrastructure (offices, equipment, laboratory, etc.), research funding (for projects, for conferences, for publications), and research support (advice, mentorship for less experienced academics). Moreover, the salary rate is very low, which compounds personal difficulties for academics. From such findings, the following implications are addressed at both national and local level.

8.3.1.1 National Level

In Vietnam, all institutional policies are directed and controlled by the Government and the Ministry of Education and Training: if ROU wants to apply a new policy, it must be aligned with the national policy issued by the Government and MOET. So, this section presents the implications for policy at national level. Among many factors influencing the research productivity of ROU's academics, it is particularly noted that ROU's academics have a low salary and experience a lack of research funding and highly qualified researchers. So, the implications for policy will address these three areas.

8.3.1.1.1 Increasing Salary for Academics

Compared with other careers, the pay rate for academics is much less than what is paid for a new Bachelor who works for a local business; and it is extremely low if compared with the pay rate of a foreign-invested company. Latham and Budworth (2007) indicated the three basic pillars that define work motivation of employees are choice, effort, and persistence. So, if salary is not significantly increased for academics in Vietnam in general, and ROU's academics in particular, they will then not exert effort to teach as many hours as possible to support their living, and will ignore the calls to engage in research activities. More importantly, the salary for academics at ROU as well as at other key universities must be higher than that for academics at other normal universities because academics at the key universities are carrying out important missions of the Government. A difference in pay rate will create a higher level of research motivation among ROU's academics.

From the view of organisational commitment, academics who have affective commitment and normative commitment to the university, happily accept the current

salary at the university. Only those who have continuance commitment⁴³ to the university will consider the financial benefits of working for the university or moving to another institution or organisation where they can earn a higher salary. In the scenario that many ROU's academics were found to have a continuance commitment, and they maintained employment with ROU, they would be found to not be trying their best in teaching and research. In contrast, they would potentially contribute at a minimal level and meet minimum requirements. Altbach and Pacheco (2012, p. 1) indicated that "Salaries and the terms of faculty appointments and promotion are central to the wellbeing of the academic profession and its contributions to the university. If salaries are inadequate, the 'best and brightest' will not be attracted to academe, and those who do teach will be obliged to moonlight, diverting their attention and dedication from their academic work".

Additionally, in the future, if the Government can increase the salary for ROU's academics to a satisfactory rate, the practice of paying salary based on number of teaching hours should be stopped, because such a type of payment seems to promote teaching and not reinforce research.

In summary, the above three matters are strictly bounded by government policies and relate to the national budget for education of Vietnam. Such suggestions will require National Assembly of Vietnam approval prior to implementation.

8.3.1.1.2 Providing a Larger Research Budget to the Research-Oriented Universities

The Government of Vietnam in general, and the Ministry of Education and Training in particular, must provide ROU with a much larger research budget than the current one to spend on many research activities if the Government wants to develop ROU to become a research university by 2020. Among so many areas, ROU has an urgent financial imperative to: 1) upgrade its libraries with new and good scholarly resources, especially with subscriptions to international journal databases; 2) equip or upgrade research infrastructure; 3) provide sufficient research funds for research projects and funding support for professional development (conference participation, workshop, and seminar); 4) provide financial incentives for academics' publications. The shortage and/or insufficiency related to these areas are negatively influencing the research productivity of ROU's academics. Furthermore, ROU also

⁴³ Continuance commitment reflects the awareness of employees relating to the costs associated with leaving an organisation (Meyer & Allen, 1991)

needs to make a financial commitment to train its academics into becoming qualified researchers—for example, by sending academics overseas for a doctoral training program; or by offering short training courses, either in Vietnam or abroad, to develop the research capability of academics.

Money is not an end, but it is a powerful means of achieving the research goals of ROU (the funds should be used wisely). One of the most important characteristics of a research university is having a strong financial budget. For example, the Saudi Arabian Government has invested ten billion dollars in building the King Abdullah University of Science and Technology. H. T. L. Nguyen (2014) also found that from 1985 to 2002, the financial contribution of the Chinese Government to research activities of universities has increased 30 times, from 290 million yuan in 1985 to 21.9 billion yuan in 2002. Such contributions have led to a rapid increase in research productivity of universities in terms of research projects, national invention awards, and international refereed journal articles. As a result, China has 10 world-class research universities (excluding those of Taiwan).

8.3.1.1.3 Appointing Fulltime Academic Researchers

Currently, the policy of Vietnamese Higher Education does not allow academics to have a 100% research profile despite their preferences. This job position is widely offered for staff at national research institutes, but not at the universities. However, the Government should adjust the policy which provides a mechanism for research-oriented universities like ROU to appoint productive academics in fulltime research positions if they are intrinsically motivated to undertake research. If this is the case, these fulltime academic researchers are not only doing their own research but also providing research training for ROU's academics in order to develop their research capability. They will become research leaders who might build a positive research climate for the university through research collaboration as well as actual through research collaboration with colleagues. So, if the Government offered this mechanism for ROU, it would create a positive change in the research culture of the university.

8.3.1.2 Local Level

At the local level of the University, eight implications for policy will be presented. These are the things that ROU can use for developing a corporate policy to satisfy academics and to motivate them to undertake research.

8.3.1.2.1 Recruiting Advanced Academics

The findings indicated that highest qualification of academics (a doctoral degree) contributed to increasing the research motivation, research behaviours, and publishing outputs of academics. Among three research behaviours, the contribution of a doctoral degree to postgraduate supervision is particularly noted. Postgraduate training is an extremely important characteristic of a research university. Therefore, future recruitment should emphasise the quality of new academics by emphasising qualifications and research profile. Regarding the qualification, it is recommended that ROU should halt recruiting applicants for employment who have obtained a Bachelor's degree only, and seek people who have a postgraduate qualification, especially a doctoral degree. As of June 2013, the percentage of doctoral academics at ROU was only 15.8%, which was much lower than the percentage that the Prime Minister of Vietnam has set for every university in Vietnam: that by 2015, at least 25% academics at all universities in Vietnam must have a doctoral degree (Thủ tướng Chính phủ, 2007). Regional universities should have achieved that standard of 25% many years ago. However, ROU's current percentage is still lower than that standard point.

8.3.1.2.2 Emphasising the Research Profile of New Academics

Recruiting a new academic who has a doctoral degree is necessary, but not a decisive criterion for employment. Instead, the University should seek people who have a good research profile in terms of research publications. The standard for research publications of applicants, prior to the recruitment, should be increased annually so as to increase the quality of new academics.

Of equal importance to the educational qualification, is an evaluation of the applicant's level of research motivation and an affective commitment to the research goals of the university. These can be explored during the interview process. When a person has such motivation and commitment, he/she will devote time and effort to the university, and overcome any research pressures which may occur.

The last, but not least, requirement for the recruitment process is that the university should clearly discuss with applicants what they have to do in relation to teaching, research, and administration as well as the annual outcomes of each mission. This can be used as a framework for evaluating the performance of academics.

Advanced academics play an important role in leading the research activities within departments, mentoring other junior academics, supervising postgraduate students. All of their behaviours will contribute to a positive research climate in their department and a research culture at the University.

8.3.1.2.3 Conducting Annual Academic Performance Review

An annual academic performance review has been a normal activity at almost all universities in the world. It is an important measure that aims to reflect on the achievements of academics in teaching, research, and administration as clearly mentioned in their work profiles. Review is an opportunity to reflect on the support that a university offered academics during the past year, to suggest any requirements one might have of the university, and to set goals and plans for the next twelve months. However, this study observed that this practice has never been formally, comprehensively, and professionally implemented at ROU. In Vietnam, when being recruited into a university, academics become permanent staff and are rarely dismissed. This appointment mechanism has limitations because it does not create any pressure for academics to perform well in their teaching and research. So, ROU should implement an annual performance review scheme shortly. The review provides a mechanism to evaluate the research outcomes that academics have planned, to appraise the strengths, and note the weaknesses of academics so that they can improve in the next year. It is important that the review be a straight and fair evaluation for all academics. If the review is conducted objectively without any biased evaluation, it is a good mechanism to align academics' performance and development with the university's strategic priorities.

8.3.1.2.4 Diversifying Appointments of Academics

In order to reduce the heavy teaching load of academics, ROU should appoint casual academics who can assist with teaching, tutoring, and/or marking of examination papers of students. Normally, this casual position is appointed to postgraduate students, mostly students at the doctoral level. A tutor will assist an academic during the main lecture, or help undergraduate students who are struggling in a subject of some sort. This appointment is a common practice in western countries because it supplements the work of teaching staff (Klopper & Power, 2014). Furthermore, the appointment is a good opportunity for postgraduate students to improve their knowledge and skills (teaching skill, communication skill, time management skill, etc.) through the tutoring activities. Therefore, it is recommended

that ROU should recruit postgraduate students or any people outside the university who meet the requirements for casual positions.

8.3.1.2.5 Providing More Scholarly Resources

Scholarly resources in the libraries consist of books and scholarly journals, especially the international and prestigious journals. Scholarly resources can be considered as one of the most important contributions to the research productivity of academics. In the circumstance of having a limited budget for the whole university's operation in general, and for research activities specifically, the university should scrutinise the costs of scholarly resources in order to ensure effective use of the resources available. Kerr (2001, p. 190) advised that "not all universities need to provide coverage of all fields of knowledge; rather, some might concentrate more on what is most needed and what they do the best". The university can set up a network with other universities nationally to share resources. For example, nine universities in Australia and three universities in New Zealand have set up a resource sharing project called BONUS+ to share books for staff and students from among the 12 participating universities. All academics and students of these universities receive many benefits from the BONUS+, which motivates everyone to actively engage in research.

8.3.1.2.6 Restructuring the Number of Undergraduate and Postgraduate Students

Due to the negative correlation between a heavy teaching load and the research productivity of academics, the university should significantly reduce its number of undergraduate students. Currently, the university has too many undergraduate students and the number should be reduced significantly to a reasonable number in order to improve the quality of teaching. A reduction in teaching load would provide academics with more time for research, assumedly. However, there is a dualism of reality: despite a heavy teaching load, academics are happy with the income they earn from the extra teaching hours. So, if ROU reduced the number of undergraduate students, academics would not have many classes to teach, which would lead to a reduction in their incomes. At this time, nobody can ensure that academics will spend the gained time on research activities and have more research publications; they may seek other jobs to do to earn their living. So, the government must increase salaries for academics as already mentioned above.

Simultaneously, the university should increase the number of postgraduate students because one of the core missions of a research university is to train

postgraduate students (Altbach, 2013). Postgraduate students significantly contribute to the research climate of the university and the research productivity of academics, as already analysed. However, in order to attract more postgraduate students, the university must have many highly qualified academics, good libraries which have abundant scholarly resources, and good infrastructure for teaching and research.

All of the above suggestions are challenging for the university in the context of a limited budget. The University depends heavily on the tuition fees paid by its large number of undergraduate students. If the university reduced its large number of undergraduate students, its budget deficit would potentially worsen. Solving this problem is complex and requires much support from the Government and the active engagement of ROU's leaders.

8.3.1.2.7 Offering monetary incentives for highly qualified research publications

In the context of a low level of research productivity, monetary incentives for publication might be an effective means of increasing the research motivation and productivity of academics. Rewarding shows the university's recognition of academics. Therefore, ROU should develop a policy to reward highly qualified research publications. For example, the higher the journal ranking, the larger the sum of money rewarded. It is predicted that the large amount of any incentives would motivate academics to publish in high-ranking journals. If the University could offer financial incentives to academics for their research publications, they would be more motivated to undertake research.

One note is that the incentive reward should be fair for academics at all levels of academic rank and administered transparently. However, this is not the long-term and decisive solution to increase research productivity. It is important that ROU should find suitable solutions to encourage academics' intrinsic motivation to research. Intrinsically motivated academics will automatically spend more time and increased industry in engaging in research. Such academics have research passion and want to make significant contributions to the knowledge of the discipline rather than earn more money.

8.3.1.2.8 Stopping the Financially Punitive Policy

Although ROU has applied a financially punitive policy against academics that have not met the minimum research requirement, it appears not to work well in this context and needs to be reconsidered. While the university continues to recruit a high number of undergraduates every year, academics have no chance to reduce their

teaching load. The decision to transform ROU from a teaching-focused university to a research university was made by the university's leaders due to the political obligations of regional universities, and without any consultation with the academics. When making such decisions, the university did not carefully evaluate its actual capacity in terms of human resources (e.g. the number of doctoral academics, number of competent academic researchers), physical resources (scholarly resources in libraries, research facilities and infrastructure), and finance. So, it is relatively unfair if the University continually places pressure on academics to undertake research and produce publications without providing sufficient basic requirements to support them. The more pressures that are placed on academics, the less likely they are to participate in research activities. The university should consider other ways of promoting academics' intrinsic motivation to research, and reconsider the application of financially punitive mechanisms.

In summary, the aforementioned policy implications at national and local level have been suggested based on the findings of this study. All suggestions are necessary so that the Government of Vietnam, MOET, and ROU can carefully seek effective solutions. The university can fulfil the educational and political imperatives of the country when it is well supported and well-funded to operate. Having a centralised management and little autonomy as it is, ROU cannot develop if the policies are not changed.

8.3.2 Implications for Practice

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

8.3.2.1 Individual Level

This study indicated the importance of research collaboration between academics in enhancing the research capability of academics. The collaboration includes research collaboration such as asking for advice or peer-review of a manuscript for a college, and major research activities such as co-authoring a research paper. Such activities help academics to develop their research capability in terms of skills, knowledge of the discipline, and research self-efficacy. Academics should be encouraged to take every opportunity to communicate with colleagues both within and beyond their departments, and beyond the university.

During collaboration with colleagues, academics must be fully and actively engaged in discussions without shame. One of the habits of Vietnamese people is that they do not want to ask for help or for an explanation despite not knowing something. Such timidity is disadvantageous in research. Academics should overcome such feelings in order to learn from and with others, especially when there is an opportunity to exchange ideas with experienced researchers from other universities nationally or internationally. Effective collaboration between academics can be considered as a good start, one which motivates all other research behaviours.

8.3.2.2 Departmental Level

This study found the importance of a positive research climate within a department. According to Creswell (1986), in positive research climates, academics share knowledge, support each other, and collaborate harmoniously. Their positive practices gradually build a research culture for the department and the university. According to M. E. Porter (2000), culture consists of four important characteristics: trust, respect, individual self-determination, and obedience. In order to build a research culture in a department, it is necessary that all academics trust and respect each other (this was mentioned in the questionnaire of this study as collaboration readiness despite age, gender, rank, qualification), and that they should self-determine what activities to be involved in, and follow instruction/guidance/advice from other academics or research leaders.

From the lens of a community of practice, a department is a professional community in which academics collaborate in research. For every community, the role of the leader is very important. The departmental leaders should strive to facilitate a research culture across the department. The leaders should have the capacity to gather all academics for research purposes and become good exemplars themselves. As human beings, we are mostly influenced by, or even affected by, behaviours of other people, especially of the leaders. So, the departmental leaders need to play the roles of research planners, who direct other academics to engage in research, and evaluate the research performance of fellow academics. Being involved in a community which has a good research culture, academics will move from a peripheral position of less skilled or inexperienced, towards becoming more skilled in research. Their research competency will then make a good contribution to the research community of the department, which continues to enhance the research culture of the department.

8.3.2.3 University Level

8.3.2.3.1 Providing Professional Development

The findings of this study raise the need to provide professional development for ROU's academics. Their low level of research productivity was partly caused by a low level of research capability. It is not a surprise to see that ROU's academics have a low level of research capability because they were predominantly teaching-only staff and a majority of them have not been trained at postgraduate level. Therefore, professional development programs should be timely and regularly provided to improve their research capability. It is the responsibility of ROU to provide opportunities for academics to develop their research capability through workshops and training programs which are formally and professionally organised by the university or any other organisations nationally and internationally. The training programs should focus on the building of research knowledge (such as research methodology) and research skills (such as how to select, define and refine a research topic, how to get started with writing a paper on that topic, different narratives/structures for research papers, discussing pros and cons of findings, or strategies to prepare a research grant application). Even, some basic skills such as how to effectively reading a research paper, how to criticise or review a manuscript of each other's article, how to summarise and analyse a research paper, how to take note and use mind maps would constitute useful research workshops for ROU's academics at this point.

The professional development should also focus on enhancing English proficiency for academics. English is the most widely used language in academic and scholarly publications in the world. The extremely low number of international refereed journal articles of ROU's academics compared with that of other universities as shown in Table 2.10 was somehow a consequence of a low level of English proficiency, especially in the academic writing for international publications. Facilitators of the English courses cannot be just purely language teachers, but they must have good experience in undertaking research and publishing internationally.

Also, ROU could establish a group of academic writers whose position is to proof read and edit English manuscripts for all academics across the university. The university could send such 'editors' to an overseas university for a training course in academic editing such as a Master of Arts in Writing, Editing, and Publishing.

More importantly, the training programs must be developed systematically and regularly in a way that each workshop helps academics to achieve a certain goal and skill. They should be well designed to create a foundation in research skills for academics. This is a challenging task, like designing a teaching curriculum, but ROU should do it.

8.3.2.3.2 *Establishing Partnership with International Universities*

The findings indicated that research collaboration between academics can increase research productivity. It is especially more beneficial if ROU's academics have prospects of collaborating with international academics and experienced researchers. Recently, ROU has established partnerships with many universities in the world in order to exchange academics and researchers, but the outcome of such collaboration is still moderate because of the incomparable differences in the research capabilities between ROU's academics and international researchers. Therefore, on one hand, the university should be proactive in seeking international research collaborations, but on the other hand, ROU's academics must improve their research capability and English language skills in order to be able to communicate and work with international researchers on research projects. English has become the global scientific language; so all academics must achieve a minimum level of English proficiency in order to discuss ideas with overseas researchers.

Another point related to research collaboration is that ROU should invite international academics to come and work for the university. In order for that to occur, the Vietnamese Government should offer ROU a mechanism by which to attract international academics and researchers. Professor Ngô Bảo Châu⁴⁴ has suggested that the typical situation in Vietnam is that, while many countries in the world have good policies to attract international academics to their universities, Vietnam does not have any policy like that. Bevis (2013) indicated that China, a country with the same political system as Vietnam, has developed good policies to attract talent in the global academic world.

Individual Chinese universities have been busy recruiting Western academics for some time, but more recently the Chinese government has further incited

⁴⁴ Ngô Bảo Châu, born 1972, is a Vietnamese and French distinguished mathematician who is currently teaching at the University of Chicago, the US. He is the first Vietnamese to receive the Fields Medal, which he did in 2012.

foreigners with new opportunities that offer a range of incentives. ... an effort designed to attract up to one thousand foreign academics and entrepreneurs to China over a period of ten years (Bevis, 2013, p. 164).

Recognising the attraction of highly qualified foreign academics, and in combination with strong investment from the Chinese Government in higher education, the Chinese universities have improved their quality of teaching and research in recent years. Some universities have become world-class research universities, such as Tsinghua University and Peking University.

8.3.2.3.3 Providing Early Career Academic Development Programs

It is realised that ROU currently does not have support for the development of early career researchers. In many western countries, the universities have separate programs to support early career academics to develop their research. It is advocated that ROU introduce such a scheme for early career researchers. It is predicted that by providing early academic researchers with the opportunities to conduct independent research, they will improve their research capability over time at ROU.

8.3.2.3.4 Providing More Opportunities for Academics to Study a Doctoral Degree

The great benefits of being trained to become a doctor cannot be denied. According to Lee and Boud (2009, p. 96), "a credential for undertaking advanced scholarly research is a doctorate, usually a PhD". Definitely, the socialisation is important in a research community during a doctoral training program, especially an international one, when ROU's academics are supervised by qualified researchers and when they have opportunities to participate in core research activities such as discussions, research seminars, and workshops. All of these activities gradually improve research skills and build a good research capability for ROU's academics. These benefits are most visible when ROU's academics are trained overseas, where they receive comprehensive training, mentorship, and support from their supervisors, from their student peers, and even from internationally recognised academics in the school where they are studying. It is a golden chance for ROU's academics to build good research capability and a research profile during this time.

8.3.2.3.5 Prioritising More Support for Female and/or Old Academics

The findings of this study revealed that female and/or old academics were less research productive than male and/or young academics. While female academics often have greater family responsibilities, older academics experience

some disadvantages compared with young colleagues in terms of activeness, creative thinking, and mobility. Furthermore, the technological skills of old persons will be reduced, while such skills are very important for searching research materials. So, ROU should introduce a special support scheme to offer old and/or female academics an equal advancement opportunity in their careers. If the university does not provide special support for old and/female academics, it is difficult for them to fulfil the requirements of the research component of their tenure.

8.3.2.4 National Level

As previously mentioned, in Vietnam research has mainly been conducted by researchers at one hundred research institutes of two national research academies for a long time. In contrast, the role of academics at universities has been mainly teaching. This separation is a barrier which restrains the research productivity of academics. Research has indicated that a large amount of the government's research funding has been allocated to two national research academies' research institutes, while a very small amount has been allocated to hundreds of institutions in the Vietnamese Higher Education sector (H. T. L. Nguyen, 2014). In order to improve the research capability of ROU's academics, the Government of Vietnam should provide opportunities for ROU's academics as well as for the academics of other key universities (in the HERA project) to visit and work at national research institutes for few months per year. Academics will have good opportunities to work with experienced researchers of national research institutes. Also, academics will be able to access modern research equipment that is only available at the research institutes. On the other hand, researchers at national research institutes can be rotated to ROU and other key universities to work as visiting academics. During their time working at universities, researchers could conduct research training programs for all academics at the universities through research workshops and seminars. Such collaborations will definitely bring great benefits to the academics.

Importantly, such collaboration should be conducted regularly and become a common scholarly practice between ROU and the national research institutes. It would provide academics with opportunities to do research and help to reduce the teaching load of academics. The collaboration should have some short-term and long-term programs in order to maintain the research collaboration and to develop the research capability of academics.

In summary, the above implications for practice at four levels are important in the current context of ROU. In order to successfully implement such suggestions, it requires much effort and enthusiasm from all academics and educational leaders. For example, if the university provides a research workshop, academics should spend time in attending it in order to achieve the best outcomes. It is the responsibility of the university to provide sufficient support for academics, but academics must be required to make significant contributions to the research activities of the universities.

8.4 Limitations of the Study

The study has answered all three research questions. The qualitative findings and quantitative findings in each research question are consistent with one another. The research results confirm the reliability of the data and the appropriate methodology of this study. However, the following four limitations have been recognised:

- Although research productivity involves numerous different types of activities associated with the work of academics, this study only focused on some common publishing outputs. This was due to the contextual relevance for ROU within the higher education sector in Vietnam;
- The study depended mostly on the self-reports of academics. The actual number of research outputs and the type of an output (e.g. if it is a refereed journal article) were not verified;
- The items in the questionnaire could not explore the information about actual barriers related to scholarly resources, research infrastructure, and research self-efficacy that academics were really experiencing. Instead, the questionnaire was just able to investigate the perception of academics that a lack of such things constituted barriers; and
- Although the questionnaire was based on results of previous studies in the literature and on the findings of the qualitative research in the first stage of this study, I acknowledge that the questionnaire still had some limitations— For example, I based it on the instrument of Chen et al. (2006) which classified 12 items in two categories of intrinsic motivation and extrinsic motivation. However, it is hard to draw a distinction between these two types. One thing might constitute extrinsic motivation of this person, but be

considered as intrinsic motivation in the view of another, and vice-versa. The boundary between them is just a matter of opinion.

8.5 Suggestions for Further Study

The following suggestions for further study are recommended:

- To systematically collect information about different types of the research productivity of ROU's academics. The evaluation should also focus on the quality of the outputs, rather than just consider the quantity of publishing outputs as in this study.
- To explore other factors which are collectively aligned with the significant factors that I have found in this study, for example, the factors which constitute a positive research climate. This is because there is no one-fit-all answer for research productivity. The predictors found in this study contributed to a small variation in explaining the outcomes, while there are many other factors which might exist in the context of each academic, each department, the university, and Vietnamese society.
- To investigate the factors that particularly influence academics' intrinsic motivation to undertake research would significantly contribute to the literature, because intrinsic motivation to undertake research is the most important type of research motivation.

8.6 Summary

The emphasis on the research productivity of ROU's academics is a timely response to the changing context of international higher education that focuses on the research university. The change in the academic role of ROU's academics from teaching-only staff to teaching-and-research staff or research-focused staff, is a result of globalised forces in higher education. This change is extremely necessary for the Research-Oriented University to become a research university in 2020. Krause (2009, p. 415) indicates the changes of academic roles and higher education institutional missions are results of "the massification of the sector and the strengthening of the higher education market in a global context". Therefore, three research questions and the methodology were well designed to identify significant predictors of the research productivity of ROU's academics. The findings of this study contribute to the knowledge of the field, particularly in the context of ROU. The findings have the potential to inform ROU's leaders of strategies to increase the

research productivity of academics, particularly the publishing output, as it is one of the very important characteristics of a research university.

Regarding the implementation of a new research policy, every policy implication should be well positioned in a particular context which relates to culture, politics, and economics. So, when ROU changes from the model of a teaching-intensive university to a research university, ROU's academics have many difficulties in changing their identity from teaching-only staff to teaching-and-research staff. Academics also have to change their quite challenging work attitudes and behaviours. All of these are not easy to successfully change in a short period. Instead, it requires a long-term plan which is well designed and implemented. According to the perspective of M. Fullan (1994) regarding education reform, a new policy must have mutual support from academics. The implementation of the new policy must be conducted using both bottom-up and top-down strategies simultaneously. This means that on the one hand, policy makers at the university design a new teaching and research policy in order to change the current practice of academics from teaching-intensive to teaching and research-focused, based on the recommendations made by this study and/or other sources of information; but on the other hand, the university must have a strategic plan to successfully deploy such new policy into practice. The plan can be conducted through stages and must satisfy the expectations of a majority of academics in all aspects such as finance, resources, working environment, and culture in order to intrinsically motivate them to engage in undertaking research. M. G. Fullan (1996, p. 420) advised that "the lesson of systemic reform is to look for those strategies that are most likely to mobilise large numbers of people in new directions".

If the university cannot advance the working conditions, salaries, and physical resources for teaching and research, ROU's academics might seek other opportunities and withdraw their attachment to ROU to work for another institution where they might receive better working conditions and higher salary. This comes as a consequence of the globalised force called 'mobility' of talent. Academics may even move to another country or seek opportunities to stay in a country after they

finish studying a postgraduate program⁴⁵. In recent years, there have many Vietnamese academics sponsored by the Government of Vietnam to study abroad but who were unwilling to return to Vietnam to continue their work at their previous institutions. These persons had been elite staff at the institutions and were expected to significantly contribute to the quality of teaching and research of the universities upon their return (V. X. Nguyen, 2011). Altbach and Pacheco (2012) named this problem a migration of talent. According to Tran, Marginson, and Nguyen (2014, p. 142), this problem of brain drain was “largely due to the lack of recognition of their capability and potential contributions and lack of support from authorities and the working environment”.

Increasing the research productivity of academics is a long journey which has many challenges. It should be conducted gradually but firmly in some stages and cannot be done overnight. In order to successfully achieve the research goal of becoming a research university in 2020, the Research-Oriented University not only needs support and collaboration from academics, leaders, managers and administrative staff, but also needs greater provision from the Government of Vietnam, Ministry of Education and Training, and other relevant ministries such as Ministry of Science and Technology. All of these agents contribute to the high levels of research motivation, research behaviours, and then research productivity of all academics across the university.

⁴⁵ Academics who are sponsored to study a postgraduate program overseas are required to return to Vietnam immediately after the completion of study; but, some people have not returned and become permanent residents in some developed countries such as Australia.

APPENDICES

Appendix 1: Research Ethics and Permissions to Conduct the Study at the Sample Site

- 1a Research ethics protocol
- 1b Letter to the President of the Research-Oriented University regarding the permission to conduct the study
- 1c Letter to the President of the Research-Oriented University regarding the permission to conduct the study (Vietnamese translation)
- 1d Letter to an academic at ROU who worked as an independent contact for this study

Appendix 2: Interview

- 2a Letter of invitation and consent for participating in the interview
- 2b Letter of invitation and consent for participating in the interview (Vietnamese translation)
- 2c Questions for the interview
- 2d Questions for the interview (Vietnamese translation)

Appendix 3: Survey

- 3a Letter of invitation and consent for participating in the online survey
- 3b Letter of invitation and consent for participating in the online survey (Vietnamese translation)
- 3c Questionnaire for the survey
- 3d Questionnaire for the survey (Vietnamese translation)

Appendix 4: Others

- 4a Description of 19 participants of the interviews
- 4b Inversion of Values of Questionnaire's Scales

Appendix 1a

Research Ethics Protocol

GRIFFITH UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE

04-Jun-2015

Dear Mr NGUYEN

I write further to your application for a variation to your approved protocol "NR:

Understanding and explaining research productivity of academics

in a research-oriented university in Vietnam" (GU Ref No: EDN/A2/11/HREC). This request has been considered by the Office for Research.

The OR resolved to approve the requested variation:

Variation requested as follows:

1) To change title to: Factors Influencing the Research Productivity of Academics at The Research-Oriented University in Vietnam.

This decision is subject to ratification at the next meeting of the HREC. However, you are authorised to immediately commence the revised project on this basis. I will only contact you again about this matter if the HREC raises any additional questions or comments about this variation.

Regards

Rick Williams

Manager, Research Ethics

Office for Research

Bray Centre, N54 Room 0.15 Nathan Campus

Griffith University

ph: 07 3735 4375

fax: 07 373 57994

email: rick.williams@griffith.edu.au

Appendix 1b

Permission to Conduct the Study at the Sample Site

School of Education and Professional Studies
Mt Gravatt campus, Griffith University
176 Messines Ridge Road
Mt Gravatt, Queensland, 4122, Australia

**LETTER TO THE PRESIDENT OF
THE RESEARCH-ORIENTED UNIVERSITY, VIETNAM**

Re: Permission to Conduct the Study at the Research-Oriented University

Dear Mr President of the Research-Orient University

I am Nguyen Huu Quy, a doctoral candidature at School of Education and Professional Studies, Griffith University, Australia. I am conducting a Doctoral dissertation under the principal supervision of Associate Professor Christopher Klopper⁴⁶. The research is titled *“Factor Influencing the Research Productivity of Academics at the Research-Oriented University in Vietnam⁴⁷”*.

PROJECT HIGHLIGHT

Nowadays, doing scientific research is one of the most basic responsibilities of academics in Higher Education (HE). Academics' success in research depends very much on their commitment to research activities, for example writing and publishing journal articles, as well as presenting conference papers. Their commitment to research can be recognised and/or measured by looking at their attitudes towards and behaviours in research. A visible outcome of their research commitment is research productivity, in terms of scholarly publications such as peer-reviewed journal articles, conference papers, textbooks, and books.

This research project aims to achieve the following three goals: first, to explore perceptions of academics about research and its importance to their professional career; second, to discover individual and institutional factors that have positive or negative

⁴⁶ Associate Professor Christopher Klopper is the new principal supervisor. The original person at the time of data collection was Dr Calvin Smith.

⁴⁷ The original thesis title at the time of data collection was “Understanding and explaining research productivity of academics in a research-oriented university in Vietnam”. It has just been revised to make it simple but clear. The nature of the thesis has not been changed.

influences on their research commitment and research productivity; and thirdly, to model the relationships between research productivity and a variety of psychological, sociological and cultural constructs, and research behaviours. The results of this study are expected to be used by the University to develop policies and procedures that may improve the level of commitment to research and the number of research publications, in the local HE context of Vietnam.

In order to achieve the above-mentioned goals, I am planning to collect data at your university to answer these research questions. The process of data collection consists of two stages. The first stage engages in-depth interviews with 15-20 academics. Each interview lasts about 30-45 minutes and is scheduled at a convenient time in the period from 20 February to 30 March, 2013. The second stage conducted in three months from January to March, 2014 involves an online survey engaging as many academics as possible. Each participant is expected to spend about 30 minutes to complete the questionnaire. If there is a low online response rate, some paper questionnaires will be distributed.

PERMISSION

I hereby ask for your permission to conduct the research at this university. If you would be willing to cooperate with me on this research project, please provide me with the appropriate permission to contact and collect the data from academics at the University. More importantly, I would be grateful if you would deliver a message to academics of the University in order to emphasise the importance of this research to the University, and encourage your academics to participate voluntarily in the interviews and surveys.

Information gathered during the study will be maintained in the strictest confidence. The names of participants will not be known to anyone. Participation in this study is voluntary. Individuals can withdraw from the study without any prejudice. A summary of the findings will be provided at the completion of the study upon your and the participants' interest.

For your information, this study has conformed to the ethical review guidelines and processes of Griffith University. These guidelines are endorsed by the university's principal human ethics committee, the Human Experimentation Ethical Review Committee, and registered with the Australian Health Ethics Committee as complying with the National Statement. You are free to discuss your participation in this study with me or my Principal supervisor. If you would like to speak to an officer of Griffith University who is not involved in the study, you may contact Dr Allen Gary, Senior Policy Officer, Office for Research on +61.7.3735585 or email: g.allen@griffith.edu.au.

Thank you very much for your kind support and cooperation.

Yours sincerely,

Nguyen Huu Quy

Nguyen Huu Quy

Doctoral student of Education

School of Education and Professional Studies

Email: quy.nguyen@griffithuni.edu.au

Tel: +61 7 37355970

Associate Professor Christopher Klopper

Director International Education

Arts, Education, and Law Group

Griffith University

Email: c.klopper@griffith.edu.au

Tel: +61 7 373 55820

Appendix 1c

Permission to Conduct the Study at the Sample Site (Vietnamese translation)

Khoa Giáo dục và Nghiên cứu chuyên nghiệp
Đại học Griffith
176 Messines Ridge Road
Mt Gravatt, Queensland, 4122, Ô-xtrây-liá

THƯ GỬI GIÁM ĐỐC ĐẠI HỌC ĐỊNH HƯỚNG NGHIÊN CỨU

V/v: Xin phép thu thập dữ liệu nghiên cứu

Kính gửi: Ông Giám đốc Đại học Định hướng Nghiên cứu

Tôi tên là Nguyễn Hữu Quý, nghiên cứu sinh tại Khoa Giáo dục và Nghiên cứu chuyên nghiệp, Đại học Griffith, Ô-xtrây-liá. Nghiên cứu của tôi được sự hướng dẫn chính của Phó Giáo sư Christopher Klopper. Đề tài nghiên cứu có tên ***“Các yếu tố tác động đến hiệu suất nghiên cứu khoa học của giảng viên tại trường Đại học Định hướng Nghiên cứu ở Việt Nam”***.

TỔNG QUAN VỀ ĐỀ TÀI NGHIÊN CỨU

Ngày nay, bên cạnh việc giảng dạy thì nghiên cứu khoa học (NCKH) được xem là một nhiệm vụ rất quan trọng của người giảng viên đại học (GV). Thành tựu NCKH của GV phụ thuộc vào niềm đam mê và sự tâm huyết với NCKH (Commitment to Research=C2R) của chính họ. C2R được ghi nhận và đánh giá thông qua thái độ và hành vi của GV đối với hoạt động NCKH. Kết quả hiện hữu của C2R chính là hiệu suất NCKH (Research Productivity=RP), được cụ thể hoá bằng số lượng cũng như chất lượng các bài báo khoa học (có bình duyệt), báo cáo tại hội thảo khoa học, giáo trình và sách tham khảo chuyên ngành.

Đề tài này nhằm đạt được 3 mục đích sau: Một là khám phá nhận thức của GV về NCKH và tầm quan trọng của việc NCKH đối với sự phát triển chuyên môn nghề nghiệp. Hai là phát hiện các yếu tố mang tính cá nhân và tổ chức, có tác động tích cực hoặc tiêu cực đến C2R và RP của GV. Ba là nghiên cứu mối quan hệ giữa RP và các yếu tố tâm lý, xã hội, văn hoá, và các hành vi tiền NCKH. Kết quả nghiên cứu của luận án sẽ giúp quý trường có thêm cơ sở để xây dựng chính sách về khoa học công nghệ và các quy trình nghiệp vụ nhằm nâng cao mức độ C2R và năng lực NCKH của GV, và số lượng cũng như chất lượng của các công trình NCKH.

Để đạt được các mục đích trên, tôi dự định thu thập số liệu nghiên cứu tại quý trường trong 2 giai đoạn. Trong giai đoạn 1, tôi sẽ trao đổi trực tiếp với 15-20 GV của các trường đại

học và cao đẳng thành viên. Mỗi cuộc trao đổi kéo dài khoảng 30-45 phút, và được thực hiện vào một thời điểm thích hợp với người tham gia phỏng vấn, trong khoảng thời gian từ 20/02/2013 đến 30/03/2013. Giai đoạn 2 dự kiến thực hiện trong từ tháng 01-03/2014, liên quan đến việc khảo sát trực tuyến toàn bộ GV của quý trường về thực trạng NCKH hiện nay. Thời gian dự kiến để hoàn thành một bảng câu hỏi khảo sát trực tuyến là 30 phút.

THƯ XIN PHÉP

Tôi muốn xin phép Ông để được thu thập dữ liệu (theo kế hoạch trên) tại các trường thành viên, cũng như được tiếp xúc với các GV để tiến hành phỏng vấn và khảo sát. Để thuận tiện cho quá trình thu thập dữ liệu, tôi cũng mong Ông cho gửi một văn bản đến toàn thể GV của nhà trường để khẳng định tính thiết thực của đề tài nghiên cứu này đối với nhà trường và kêu gọi họ tham gia vào các cuộc phỏng vấn và khảo sát trực tuyến.

Thông tin thu thập được từ GV chỉ được sử dụng để phục vụ cho đề tài nghiên cứu này. Danh tính của các GV tham gia sẽ được bảo mật tuyệt đối. Việc tham gia phỏng vấn và khảo sát hoàn toàn mang tính chất tự nguyện, vì vậy cá nhân GV tham gia có thể rút lui hoặc chấm dứt bất kỳ lúc nào. Tóm tắt về kết quả nghiên cứu sẽ được gửi đến GV có quan tâm.

Tôi cũng xin cam đoan là nghiên cứu này và quy trình thu thập dữ liệu phục vụ cho nghiên cứu này tuyệt đối tuân thủ các tiêu chuẩn về đạo đức nghiên cứu theo quy định của Đại học Griffith và Ủy Ban Sức khỏe-Đạo đức nghiên cứu của Ô-xtrây-li-a. Nếu Ông cần biết thêm thông tin, xin vui lòng liên hệ với Phó Giáo sư Christopher Klopper - người hướng dẫn chính. Nếu Ông muốn trao đổi với một người khác không thuộc trong nhóm nghiên cứu để đảm bảo tính khách quan, Ông có thể liên hệ với TS. Allen Gary, Chuyên viên chính sách, Phòng Nghiên cứu của Đại học Griffith theo số máy +61.7.3735585 hoặc email: g.allen@griffith.edu.au.

Trân trọng cảm ơn Ông về sự quan tâm.

Nghiên cứu sinh

Nguyễn Hữu Quý

Nguyễn Hữu Quý

Nghiên cứu sinh

Trường Giáo dục và Nghiên cứu chuyên nghiệp

Email: quy.nguyen@griffithuni.edu.au

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Phó Giáo sư Christopher Klopper

Trưởng phòng Giáo dục quốc tế

Trường Nghệ thuật, Giáo dục và Luật

Đại học Griffith

Email: c.klopper@griffith.edu.au

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Appendix 1d

Letter to the Independent Contact for this Study

School of Education and Professional Studies
Mt Gravatt campus, Griffith University
176 Messines Ridge Road
Mt Gravatt, Queensland, 4122, Australia

LETTER TO THE INDEPENDENT CONTACT FOR THIS STUDY

Re: Invitation to Become an Independent Contact for this Study

Dear Dr ABC⁴⁸

I am Nguyen Huu Quy, a doctoral candidature at School of Education and Professional Studies, Griffith University, Australia. I am conducting a Doctoral dissertation under the principal supervision of Associate Professor Christopher Klopper. The research is titled *“Factor Influencing the Research Productivity of Academics at the Research-Oriented University in Vietnam”*.

PROJECT HIGHLIGHT

Nowadays, doing scientific research is one of the most basic responsibilities of academics in Higher Education (HE). Academics' success in research depends very much on their commitment to research activities, for example writing and publishing journal articles, as well as presenting conference papers. Their commitment to research can be recognised and/or measured by looking at their attitudes towards and behaviours in research. A visible outcome of their research commitment is research productivity, in terms of scholarly publications such as peer-reviewed journal articles, conference papers, textbooks and books.

This research project aims to achieve the following three goals: first, to explore perceptions of academics about research and its importance to their professional career; second, to discover individual and institutional factors that have positive or negative influences on their research commitment and research productivity; and thirdly, to model the relationships between research productivity and a variety of psychological, sociological and cultural constructs, and pro-research-productivity behaviours. The results of this study are expected to be used by the university to develop policies and procedures that may improve

⁴⁸ The real name and contact number of this Independent contact was offered to all participants in the consent form sent to them. But now, for confidentiality, the anonymous name is used.

the level of commitment to research and the number of research publications, in the local HE context of Vietnam.

In order to achieve the above-mentioned goals, I am planning to collect data at your University to answer these research questions. The process of data collection consists of two stages. The first stage engages in-depth interviews with 15-20 academics. Each interview lasts about 30-45 minutes and is scheduled at a convenient time in the period from 20 February to 20 March, 2013. The second stage conducted in three months from January to March, 2014 involves an online survey engaging as many academics as possible. Each participant is expected to spend about 30 minutes to complete the questionnaire. If there is a low online response rate, some paper questionnaires will be distributed.

INVITATION

As requested by the Griffith University's Office for Research, I needed to nominate an independent person not involved in the study, for participants to contact for any concerns or complaints about the ethical conduct of this project. I hereby invite you to cooperate with me in this project and to become an Independent Contact. I would be grateful if you accept this invitation.

For your information, this study has conformed to the ethical review guidelines and processes of Griffith University. These guidelines are endorsed by the University's principal human ethics committee, the Human Experimentation Ethical Review Committee, and registered with the Australian Health Ethics Committee as complying with the National Statement. You are free to discuss your participation in this study with me or my principal supervisor. If you would like to speak to an officer of GU who is not involved in the study, you may contact Dr Allen Gary, Senior Policy Officer, Office for Research on +61.7.3735585 or email: g.allen@griffith.edu.au.

Thank you very much for your kind support and cooperation.

Yours sincerely,

Nguyen Huu Quy

Nguyen Huu Quy
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Associate Professor Christopher Klopper
Director International Education
Arts, Education, and Law Group
Griffith University
Email: c.klopper@griffith.edu.au
Tel: +61 7 373 55820

Appendix 2a

Invitation and Consent Form to Participants in the Interview

School of Education and Professional Studies
Mt Gravatt campus, Griffith University
176 Messines Ridge Road
Mt Gravatt, Queensland, 4122, Australia

**INVITATION AND CONSENT FORM
TO PARTICIPANTS IN THE INTERVIEW**

Dear Participants (Add name of the Participant here)

I am Nguyen Huu Quy, a doctoral candidature at School of Education and Professional Studies, Griffith University, Australia. I am conducting a Doctoral dissertation entitled *“Factor Influencing the Research Productivity of Academics at the Research-Oriented University in Vietnam”*.

This research project aims to achieve the following three goals: first, to explore perceptions of academics about research and its importance to their professional career; second, to discover individual and institutional factors that have positive or negative influences on their research commitment and research productivity; and thirdly, to model the relationships between research productivity and a variety of psychological, sociological and cultural constructs, and pro-research-productivity behaviours. The results of this study are expected to be used by ROU to develop policies and procedures that may improve the level of commitment to research and the number of research publications, in the local HE context of Vietnam.

In order to collect data for my research, I would be grateful if you would participate in an in-depth interview with me. It lasts about 45-60 minutes and is scheduled at your convenient time and place in the period from 20/02/2013 to 20/03/2013. If you would be willing to cooperate with me, please let me know your convenient time and place for an interview. Your participation is voluntary and you can withdraw from it without any prejudice. A summary of the findings will be provided at the completion of the study upon your interest.

For your information, this study has conformed to the ethical review guidelines and processes of Griffith University. Information gathered during the interview will be

maintained in the strictest confidence. You are free to discuss any matter of this study with me or my Principal supervisor - Associate Professor Christopher Klopper. If you would like to speak to a person who does not involve in the study relating to your concerns or complaints about the ethical conduct of this research, you may contact Dr ABC.

Thank you very much for your cooperation.

Yours sincerely,

Nguyen Huu Quy

Nguyen Huu Quy
Doctoral student of Education
School of Education and Professional Studies
Email: quy.nguyen@griffithuni.edu.au
Tel: +61 7 37355970

Associate Professor Christopher Klopper
Director International Education
Arts, Education, and Law Group
Griffith University
Email: c.klopper@griffith.edu.au
Tel: +61 7 373 55820

Appendix 2b

Invitation and Consent Form to Participants in the Interview (Vietnamese translation)

Khoa Giáo dục và Nghiên cứu chuyên nghiệp
Đại học Griffith
176 Messines Ridge Road
Mt Gravatt, Queensland, 4122, Úc

THƯ MỜI THAM GIA CUỘC PHÒNG VẤN

Kính gửi: Anh/Chị...

Tôi là Nguyễn Hữu Quý, nghiên cứu sinh ngành Quản lý Giáo dục tại Đại học Griffith, Úc. Đề tài nghiên cứu của tôi có tên *“Các yếu tố tác động đến hiệu suất nghiên cứu khoa học của giảng viên tại trường Đại học Định hướng Nghiên cứu ở Việt Nam”*.

Đề tài này nhằm đạt được 3 mục đích sau: Một là khám phá nhận thức của giảng viên (GV) về nghiên cứu khoa học (NCKH) và tầm quan trọng của việc NCKH đối với sự phát triển chuyên môn nghề nghiệp. Hai là phát hiện các yếu tố mang tính cá nhân và tổ chức, có tác động tích cực hoặc tiêu cực đến niềm đam mê và tâm huyết với NCKH (Commitment to Research=C2R) và Hiệu suất NCKH (Research Productivity-RP) của GV. Ba là nghiên cứu mối quan hệ giữa RP và các yếu tố tâm lý, xã hội, văn hoá, và các hành vi tiền NCKH. Kết quả nghiên cứu của luận án này sẽ giúp cho nhà trường có cơ sở để xây dựng chính sách về khoa học công nghệ và các quy trình nghiệp vụ nhằm nâng cao mức độ C2R và năng lực NCKH của GV, và số lượng cũng như chất lượng của các công trình NCKH.

Để có được dữ liệu nghiên cứu, tôi xin mời Anh/Chị tham gia vào cuộc trao đổi thông tin với tôi. Cuộc trao đổi sẽ kéo dài khoảng 30-45 phút, được sắp xếp vào một thời điểm thích hợp trong khoảng thời gian từ ngày 20/02/2013 đến ngày 20/03/2013. Nếu Anh/Chị sẵn sàng tham gia, vui lòng cho tôi biết thời gian và địa điểm thích hợp. Sự tham gia của Anh/Chị mang tính chất tự nguyện, vì vậy Anh/Chị có thể chấm dứt bất kỳ lúc nào nếu Anh/Chị không còn thấy quan tâm. Tóm tắt kết quả nghiên cứu sẽ được gửi đến Anh/Chị, nếu Anh/Chị có quan tâm.

Tôi cũng xin trình bày để Anh/Chị biết rằng nghiên cứu này và quy trình thu thập dữ liệu phục vụ cho nghiên cứu tuân thủ nghiêm ngặt các tiêu chuẩn về đạo đức nghiên cứu theo quy định của Đại học Griffith và Ủy Ban Sức khỏe-Đạo đức nghiên cứu của Ô-xtrây-li-a. Nếu Anh/Chị muốn trao đổi thêm tin, vui lòng liên hệ với người hướng dẫn chính của tôi, Phó

Giáo sư Christopher Klopper. Nếu Anh/Chị muốn trao đổi với một người khác không thuộc trong nhóm nghiên cứu, để đảm bảo tính khách quan, Anh/Chị có thể liên hệ với Tiến sĩ ABC.

Trân trọng cảm ơn bà.

Nguyễn Hữu Quý

Nguyễn Hữu Quý

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Appendix 2c

Questions for the Interview

QUESTIONS FOR THE INTERVIEW

Research question	Interview question
1. What are the individual and institutional factors that impact the research motivation of academics at the Research-Oriented University in Vietnam?	1.1. Do you think that research is an important responsibility of academics?
	1.2. How do you think about the library resources for research at this university?
	1.3. How do you think about the facilities and equipment that support for research at this university?
	1.4. Are you satisfied with the research policy of this university in terms of research funding and services that support for research?
	1.5. What other factors that you think they influence research motivation of yourself as well as your colleagues?
2. What are the research motivational factors that impact the research behaviours of academics at the Research-Oriented University in Vietnam?	2.1. Why do you engage in research?
	2.2. What are the factors that motivate you to conduct research behaviours?
	2.3. What are the factors that are currently constraining you from conducting research behaviours?
3. What are the research behavioural factors that impacted the publishing outputs from 2009 to 2013 of academics at the Research-Oriented University in Vietnam?	3.1. Do you discuss with your colleagues about research matters? How often?
	3.2. Do you collaborate with your colleagues to do research? How often?
	3.3. Have you ever supervised a postgraduate student? If yes, what are the benefits of the supervision?

Appendix 2d

Questions for the Interview (Vietnamese translation)**BẢNG CÂU HỎI PHỎNG VẤN**

Câu hỏi nghiên cứu	Câu hỏi phỏng vấn
1. Những yếu tố mang tính cá nhân và tổ chức nào có tác động đến động cơ làm nghiên cứu khoa học của giảng viên tại Đại học Định hướng Nghiên cứu, Việt Nam?	1.1. Anh/Chị có nghĩ rằng nghiên cứu khoa học là nhiệm vụ quan trọng của giảng viên không?
	1.2. Anh/Chị đánh giá thế nào về các nguồn tài liệu phục vụ nghiên cứu trong thư viện của trường?
	1.3. Anh/Chị đánh giá thế nào về cơ sở hạ tầng và trang thiết bị phục vụ nghiên cứu của trường?
	1.4. Anh/Chị có hài lòng với kinh phí khoa học được cấp và các dịch vụ hỗ trợ của nhà trường liên quan đến hoạt động nghiên cứu?
	1.5. Còn những yếu tố nào khác tác động đến động cơ làm nghiên cứu khoa học của Anh/Chị, cũng như đồng nghiệp của Anh/Chị trong trường?
2. Những yếu tố thuộc về động cơ làm nghiên cứu khoa học nào, có tác động đến hành vi nghiên cứu của giảng viên tại Đại học Định hướng Nghiên cứu, Việt Nam?	2.1. Tại sao Anh/Chị thực hiện hoạt động nghiên cứu?
	2.2. Những yếu tố động cơ nào thôi thúc Anh/Chị tiến hành làm nghiên cứu?
	2.3. Những yếu tố nào đang kìm hãm khiến Anh/Chị không muốn thực hiện hoạt động nghiên cứu?
3. Những yếu tố thuộc về hành vi nghiên cứu nào, có tác động đến hiệu suất nghiên cứu từ năm 2009 đến năm 2013 của giảng viên tại Đại học Định hướng Nghiên cứu, Việt Nam?	3.1. Anh/Chị có trao đổi ý kiến với đồng nghiệp về các vấn đề nghiên cứu? Mức độ thường xuyên thế nào?
	3.2. Anh/Chị có cộng tác với đồng nghiệp để làm nghiên cứu? Mức độ thường xuyên thế nào?
	3.3. Anh/Chị đã bao giờ hướng dẫn sinh viên sau đại học chưa? Nếu có, thì cho biết việc hướng dẫn đó có tác động tích cực gì đến hiệu suất nghiên cứu khoa học của Anh/Chị?

Appendix 3a

Letter of Invitation and Consent for Participating in the Online Survey

School of Education and Professional Studies
Mt Gravatt campus, Griffith University
176 Messines Ridge Road
Mt Gravatt, Queensland, 4122, Australia

CONSENT FORM TO PARTICIPANTS IN THE ONLINE SURVEY**Dear Colleagues**

I am Nguyen Huu Quy, a doctoral candidature at School of Education and Professional Studies, Griffith University, Australia. I am conducting a Doctoral dissertation entitled "*Factor Influencing the Research Productivity of Academics at the Research-Oriented University in Vietnam*".

This research project aims to achieve the following three goals: first, to explore perceptions of academics about research and its importance to their professional career; second, to discover individual and institutional factors that have positive or negative influences on their research commitment and research productivity; and thirdly, to model the relationships between research productivity and a variety of psychological, sociological and cultural constructs, and pro-research-productivity behaviours. The results of this study are expected to be used by ROU to develop policies and procedures that may improve the level of commitment to research and the number of research publications, in the local HE context of Vietnam.

In order to collect data for my research, I would be grateful if you would participate in an online survey. By clicking the link below, you express your great support and cooperation with me in this study.

https://www.surveymonkey.com/s.aspx?sm=y9SWgQKRj5tW4QKTsie6kA_3d_3d

It takes you about 30 minutes to complete the questionnaire. Your participation is voluntary and you can withdraw from it without any prejudice. A summary of the findings will be provided at the completion of the study upon your interest.

For your information, this study has conformed to the ethical review guidelines and processes of Griffith University. Information gathered during the interview will be maintained in the strictest confidence. You are free to discuss any matter of this study with me or my Principal supervisor - Associate Professor Christopher. If you would like to speak

to a person who does not involve in the study relating to your concerns or complaints about the ethical conduct of this research, you may contact Dr Allen Gary, Senior Policy Officer, Office for Research of Griffith University on +61.7.3735585 or email:

g.allen@griffith.edu.au, or Dr ABC.

Thank you very much for your cooperation.

Yours sincerely,

Nguyen Huu Quy

Nguyen Huu Quy

Doctoral student of Education

\School of Education and Professional Studies

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Tel: +61 7 37355970

Associate Professor Christopher Klopper

Director International Education

Arts, Education, and Law Group

Griffith University

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Appendix 3b

Invitation and Consent Form to Participants in the Online Survey (Vietnamese translation)

Khoa Giáo dục và Nghiên cứu chuyên nghiệp
Đại học Griffith
176 Messines Ridge Road
Mt Gravatt, Queensland, 4122, Úc

THƯ MỜI THAM GIA CUỘC KHẢO SÁT TRỰC TUYẾN

Kính gửi: Quý Anh/Chị

Tôi là Nguyễn Hữu Quý, nghiên cứu sinh ngành Quản lý Giáo dục tại Đại học Griffith, Úc. Đề tài nghiên cứu của tôi có tên *“Các yếu tố tác động đến hiệu suất nghiên cứu khoa học của giảng viên tại trường Đại học Định hướng Nghiên cứu ở Việt Nam”*.

Đề tài này nhằm đạt được 3 mục đích sau: Một là khám phá nhận thức của giảng viên (GV) về nghiên cứu khoa học (NCKH) và tầm quan trọng của việc NCKH đối với sự phát triển chuyên môn nghề nghiệp. Hai là phát hiện các yếu tố mang tính cá nhân và tổ chức, có tác động tích cực hoặc tiêu cực đến niềm đam mê và tâm huyết với NCKH (Commitment to Research=C2R) và Hiệu suất NCKH (Research Productivity-RP) của GV. Ba là nghiên cứu mối quan hệ giữa RP và các yếu tố tâm lý, xã hội, văn hoá, và các hành vi tiền NCKH. Kết quả nghiên cứu của luận án này sẽ giúp cho nhà trường có cơ sở để xây dựng chính sách về khoa học công nghệ và các quy trình nghiệp vụ nhằm nâng cao mức độ C2R và năng lực NCKH của GV, và số lượng cũng như chất lượng của các công trình NCKH.

Để có được dữ liệu nghiên cứu, tôi xin mời Anh/Chị tham gia vào cuộc khảo sát trực tuyến. Bằng cách kích vào đường link dưới đây, Anh/Chị thể hiện sự hợp tác và đồng ý tham gia cuộc khảo sát.

https://www.surveymonkey.com/s.aspx?sm=y9SWgQKRj5tW4QKTSie6kA_3d_3d

Cuộc khảo sát mất khoảng 30 phút. Sự tham gia của Anh/Chị mang tính chất tự nguyện, vì vậy Anh/Chị có thể chấm dứt bất kỳ lúc nào nếu Anh/Chị không còn thấy quan tâm. Tóm tắt kết quả nghiên cứu sẽ được gửi đến Anh/Chị, nếu Anh/Chị có quan tâm.

Tôi cũng xin trình bày để Anh/Chị biết rằng nghiên cứu này và quy trình thu thập dữ liệu phục vụ cho nghiên cứu tuân thủ nghiêm ngặt các tiêu chuẩn về đạo đức nghiên cứu theo quy định của Đại học Griffith và Ủy Ban Sức khỏe-Đạo đức nghiên cứu của Ô-xtrây-li-a. Nếu Anh/Chị muốn trao đổi thêm tin, vui lòng liên hệ với người hướng dẫn chính của tôi, Phó

Giáo sư Christopher Klopper. Nếu Anh/Chị muốn trao đổi với một người khác không thuộc trong nhóm nghiên cứu, để đảm bảo tính khách quan, Anh/Chị có thể liên hệ với Tiến sĩ ABC.

Trân trọng cảm ơn bà.

Nguyễn Hữu Quý

Nguyễn Hữu Quý

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Appendix 3c

Questionnaire for the Online Survey**INTRODUCTION ABOUT THE RESEARCH PROJECT****About the researcher**

I am Nguyen Huu Quy, a doctoral student at School of Education and Professional Studies, Griffith University (GU), Australia.

Research topic

Factors Influencing the Research Productivity of Academics at the Research-Oriented University in Vietnam

Research aims

1. To explore perceptions of academics about research and its importance to their professional career.
2. To discover individual and institutional factors that have influences on the research productivity of academics at this University.
3. To explain the relationship between psychological, social, cultural factors and research behaviours of academics and their research productivity in the last five years, from 01/01/2009 to 31/12/2013.

The Significance of This Study

The results of this study are expected to be used by the University to develop policies and procedures that may improve the level of commitment to research and the number of research publications, in the Higher Education context of Vietnam. The contribution of this research is to help the Research-Oriented University achieve its goal of a research intensive university by 2020.

INVITATION AND RESEARCH ETHICS

I invite you to participate in this online survey. It will only take you about 30 minutes to complete the survey. Your participation is voluntary and you can withdraw from it without any prejudice.

A summary of the findings will be provided at the completion of the study upon your interest.

This research project has ethical clearance from Griffith University (protocol number EDN/A2/11/HREC).

Information gathered during the survey will be maintained in the strictest confidence. You are free to discuss any matter of this study with me or the Principal supervisor, Associate Professor Christopher Klopper.

If you have any concerns or complaints relating to the ethical conduct of this research you may contact Dr. Allen Gary, Senior Policy Officer, Office for Research of Griffith University on +61.7.3735585 or email: g.allen@griffith.edu.au, or Dr. ABC.
Thank you very much for your cooperation.

Nguyen Huu Quy
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Associate Professor Christopher Klopper
Director International Education
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PART ONE: DEMOGRAPHICS

Please provide some information about yourself by either choosing from the drop-down list or click in the box (whichever possible).

Question 1. Age

Question 2. Gender

A. Male

B. Female

Question 3. Academic rank

A. Lecturer

B. Senior lecturer

C. Superior lecturer

Question 4. Qualification

A. Bachelor's degree

B. Master's degree

C. Doctorate degree

D. Doctor of science degree

Question 5. Professorship

A. N/A

B. Associate Professor

C. Professor

Question 6. Department

Question 7. What is your highest level of teaching?

A. Vocational college students

B. Undergraduate students

C. Master's students

D. Doctoral students

Question 8. What is your main current job?

A. I am totally doing lecturing.

B. I am mainly doing lecturing and some managerial duties at the department level.

C. I am mainly doing managerial duties (at the college and university level) and still doing some lecturing.

D. I am mainly doing administrative duties (at the college and university) and doing some lecturing.

Question 9. Have you ever been training or being trained overseas? Please indicate the level of training. (You can choose many options if suitable).

A. I was trained from three to six months overseas

B. I got a Diploma overseas

C. I got a Bachelor's degree overseas

D. I got a Master's degree overseas

E. I got a Doctoral degree overseas

F. I did post-doctorate research overseas

- G. I am undertaking a master's program overseas
- H. I am undertaking a doctoral program overseas
- I. Never
- J. Other (please specify)

PART TWO: YOUR PERCEPTIONS ABOUT RESEARCH, MOTIVATION AND FACTORS INFLUENCE YOUR RESEARCH PRODUCTIVITY

The section aims to understand your perceptions about research, discover motivational factors which motivate you to do research as well as other institutional factors that have significant influences on your research productivity in the context of the University of Danang and Higher Education of Vietnam.

Question 10. How much do you agree with the following statements about research?

	Strongly agree	Moderately agree	Moderately disagree	Strongly disagree
A. Doing research is the most important task of academics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Doing research increases my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Doing research enhances my teaching quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 11: How important is each of the following motivational factors in motivating you to do research?

	Very important	Moderately important	Quite important	Not at all important
A. Being promoted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Getting a professorship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Getting a managerial position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Getting a better salary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Getting a reduced teaching load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Satisfying a personal need to stay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

current in the field

G. Satisfying a personal need to contribute to the field

H. Satisfying a personal need for creativity and curiosity

I. Satisfying a personal need to collaborate with others

J. Achieving peer recognition

K. Getting respect from students

Question 12. Among the following obstacles which potentially inhibit your research productivity, what are the ones with which you are facing? For each of it, please indicate the level of influence.

**Choose the ones that match your circumstance only*

	Strongly influential	Moderately influential	Moderately uninfluential	Strongly uninfluential	N/A
A. Having a heavy teaching load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Having a heavy managerial load	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Lacking books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Lacking research articles in domestic refereed journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Lacking research articles in international refereed journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Having a low salary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Lacking funding support for attending research conferences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Lacking research equipment (laboratory,...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Lacking office facilities for research (computers,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

printers,...)					
J. Lacking opportunities to collaborate with international reseachers in order to improve research capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Having a low proficiency of a foreign language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Having a low research capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 13. On average, how often have you done the following research behaviours in the last five years (2009-2013)?

	Ofte n	Sometime s	Seldo m	Never
A. Discussing with colleagues to find research ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Seeking advice from experienced colleagues to improve research capabilty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Asking colleagues to review manuscripts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Collaborating with colleagues to do research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Giving feedback on manuscripts of colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Discussing with academics from other universities in Vietnam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Discussing with researchers from foreign universities, institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Supervising undergraduate students to write theses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Supervising master's students to write theses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Supervising doctorate students to write dissertations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 14. On average, how much have the following research behaviors attributed to all your research outputs during the last five years? * For those behaviours in the question 4 above which you chose "Never", please choose N/A in this question.

	0%	1-25%	26-50%	51-75%	>75%	N/A
A. Discussing with colleagues to find research ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Seeking advice from experienced colleagues to improve research capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Asking colleagues to review manuscripts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Collaborating with colleagues to do research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Giving feedback on manuscripts of colleagues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Discussing with academics from other universities in Vietnam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Discussing with researchers from foreign universities, institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Supervising undergraduate students to write theses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Supervising master's students to write theses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Supervising doctorate students to write dissertations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 15. How much do you agree with the following statements about the research climate in your departments?

	Strongly agree	Moderately agree	Moderately disagree	Strongly disagree
A. Almost academics are committed to research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. People are supportive in helping others do research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Regardless of people's age, rank and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

title, their research ideas are respected by others in my department

D. The department head can influence the research productivity of me and other academics by being a great exemplar of research behaviours.

Question 16. How satisfied are you with the access of the following resources that support you to do research productively?

	Strongly satisfied	Moderately satisfied	Moderately dissatisfied	Strongly dissatisfied
A. Books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Research articles in domestic refereed journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Research articles in international refereed journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Research equipment (laboratory, ...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Office facilities for research (computers, printers,...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Questions 17. How satisfied are you with the following things relating to the research policy of the University?

	Strongly satisfied	Moderately satisfied	Moderately dissatisfied	Strongly dissatisfied
A. The supporting fund provided by university for publishing articles in international refereed journals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. The supporting fund provided by	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

university for publishing articles in domestic refereed journals

C. The supporting fund provided by the university for attending international conferences

D. The research fund provided by the university for research projects at college level

E. The research fund provided by the university for research projects at university level

F. The reward policy for academics who have good research outputs

Question 18. How comfortable do you feel discussing research matters with the following persons?

	Very comfortable	Moderately comfortable	Slightly comfortable	Not at all comfortable
A. Colleagues of a higher degree / professorship rank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Colleagues of a lower degree / professorship rank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Colleagues who have been trained overseas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 3: RESEARCH PRODUCTIVITY

Please indicate your research productivity in the last five years (2009, 2010, 2011, 2012,2013).

**For questions 1,2, 3: if the value is zero, still need to fill a "0" in the box.*

Question 19. In the last five years, how many papers have you published in domestic and international refereed journals? Indicate your role in each type

(Do not count submissions that have not been published yet)

	Total	As a sole author	As a co-author
A. Domestic refereed journal articles	<input type="text"/>	<input type="text"/>	<input type="text"/>
B. International refereed journal articles	<input type="text"/>	<input type="text"/>	<input type="text"/>

Question 20. In the last five years, how many research projects of each level have you completed and what was your role?

	Total	As a sole CI	As a team member
A. Research projects at college level completed	<input type="text"/>	<input type="text"/>	<input type="text"/>
B. Research projects at university level completed	<input type="text"/>	<input type="text"/>	<input type="text"/>
C. Research projects at ministry level completed	<input type="text"/>	<input type="text"/>	<input type="text"/>

Question 21. In the last five years, how many textbooks, book chapters, and books have you published? Indicate your role in each category.

	Total	As a sole author	As a co-author
A. Textbooks	<input type="text"/>	<input type="text"/>	<input type="text"/>
B. Book chapters	<input type="text"/>	<input type="text"/>	<input type="text"/>
C. Books	<input type="text"/>	<input type="text"/>	<input type="text"/>

Question 22. In a typical week (6 days), on average, how many hours do you spend for each of the three aspects of work? (estimate the number of hours for each aspect).

	Number of hours
Teaching <i>(The time spent preparing for teaching, laboratory instruction, grading, working with students)</i>	<input type="text"/>
Research <i>(The time spent on activities that lead to a concrete product such as journal articles, conference presentations)</i>	<input type="text"/>
Management and/or Administration <i>(The time spent for management and administration as main jobs, and time spent on meetings and</i>	<input type="text"/>

professional association involvement)

Question 23. Please indicate your publications in your whole academic life (up to now)

	Total	As a sole author / As a sole CI	As a co-author / As a team member
A. Domestic refereed journal articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. International refereed journal articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Research projects at college level completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Research projects at university level completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Research projects at ministry level completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Textbooks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Book chapters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 24. Regarding your own preferences, do your interests lie primarily in teaching or research?

	Totally teaching	Both teaching and research, but leaning toward teaching	Both teaching and research equally (50 - 50)	Both teaching and research, but leaning toward research	Totally research
I am interested in...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FURTHER DISCUSSION (This part is optional)

Question 25. Thinking about the time when you were very productive in your research, what were the circumstances/conditions that helped you to be very productive?

.....

.....
.....

Question 26. Thinking about the time when you were very productive in your research, what were the things that were motivating you to be very productive at that time?

.....
.....
.....

Question 27. Thinking about the time when you were not as productive in your research as you wanted to be, what were the circumstances/conditions that prevented you from being as productive as you wanted to be?

.....
.....
.....

Question 28. Thinking about the time when you were not as productive in your research as you wanted to be, what were the things that were not motivating you to be productive at the time?

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.....
.....

This is the end of the survey. Thank you very much for your support.

Appendix 3d

BẢN CÂU HỎI KHẢO SÁT**Giới Thiệu Tổng Quan Về Đề Tài****Về nghiên cứu sinh**

Tôi là Nguyễn Hữu Quý, hiện là Đại học Đà Nẵng.

Tôi hiện là Nghiên cứu sinh ngành Quản lý Giáo dục tại Khoa Giáo dục và Nghiên cứu chuyên nghiệp, Đại học Griffith, Úc.

Đề tài nghiên cứu:

“Các yếu tố tác động đến hiệu suất nghiên cứu khoa học của giảng viên tại trường Đại học Định hướng Nghiên cứu ở Việt Nam”

Mục đích nghiên cứu:

1. Tìm hiểu nhận thức của giảng viên về tầm quan trọng và giá trị của việc nghiên cứu khoa học (NCKH) đối với sự phát triển chuyên môn và chất lượng giảng dạy của giảng viên nói riêng, và chất lượng giáo dục của nhà trường nói chung.

2. Phát hiện các yếu tố mang tính cá nhân (individual factors) và tổ chức (institutional factors) có tác động tích cực hoặc tiêu cực đến a) niềm đam mê và sự tâm huyết với NCKH và b) hiệu suất NCKH của giảng viên các trường đại học, cao đẳng thành viên thuộc Đại học Định hướng Nghiên cứu.

3. Nghiên cứu mối quan hệ giữa các yếu tố tâm lý, xã hội, văn hoá và các hoạt động trao đổi học thuật với hiệu suất NCKH của giảng viên nhà trường trong khoảng thời gian 5 năm, từ ngày 01/01/2009 đến ngày 31/12/2013.

Ý nghĩa thực tiễn của đề tài nghiên cứu:

Kết quả nghiên cứu của đề tài này sẽ giúp chúng tôi có thêm luận cứ và luận chứng khoa học để:

1. Xây dựng một chính sách khoa học công nghệ và các quy trình nghiệp vụ phù hợp với đặc thù và sứ mệnh của một đại học vùng trọng điểm quốc gia, cũng như phù hợp với tâm tư, nguyện vọng của Anh/Chị.

2. Xây dựng một môi trường nghiên cứu mang tính học thuật cao nhằm kích thích niềm đam mê nghiên cứu khoa học của Anh/Chị, cũng như nâng cao kỹ năng nghiên cứu, số lượng và chất lượng của các công trình NCKH.

Tất cả những điều này sẽ góp phần đưa Đại học Định hướng Nghiên cứu trở thành một đại học nghiên cứu vào năm 2020 như mục tiêu đã đề ra.

LỜI MỜI VÀ ĐẠO ĐỨC NGHIÊN CỨU

Để giúp tôi có thêm luận cứ và luận chứng khoa học cho đề tài nghiên cứu, xin trân trọng kính mời Anh/Chị tham gia vào cuộc khảo sát này. Thời gian để trả lời các câu hỏi mất khoảng 30 phút.

Sự tham gia của Anh/Chị mang tính chất tự nguyện nhưng sẽ hỗ trợ đắc lực cho tôi hoàn thành tốt đề tài nghiên cứu. Tóm tắt kết quả nghiên cứu sẽ được gửi đến Anh/Chị, nếu Anh/Chị có quan tâm.

Đề tài nghiên cứu này và quy trình thu thập dữ liệu tuân thủ nghiêm ngặt các tiêu chuẩn về đạo đức nghiên cứu theo quy định của Đại học Griffith và Ủy ban Sức khoẻ Đạo đức nghiên cứu của Úc (Mã số: EDN/A2/11/HREC).

Hoạt động thu thập dữ liệu tại các trường thành viên thuộc nhà trường cũng đã được sự chấp thuận của Giám đốc.

Thông tin mà Anh/Chị cung cấp sẽ được giữ bí mật tuyệt đối và chỉ phục vụ cho mục đích nghiên cứu của đề tài này.

Nếu Anh/Chị muốn trao đổi thêm thông tin, vui lòng liên hệ với người hướng dẫn chính của tôi (theo địa chỉ dưới đây) hoặc Tiến sĩ ABC.

Chân thành cảm ơn sự giúp đỡ của Anh/Chị. Kính chúc Anh/Chị và gia đình luôn mạnh khỏe, hạnh phúc và công tác tốt.

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H. Đang học tiến sĩ ở nước ngoài

I. Chưa bao giờ

J. Hệ khác (vui lòng ghi rõ)

PHẦN 2: QUAN NIỆM, ĐỘNG CƠ NGHIÊN CỨU VÀ CÁC YẾU TỐ ẢNH HƯỞNG ĐẾN HIỆU SUẤT NGHIÊN CỨU KHOA HỌC

Phần này tìm hiểu quan niệm của Anh/Chị về 1) tầm quan trọng và giá trị của việc NCKH; 2) động cơ để Anh/Chị làm NCKH và 3) các yếu tố ảnh hưởng đến hiệu suất NCKH của Anh/Chị trong điều kiện và hoàn cảnh của nhà trường nói riêng và của giáo dục đại học Việt Nam hiện nay nói chung.

Câu hỏi 10. Anh/Chị cho biết mức độ đồng ý về tầm quan trọng và giá trị của NCKH

	Rất đồng ý	Khá đồng ý	Khá không đồng ý	Rất không đồng ý
A. NCKH là nhiệm vụ quan trọng nhất của người GV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. NCKH giúp nâng cao tri thức cho bản thân tôi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. NCKH giúp nâng cao chất lượng giảng dạy của chính tôi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 11: Anh/Chị cho biết mức độ quan trọng của các yếu tố được xem là nguồn động lực thúc đẩy NCKH đối với bản thân mình?

	Rất quan trọng	Khá quan trọng	Hơi quan trọng	Không quan trọng
A. Để sớm nâng ngạch lên GVC, GVCC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Để được phong học hàm PGS, GS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Để được đề bạt, bổ nhiệm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Để tăng lương trước thời hạn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Để giảm bớt khối lượng giảng dạy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Để thỏa mãn nhu cầu cập nhật tri thức về lĩnh vực của mình	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

G. Để thỏa mãn nhu cầu đóng góp tri thức trong lĩnh vực của mình	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Để thỏa mãn nhu cầu sáng tạo và khám phá khoa học	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Để thỏa mãn nhu cầu hợp tác với đồng nghiệp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Để được đồng nghiệp công nhận là mình giỏi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Để được sinh viên kính nể	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 12. Anh/Chị cho biết đâu là những trở ngại mà mình đang gặp phải. Trong mỗi trở ngại đó, cho biết mức độ ảnh hưởng của nó đến việc làm giảm hiệu suất NCKH của bản thân

* **Ghi chú: Những yếu tố không phải là trở ngại mà Anh/Chị đang gặp phải, vui lòng chọn "N/A" (Không gặp phải)*

	Rất ảnh hưởng	Khá ảnh hưởng	Hầu như không ảnh hưởng	Hoàn toàn không ảnh hưởng	N/A
A. Do khối lượng giảng dạy quá nặng	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Do bận rộn với công tác quản lý	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Do thiếu nguồn sách nghiên cứu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Do thiếu nguồn các bài báo trên tạp chí trong nước	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Do thiếu nguồn các bài báo trên tạp chí quốc tế	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Do lương thấp chưa đảm bảo cuộc sống	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Do thiếu kinh phí để đi tham dự hội thảo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Do thiếu trang thiết bị để làm nghiên cứu (máy móc, phòng thí	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

nghiệm,...)

I. Do thiếu cơ sở vật chất hỗ trợ

nghiên cứu (phòng làm việc, máy tính, máy in,...)

J. Do thiếu cơ hội hợp tác với các nhà khoa học nước ngoài để học hỏi và nâng cao năng lực nghiên cứu

K. Do hạn chế về năng lực ngoại ngữ

L. Do hạn chế về năng lực nghiên cứu

Câu hỏi 13. Anh/Chị cho biết mức độ thường xuyên thực hiện các hoạt động trao đổi học thuật sau đây trong suốt 5 năm qua (2009 đến 2013)?

	Thường xuyên	Thỉnh thoảng	Hiếm khi	Chưa bao giờ
A. Trao đổi với đồng nghiệp để tìm ý tưởng nghiên cứu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Tham vấn đồng nghiệp để nâng cao kỹ năng nghiên cứu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Nhờ đồng nghiệp góp ý về nội dung cho các bản thảo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Hợp tác với đồng nghiệp để viết bài, làm đề tài	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Đọc bản thảo của đồng nghiệp và góp ý cho họ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Trao đổi học thuật với các GV ở các trường ĐH, viện nghiên cứu trong nước	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Trao đổi học thuật với các nhà khoa học ở các trường ĐH, viện nghiên cứu nước ngoài	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Hướng dẫn sinh viên làm luận văn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Hướng dẫn học viên cao học làm luận văn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Hướng dẫn nghiên cứu sinh làm luận án	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 14. Đối với các hoạt động ở câu 13 mà Anh/Chị đã chọn "Thường xuyên", "Thỉnh

thoảng" hoặc "Hiếm khi", ước lượng xem từng hoạt động đó đã đóng góp bao nhiêu % vào thành tích NCKH mà Anh/Chị thực hiện được trong 5 năm qua.

Lưu ý: Đối với những hoạt động ở câu 13 mà Anh/Chị đã chọn "Chưa bao giờ", vui lòng chọn phương án "N/A" ở câu này.

	0%	1-25%	26-50%	51-75%	>75%	N/A
A. Trao đổi với đồng nghiệp để tìm ý tưởng nghiên cứu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Tham vấn đồng nghiệp để nâng cao kỹ năng nghiên cứu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Nhờ đồng nghiệp góp ý về nội dung cho các bản thảo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Hợp tác với đồng nghiệp để viết bài, làm đề tài	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Đọc bản thảo của đồng nghiệp và góp ý cho họ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Trao đổi học thuật với các GV ở các trường ĐH, viện nghiên cứu trong nước	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Trao đổi học thuật với các nhà khoa học ở các trường ĐH, viện nghiên cứu nước ngoài	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Hướng dẫn sinh viên làm luận văn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Hướng dẫn học viên cao học làm luận văn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Hướng dẫn nghiên cứu sinh làm luận án	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 15. Anh/Chị cho biết mức độ đồng ý với các ý liên quan đến không khí học thuật trong khoa?

	Strongly agree	Moderately agree	Moderately disagree	Strongly disagree
A. Đa số GV trong khoa tích cực làm NCKH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Mọi người hỗ trợ lẫn nhau trong việc nghiên cứu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Ý kiến của mọi GV đều được ghi nhận; bất chấp tuổi tác hay học vị của người đó	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Lãnh đạo khoa có ảnh hưởng đến việc tích cực NCKH của toàn thể GV bởi chính thái độ NCKH nghiêm túc của họ (<i>lãnh đạo khoa</i>).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 16. Anh/Chị cho biết mức độ hài lòng với việc tiếp cận, sử dụng các nguồn tài nguyên phục vụ cho NCKH tại trường?

	Rất hài lòng	Khá hài lòng	Khá không hài lòng	Rất không hài lòng
A. Sách	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Bài báo trên các tạp chí trong nước	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Bài báo trên các tạp chí trong nước	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Research equipment (laboratory, ...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Office facilities for research (computers, printers,...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 17. Anh/Chị cho biết mức độ hài lòng đối với một số vấn đề thuộc về chính sách khoa học công nghệ tại trường.

	Rất hài lòng	Khá hài lòng	Khá không hài lòng	Rất không hài lòng
A. Kinh phí hỗ trợ cho việc đăng bài trên các tạp chí quốc tế	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Kinh phí hỗ trợ tham dự hội thảo trong nước	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Kinh phí hỗ trợ tham dự hội thảo ở nước ngoài	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Kinh phí phân bổ cho đề tài NCKH cấp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

cơ sở (do Trường quản lý)

E. Kinh phí phân bổ cho đề tài NCKH cấp

cơ sở (do ĐH vùng quản lý)

F. Chính sách khen thưởng dành cho GV

có thành tích NCKH tốt

Câu hỏi 18. Anh/Chị có cảm thấy thoải mái để trao đổi các vấn đề khoa học với những đối tượng sau đây không? (tức là Anh/Chị có sẵn sàng, có thích trao đổi với các đối tượng sau đây)

	Rất thoải mái	Khá thoải mái	Hơi thoải mái	Rất không thoải mái
A. Đồng nghiệp có học hàm/học vị cao hơn mình	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Đồng nghiệp có học hàm/học vị thấp hơn mình	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Đồng nghiệp được đào tạo ở nước ngoài về	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART 3: HIỆU SUẤT NGHIÊN CỨU KHOA HỌC

Anh/Chị vui lòng cho biết hiệu suất nghiên cứu khoa học của mình trong 5 năm qua (2009, 2010, 2011, 2012, 2013).

*Các câu 1,2, 3: Nếu giá trị là zero, vẫn cần điền số "0" vào ô

Câu hỏi 19. Trong 5 năm qua, Anh/Chị đã đăng được bao nhiêu bài trên các tạp chí trong nước và quốc tế? Cho biết số lượng tương ứng với vai trò của mình trong từng loại.

(Không tính những bản thảo đã nộp nhưng chưa được đăng)

	Tổng số	Viết một mình	Viết chung
A. Số bài đã đăng trên các tạp chí trong nước	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Số bài đã đăng trên các tạp chí nước ngoài	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 20. Trong 5 năm qua, Anh/Chị đã hoàn thành được bao nhiêu đề tài NCKH các cấp (đã được nghiệm thu)? Cho biết số lượng tương ứng với vai trò của mình trong từng loại.

	Tổng số	Chủ nhiệm đề tài	Thành viên
A. Đề tài cấp trường đã hoàn thành	<input type="text"/>	<input type="text"/>	<input type="text"/>
B. Đề tài cấp đại học vùng đã hoàn thành	<input type="text"/>	<input type="text"/>	<input type="text"/>
C. Đề tài cấp bộ đã hoàn thành	<input type="text"/>	<input type="text"/>	<input type="text"/>

Câu hỏi 21. Trong 5 năm qua, Anh/Chị đã viết được bao nhiêu giáo trình, chương sách, và sách? Cho biết số lượng tương ứng với vai trò của mình trong từng loại.

	Tổng số	Viết một mình	Viết chung
A. Giáo trình đã được đưa vào sử dụng	<input type="text"/>	<input type="text"/>	<input type="text"/>
B. Chương sách	<input type="text"/>	<input type="text"/>	<input type="text"/>
C. Sách	<input type="text"/>	<input type="text"/>	<input type="text"/>

Câu hỏi 22. Trong một tuần làm việc 6 ngày, Anh/Chị dành bao nhiêu giờ đồng hồ cho mỗi công việc sau đây? (Ước lượng số giờ cho mỗi công việc. Tổng thời gian cho 3 công việc = số giờ làm việc thực tế của Anh/Chị trong một tuần).

	Số giờ
Giảng dạy (thời gian dành cho việc soạn bài, lên lớp, chấm bài, v.v)	<input type="text"/>
Nghiên cứu (thời gian dành cho các hoạt động NCKH để tạo ra sản phẩm cụ thể như bài báo, đề tài, v.v)	<input type="text"/>
Quản lý hoặc hành chính (thời gian dành cho công tác quản lý hoặc công tác hành chính; sinh hoạt chuyên môn, hội họp, v.v)	<input type="text"/>

Câu hỏi 23. Câu hỏi này nhằm tìm hiểu thành tích NCKH của Anh/Chị từ trước đến nay (toàn bộ quá trình từ khi Anh/Chị bắt đầu sự nghiệp giảng dạy).

	Tổng số	Viết một mình / Chủ nhiệm đề tài	Viết chung / Thành viên
A. Số bài đã đăng trên các tạp chí trong nước	<input type="text"/>	<input type="text"/>	<input type="text"/>

B. Số bài đã đăng trên các tạp chí nước ngoài	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Đề tài cấp trường đã hoàn thành	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Đề tài cấp đại học vùng đã hoàn thành	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Đề tài cấp bộ đã hoàn thành	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Giáo trình đã được đưa vào sử dụng	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Chương sách	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Sách	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Câu hỏi 24. Anh/Chị cho biết sở thích làm việc của mình đối với hai nhiệm vụ giảng dạy (GD) và nghiên cứu khoa học (NCKH)

	Hoàn toàn chỉ GD, không NCKH	GD nhiều hơn NCKH	GD và NCKH như nhau (50/50)	NCKH nhiều hơn GD	Hoàn toàn chỉ NCKH, không GD
Tôi thích ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TRAO ĐỔI THÊM (Phần này không bắt buộc)

Nếu Anh/Chị vui lòng, xin cho một số ý kiến trao đổi bằng cách đánh phân trả lời vào ô trống dưới mỗi câu hỏi (tiếng Việt có dấu hoặc không dấu đều được). Nếu không, Anh/Chị có thể bỏ qua và bấm nút HOÀN TẤT bên dưới. Xin cảm ơn.

Câu hỏi 25. Nhớ về một giai đoạn nào đó (những năm nào đó) khi mà Anh/Chị đã từng có hiệu suất NCKH rất cao (có nhiều công trình), hoàn cảnh nào đã giúp Anh/Chị có hiệu suất NCKH cao như vậy? (ví dụ: đang làm nghiên cứu sinh)

.....

.....

Câu hỏi 26. Nhớ về một giai đoạn nào đó khi mà Anh/Chị đã từng có hiệu suất NCKH rất cao, những yếu tố gì đã tạo động lực cho Anh/Chị có hiệu suất NCKH cao như vậy?

.....

.....

Câu hỏi 27. Nhớ về một giai đoạn nào đó khi mà Anh/Chị có hiệu suất NCKH thấp so với mong đợi (mục tiêu) của mình, hoàn cảnh nào đã kìm hãm/làm giảm hiệu suất NCKH của Anh/Chị? (ví dụ: có con nhỏ)

.....
.....

Câu hỏi 28. Nhớ về một giai đoạn nào đó khi mà Anh/Chị có hiệu suất NCKH thấp so với mong đợi (mục tiêu) của mình, những yếu tố gì đã làm giảm động lực NCKH của Anh/Chị?

.....
.....

This is the end of the survey. Thank you very much for your support.

Appendix 4a

Description of 19 participants of the interviews

No	Code	Academic rank	Qualification	Administrative position	Date of interview
1	AP1	Associate professor	Doctor	Deputy director of an administration department	6.45-7.20 04/03/2013
2	SL1	Senior lecturer	Master	Deputy head of an academic department	14.00-14.40 04/03/2013
3	P	Professor	Doctor	Program convenor	15.00-15.55 04/03/2013
4	L1	Lecturer	Bachelor	N/A	08.00-08.40 06/03/2013
5	L2	Lecturer	Master	N/A	10.00-10.45 06/03/2013
6	L3	Lecturer	Master	N/A	10.00-11.50 15/03/2013
7	SL2	Senior lecturer	Doctor	Program convenor	08.30-09.10 17/03/2013
8	AP2	Associate professor	Doctor	Head of an academic department	14.30-14.50 18/03/2013
9	L4	Lecturer	Master	N/A	14.30-15.40 19/03/2013
10	L5	Lecturer	Master	Course convenor	15.40-17.20 19/03/2013
11	L6	Lecturer	Doctor	N/A	08.00-08.40 20/03/2013
12	SL3	Senior lecturer	Master	Deputy head of an academic department	09.30-10.00 20/03/2013
13	L7	Lecturer	Bachelor	N/A	15.00-15.45 20/03/2013
14	SL4	Senior lecturer	Doctor	Deputy head of an administration department	09.00-09.25 22/03/2013

15	SL5	Senior lecturer	Doctor	Head of an academic department	14.00-14.30 22/03/2013
16	L8	Lecturer	Master	N/A	07.30-08.30 27/03/2013
17	L9	Lecturer	Doctor	N/A	18.30-19.10 27/03/2013
18	L10	Lecturer	Doctor	N/A	20.00-20.30 27/03/2013
19	L11	Lecturer	Bachelor	N/A	10.30-11.40 28/03/2013

Note: Due to the confidentiality regarding the identity of the participants, information about their discipline and college are not mentioned here because it is very easy to guess who they are if such information is revealed.

Appendix 4b

Inversion of Values of Questionnaire's Scales

Question number	Scale as in the questionnaire				
Q10	Strongly agree	Moderately agree	Moderately disagree	Strongly disagree	
Q11	Very important	Moderately important	Quite important	Not at all important	
Q13	Often	Sometimes	Seldom	Never	
Q15	Strongly agree	Moderately agree	Moderately disagree	Strongly disagree	
Q16	Strongly satisfied	Moderately satisfied	Moderately dissatisfied	Strongly dissatisfied	
Q17	Strongly satisfied	Moderately satisfied	Moderately dissatisfied	Strongly dissatisfied	
Q18	Very comfortable	Moderate comfortable	Slightly comfortable	Not at all comfortable	
Value was assigned by Survey Monkey	1	2	3	4	
Value was recoded in SPSS before analysis	4	3	2	1	
Question number	Scale as in the questionnaire				
Q12	Strongly influential	Moderately influential	Moderately uninfluential	Strongly uninfluential	N/A
Value was assigned by Survey Monkey	1	2	3	4	5

Value was recoded in SPSS before analysis	4	3	2	1	missing
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Question number	Scale as in the questionnaire					
Q14	0%	1-25%	26-50%	51-75%	>75%	N/A
Value was assigned by Survey Monkey	1	2	3	4	5	6
Value was recoded in SPSS before analysis	5	4	3	2	1	missing

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