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Research management in Vocational Higher Education in Indonesia: policy and practice in Bandung State Polytechnic

Abstract

Polytechnic as a Vocational Higher Education is under pressure to increase quality of research in order to fulfill industrial and societal demand, as well as to strengthen the quality of its teaching and learning activities. The setting in which research grants and contracts are offered to the research proponents through proposal completion and bidding process is very selective and competitive in nature. Therefore, managing a research is no longer an individual's obligation; rather, it has become more of an institution's responsibility. This study was designed to explore the current research management process in Bandung State Polytechnic (POLBAN) in Indonesia. The focus of the research is to answer the question: what are the factors that support good research management in vocational higher education and what are the barriers, especially focusing on the current situation in Indonesia. Using an exploratory qualitative approach, this paper is focusing on identifying critical aspects in research management, including key barriers to current and future research management growth in Indonesia. The results showed nine major basic aspects that are currently managed by the research office in Bandung State Polytechnic and the need to ensure that the nine aspects can strategically be applied in an integrated work function according to the research context.

1   Introduction

Indonesia is aiming at becoming a country which has human resources that can compete on both, the regional and international level by 2025. One of the government's efforts to achieve this goal is by strengthening research conducted by higher education through the implementation of research decentralization policy as a part of higher education autonomy. In the law regarding higher education (Law No.12 Year 2012) it is stated that the duty and function of higher education comprises of three: education and teaching, research, and community services. The dedication to research is the pillar that will supports education and community services duties. Stated in the law that "research and community services conducted by higher education is aimed to develop knowledge and technology, as well as to increase the welfare of the society and the competitiveness of the nation." More specifically, Law No. 12 Year 2012 aims to:

a. "produce research that is in accordance with the national priorities set by the government;

b. ensure the development of seed-specific research based on comparative and competitive advantages;

c. reach and improve the quality in accordance to the target and researches results' relevancy for the people of Indonesia; and

d. improve the dissemination of research results and Intellectual Property Rights (IPR) protection nationally and internationally".

The aim of the government is to change the paradigm of research which originally tends to be the rights and responsibilities of individual researchers, to become the concern of institutions (OECD 2009, 164; RUFC 2012, 12).

2 Research background

Educational institutions are a system of social interaction with regard to human resources (people), with an orientation to the goals or targets, organizational structure, normative rules, various sanctions, such as the political aspects of the power and authority, culture, values and concepts (Hoy & Miskel 2008, 23). Each component has its own function and its own role. However, all components are closely interrelated to achieve one goal, namely the vision and mission of the related educational institution.

The universal mission of higher education is to serve the humanity and science, which manifest itself in the form of higher education's three duties, with the following purpose (Law No.12 Year 2012):

a. "Education duties are to master, implement, and disseminate the noble values, science, technology, arts, and sports;

b. Research duties are to discover, develop, adopt and/or adapt the noble values, science, technology, arts, and sports; and

c. Community services duties are to apply the noble values, science, technology, arts, sports and community empowerment".

The overall developments encourage a paradigm change in the management of higher education, from the simple/traditional management into an increasingly complex management. It is also changing from the certain – government-funded management, into one that is less certain due to its increasing autonomy, as can be seen in Figure 1 below (Gibb 2009, 6).
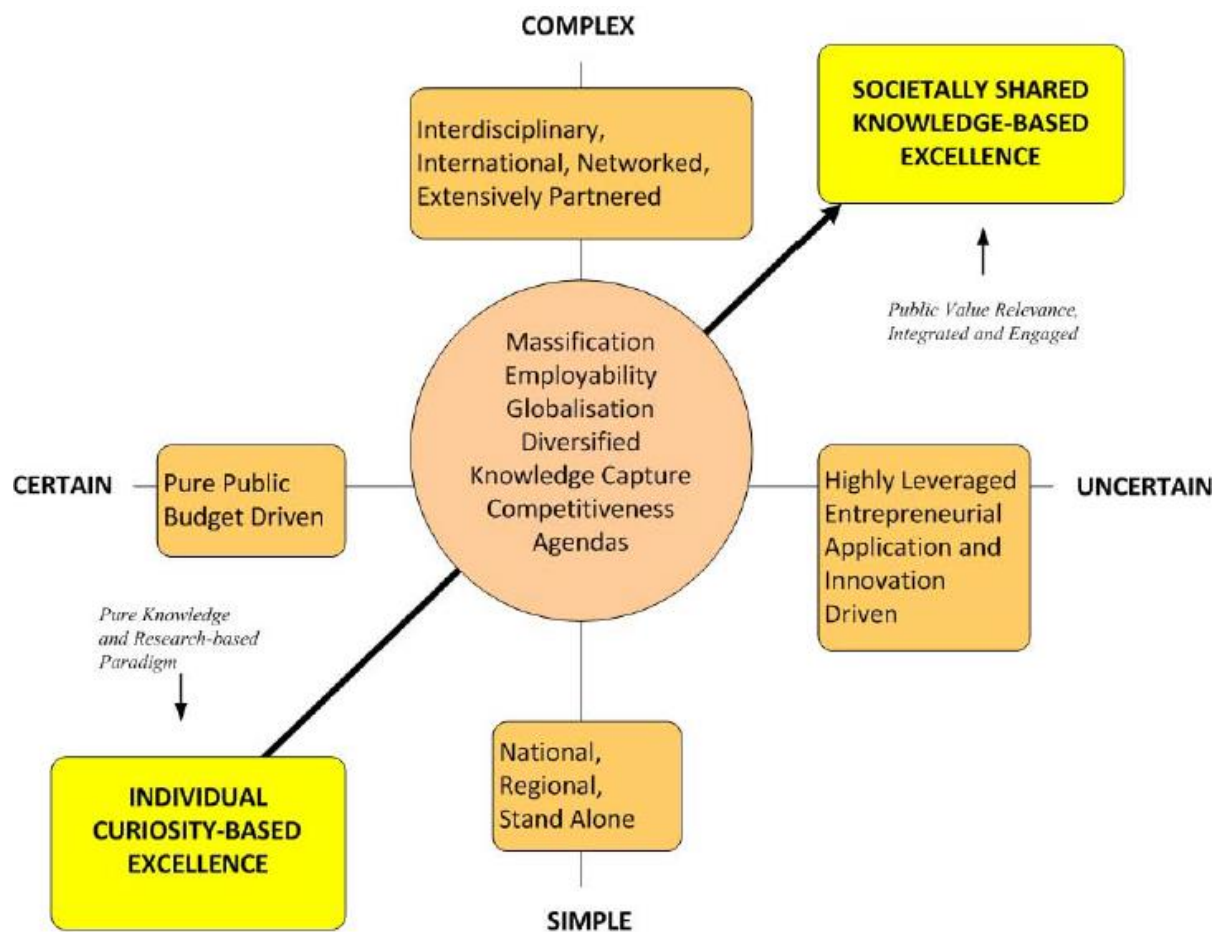
Figure 1: Simple to Complex Management of Higher Education

Note: Acknowledgements to Professor Antti Paasio of the University of Turku Finland who provided the germ of the idea. While the arrows on the Simple/Complex and Certain/Uncertain matrix point in one direction it is possible for a university to move from any one segment to another.

The research duties are the scholars' responsibility to ensure that the knowledge they share in education and teaching must always up-to-date with and relevant to the progress and the needs of the society. Research is an activity to trace data/facts to satisfy human curiosity about something that is seen or heard by using the criterion of the truth that was followed (Ismaun 2010, 15).

The problem is that the condition of research activities in Indonesian Higher Education tends to be weak as stated by the General Director of Higher Education (DGHE 2003, iii) during the OECD state member meeting. It was explained that researches conducted by researchers in Indonesian Higher Education were being considered as unsuccessful and many existing problems need to be tackled in order to produce good-quality researches (OECD 2005). The problem which appeared more than 10 years ago, in reality, was still found in 2013 as ex-plained by the DGHE in the welcoming remarks of the IX edition of researches guide in 2013. It was also described in the report of the National Higher Education research perfor-mance year 2010-2012.

Similar weaknesses are found in the publication of Indonesian researchers' scientific papers at the international level as indicated from Scopus data (2013). On one side, the scientific work of Indonesian researchers has increased each year, but on the other hand, the number of citation has been declining and the lowest was in 2011 with only 0.57 citation per document. Likewise, at the same year the *self-cited* within the country was only 0.11 per document.

Several research management review had been done in the past, but the scientific focus of the researchers tend to address the research activities in research university (Gibbons et al 1994; Welker and Cox 2006; Lepori and Attar 2006; Beerkens 2008; RUFC 2012) as well as research results' commercialization (Latour 1987; Greenberg 2007). The two topics which become the focus of those researchers tend to be addressed towards researches conducted in research universities which definitely have already acquire power in producing good-quality researches as the fundamental characteristics of researches universities. Gibson et al. (1994) discussed the aspects which contributed to the shaping of researches' management, mission and role. Mark E. Welker & Alan R. Cox (2006) confirmed that both research and mission of an institution are equally important. They found that 75% of the analyzed institutions funded and published research activities, and shared the findings regularly using various media. Fifty per cent (50%) from the institutional research played a significant role in economic development.

In their article, *Professionalising Research Management,* Green & Langley (2009) confirmed that research management at universities requires a set of skills and knowledge. They have to develop their research strategy and assign academic and administration leaders to support research management. The British Council (2012) report entitled *The shape of things to come: Higher Education Emerging Global Trends and Opportunities to 2020* described one of the trends of higher education in the global era is the importance of international collaboration in research activities.

Literature survey using the web managed to find one relevant article written by Purwo Santosa (2007, 1) described the *lessons learned* of research management at Gajah Mada University. One point that Santosa confirmed was *'the ability of* Gajah Mada University *in boosting its research capacity relies on its ability to bring together a sense of well-managed autonomous institution and atmosphere'*.

Considering the above issues and information, the focus of this research paper is to answer the research question: (1) What are the factors that support good research management in vocational higher education in Indonesia?, (2) What are the barriers in reaching good research management?

3   Methodology

This study is a qualitative case study which was triangulated using different methods and resources. A case study method is a research instrument/approach which provides detailed explanation and analysis regarding one or more cases (Johnson & Christensen 2000, Satori &

Komariah 2011). Meanwhile, Bogdan and Biglen (2008) explain that case study is a detailed scientific study towards a background, subject, or certain event. Data and information collected consist of face-to face, semi-structured interviews with POLBAN's director and assistant directors, head of departments, head of study programs, head of quality assurance unit, head and staff of research office, and head of financial division, and a focus group discussion with lecturers. These methods allow researchers to share experiences, explore and understand the research findings by engaging deeply into what is interpreted through conversations and expressions of feelings (Satori & Komariah 2011). Creswell (2008, 226) explains that focus group discussions are aiming at achieving understanding by observing a set of explanations delivered by participants related with the issue that becomes the interest of the researcher.

3.1   Data collection method

Data was obtained by using two methodologies: face-to-face interviews and focus group discussions.

1) Face-to face interview

Prior to the interview, the researcher developed an interview guideline for each respondent to find out and explore what the factors are that support good research management in POLBAN. Then, the researcher identified participants to be involved in the study. Director and Assistant Directors were selected based on their experience and function as decision makers. Head and staff of research office were selected based on their experience and expertise in managing research. Research reviewers were selected based on their experience as reviewer of the research proposal.

The research was conducted with authorization from Director of POLBAN through the Head of Research and Community Development. After participants were identified, they were provided with an official appointment letter (provided by the head of research and community development, a formal invitation letter to participate in the study).

2) Focus Group Discussions

The focus group discussions were conducted among head of departments and head of study programs, who had work experience in managing research process and coordinating research process in line with the aim of the research unit. Through the discussion, the researcher was able to record the respondent views and experiences in supporting research management conducted by the research division. The officials shared their experience, views and ideas freely without feeling any constraints or barriers. Indirectly, the discussion also helped the researcher to compare results from face-to face interview and focus group discussion, and to identify similarities and differences.

3.2   Research participants

The sample size of this study was thirty respondents. The sample was selected based on purposive sampling for maximum variation. The sample for focus group discussion consisted of

six department heads, heads of study programs who have work experience and coordinating function in research management, and are experienced lecturers. Other two department heads attended the face-to-face interview due to their time availability. The criteria used for the focus group discussions were (1) the head of office who has the experience in managing research process and is the decision maker; (2) lecturers who have experienced in conducting research.

3.3 Research process

The research process can be seen in Figure 2. After the participants received the invitation letter for participating in the research, the researcher confirmed their availability to be interviewed. Then researcher started with the interviews. After all necessary respondents had been interviewed, the researcher moved on to conduct the focus group discussion. At the beginning of the meeting, the researcher addressed such issues such as (1) the purpose of research carried out based on the conceptual framework and research design, and (2) issues related to approval of participating in the research.

Every interview and discussion was recorded by the researcher to make sure that all information was collected (Creswell 2008). The researcher also took notes to help develop follow up questions, and to facilitate the creation of records from the interviews and discussions in general.
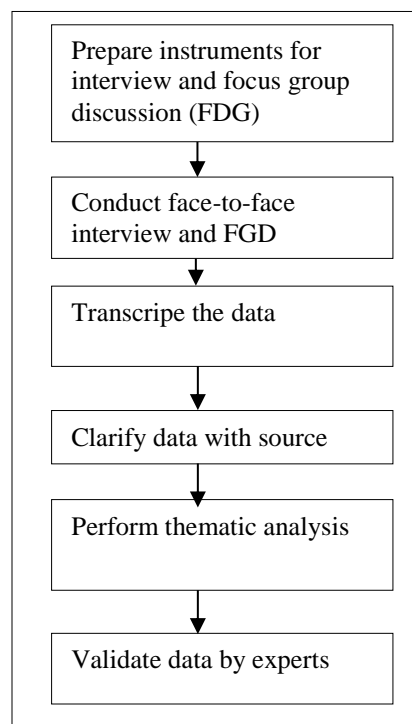
Prepare instruments for interview and focus group discussion (FDG)

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Conduct face-to-face interview and FGD

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Transcripe the data

↓

Clarify data with source

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Perform thematic analysis

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Validate data by experts

Figure 2: Steps in the Research Process

3.4 Thematic (theoretical) analysis

Written transcript of each interview and focus group discussion were arranged in sequence as interview schedule. Then for each statement in the transcript, the researcher provided coding. After all the interviews and focus group discussion transcripts were coded, then the researcher moved to compile respondents' responses for each research question. This means that the researcher obtained bulky data and information from all respondents as a response to each research question. Data reduction will occur continually throughout the analysis (Punch 2009). At the early stages, the process includes editing, segmenting, and summarizing the data. In the middle stages, the process includes coding and memoing, and associated activities such as finding themes, clusters and patterns. In the later stages, the analysis is done through conceptualizing and explaining. Based on the result of abstracting, the researcher identify theme analysis on all responses for each research question. The development of themes was based on the theories and the existing literature which is known as theoretical coding (Punch 2009). Finally, the researcher examined the trusworthiness of the collected qualitative data through expert validation. The researcher needs to ensure that the construction of themes is confirmed by the experts. In this case, the researcher was supported by the head of research office in other Polytechnics (Jakarta State Polytechnic) as well as head of research office in POLBAN (internal). After the researcher obtained confirmation from the experts, the interview data was analyzed and shared with experts for their verification.

4 Findings

Thematic analysis was conducted to answer the following research questions:

- What are the factors that support good research management, and

- What are the barriers that hinder good research management?

Overall there are nine major themes namely: (1) research policy; (2) research programs; (3) research funding; (4) research process; (5) monitoring and evaluation; (6) researcher competency; (7) supporting facility; (8) information and communication technology; (9) disemination of research results.

4.1 Research policy

Research policy is an important factor that contributes towards research management in POLBAN. Research policy which has been planned in accordance with the internal and external necessities is conducted in a bureaucratic manner in accordance with the rules implemented by the Director General of Higher Education (DGHE). It is bureaucrative because the research is conducted based on and to fulfill the regulations enacted by the policy makers such as DGHE. It is declared as administrative because the research conduct has to abide certain requirements, that have been decided by policy makers at various levels. Centralistic academic and administrative leadership pattern currently is being adopted by POLBAN's Research Office. This practice received appreciation from POLBAN's acade-

micians, as well as DGHE as it has supported the process of research implementation and development. Respondent from chemistry department stated that *"in principle, the research policy socialized by the Research Officew was followed thoroughly. The current research policy which currently implemented in POLBAN is adequate and is better compared to the previous one"*. The strategy at the institution level is the top level strategy to be achieved by institution as a whole, while the strategy at the study program level is the bridge strategy between the institution and the lecturer research strategy. Lecturers are the implementers in technical level which produce the outer part of research to be in accordance with the institution's strategy. The role of study program becomes very important to balance the strategies and operational in achieving an optimum research performance.

Figure 3: Flow of Research Strategy

4.2   Research programs

Research Programs in POLBAN, which is shown in the form of research scheme, is the second most important factor in research management. Research program is important because it is the main object of research management. Beside the decentralization research scheme from DGHE, POLBAN Research and Community Service Office (RCSO) develops internal research scheme to achieve the institution mission and vision, as well as to carry out research activities as stated within POLBAN's Strategic Plan document. POLBAN's RCSO leadership has made a creative and particular effort to fulfill the academic necessity of POLBAN by using the available opportunity through research activities. The three research scheme developed by POLBAN's RCSO is aimed to: 1) support improvement in education development through laboratory capacity improvement research scheme, as well as applied research scheme; 2) support the institution's policy by developing institutional excellent research scheme; 3) solve specific problems and act as "intermediaries" research through research scheme for beginners in which expert group creates a competitive scheme that encourages senior rank lecturer to conduct research.

In 2013, the number of POLBAN researchers in general increased compare to the previous years. However, during the year of 2014, the number of researchers tend to decline for approximately 31% compared to the previous year. Exploring the types of research *(applied research* and *basic research)* undertaken by each department/study program in POLBAN from 2012 to 2014, a significant comparison was found. Over the last three years the development of applied research exceeds the development of the fundamental research.

The finding showed that the tendency of POLBAN lecturers' to pursue applied research activities was increasing. According to Jain and Triandis (1990, 6) "*Applied research is an original investigation undertaken in order to gain new scientific practical aim or objective. Applied research develops ideas into operational forms"*. This form of research is in accordance with the type of education carried out by polytechnic which is vocational education (Law No.12 2012 Article 6). The aim of the research is to find solutions for existing or current problems. Furthermore, it is stated that "*people cannot foresee the future well enough to predict what's going to develop from basic research. If we only did applied research, we would still be making better spear*". (LBNL 2014). Since the result from applied research is a solution to the current problem in the society, applied research tends to have economic value which can be directly enjoyed by the researcher.

4.3 Research funding

Research funding is a contributing factor to increase the number of research activities. Research may not be able to carry out without financial support. At this time, the source of funding for research in POLBAN comes from two sources, namely State University's Operational Assistance (BOPTN) in which the amount is annually set by DGHE, and the second source is from the State Non-Tax Revenue.

The development of research fund allocation comes from non-tax revenues and from BOPTN. Allocation of funds from BOPTN Higher Education in 2013 has been continuously increasing. Since funds for research from BOPTN Higher Education is increasing, the allocation of funds from non-tax revenues tends to be decreasing. Non-tax revenues fund not absorbed in the current year then will be distributed for the following year to support the research activities that are not funded by the government.

4.4 Research process

The research focus in POLBAN tends to meet the administrative regulations in line with the proposal selection process which has been endorsed by POLBAN's RCSO. The substance of the research proposal is reviewed thrice, at the early stage, during progress report presentation, and at the final report presentation. Thus, any activities conducted after submission of the final research report to POLBAN's RCSO will become the responsibility of the researcher. At this stage POLBAN's RCSO tends to act as a facilitator who is ready to facilitate the needs of faculty researchers. This means there is a change in the role of RCSO from bureaucrats and administrators into facilitators. In fact, the nature of a facilitator tends to be passive,

so further development of research results such as obtaining Intellectual Property Rights (IPRs) depend on the willingness and hard work of the faculty researcher. Since the research process managed by RCSO is fully terminated at the second term of research funding payment, many research products were scattered in various locations such as in the laboratory or workshop, or kept by the researchers themselves. Lack of good record on research product data may weaken the high economic value of the research products.

4.5 Monitoring and evaluation

Monitoring and evaluation are activities integrated into a management cycle which consist of *Plan, Do, Check* and *Action* (PDCA). Basically the purpose of monitoring and evaluation is to determine the achieved performance (Hunger & Wheelen 2012, 385). In the process of monitoring and evaluation conducted by POLBAN's RCSO, there were two things that have been monitored and evaluated. First, collecting data and information about the performance of research activities carried out by the researcher. It is to prove the accountability of research funding provided by RCSO, then an evaluation will take place. The next process is compareson of the achieved performance with the desired results. Desired result in this case is the output promised by the researcher in the signed research contract. Necessary feedback is given to the researcher and to research management for further follow up of research activeties. Second, monitor and evaluate the performance of RCSO itself as accountability in research management as well as the organizers of decentralization policy in POLBAN or as the implementer of DGHE's decentralization research policy.

Monitoring and evaluation research activities in POLBAN is quite complex given the following circumstances: number of considerable research activities and limited number of reviewers For example in 2013 alone there were 118 research activities, while in 2014 there are 117 research activities from all disciplines that exist in ten majors in POLBAN. Meanwhile, POLBAN only have a limited number of reviewers: 9 external reviewers and 36 internal reviewers.

4.6 Researcher competency

As mentioned previously that POLBAN Research and Community Service Office (RCSO) has developed three internal research schemes to achieve the institution mission and vision. Ever since the implementation of the three schemes in 2011, the amount of research proposal received has continually increased. Likewise, the number of lecturers involved in conducting research is also increasing. In the year of 2005-2006 the number of lecturers involved in research activities was under 50 lecturers, however since 2007 until 2011 the number has been increasing and almost reaching 90. A significant increased happened in 2012 during the implementation of decentralization policy. It increased up to 309. However, in 2013 and 2014 there was a small decline in the number of participating lecturers in research activities, approximately between 4% - 6%. The availability of more than 25 research schemes with various sources of funding has open more opportunity for POLBAN lecturers to participate in conducting research. The problem now is the lack of capability to develop good research

proposal that fulfill the requirements of funding donors. As the result, the recipients of research funding usually go the same lecturers.

4.7   Supporting facility

In an academic research environment, research facility is one of the much needed aspect by lecturers to support their research activities. The availability of research facilities becomes more important as operational element and research strategy. The term research facility, includes a wide set of skills from standing tools to full support, from inter-faculty and inter-major staff. In POLBAN setting, research facility may include engineering laboratory facility or trade administration; workshops for the field of engineering; as well as library facilities and networks of international scientific journals such as the subscription to SAGE and Emerald.

Until today, POLBAN still has not provided special facilities to support researchers' needs. The available facilities in POLBAN are educational and teaching facilities provided for Polytechnic students. The number of facilities has been adjusted to fix the number of students attending the program in the university. Thus, to support their research, lecturers need to do resource sharing by using laboratory facility during idle time or seeking support from other laboratory outside the university.

4.8   Information and communication technology

Communication is an important aspect for scientist to conduct research. Communication is used by scientist to express the ideas which make them creative, to formulate research questions, to solve problems through the implementation of theories and experiments, to disseminate research results and to receive feedback from stakeholders. A research regarding the role of communication in research has long been conducted by researchers. Garvey for example, in the year of 1979 stated that '*communication is the essence of science'*. Abelson, a science journal editor emphasize that, '*without communication there would be no science*' (1980, cited from Lacy & Bush 1983, 193).

Science, basically has a social and scientific communication which is the backbone that connects scientists and make the advancement in science possible. (Kling, McKim & King 2003). In the globalization era, researchers need to be supported by communication network provider as a tool to support knowledge sharing between scientists. In this position, information technology become very crucial as what currently happens in today's educational environment, including in POLBAN. DGHE starts utilizing information and communication technology from proposal submission, selection process as well as accountability report of researches conducted by the lecturers of State Higher Education Institutions.

Hence, the workload that POLBAN's RCSO has to carry in research management is increasing and it requires strong effort to support the success of the research conducted by the lecturers. As stated by Johnson (2013, 8) "*Managing a research group or faculty is an increa-*

singly challenging task. On the one hand you need to be prepared to collaborate and compete at a global level, but on the other you are often obliged to depend on local sources of income".

Communication aspect is one of the important aspect to support the existing innovation in POLBAN. *Communication through personal contacts is crucial aspect of the innovation process* (Jain & Triandis 1990, 29). In practice, POLBAN already provides communication network which can easily be accessed by all academic lecturers. Communication structure pattern needs to be formalized and agreed by all stakeholders. Likewise, the communication network builder needs to consider the optimization of research development. In conclusion, "*Creative people are likely to have good research ideas, but good research ideas also come from communication with others. There is considerable research suggesting that communication patterns should be structured so that people can be stimulated by others who do similar work* " (Jain & Triandis 1990, 26).

4.9   Dissemination of research's result

The ninth factor is disseminating the results of research in all forms because one of the aims of research in higher education is to increase the dissemination of research results and protection of Intellectual Property Rights (IPRs) nationally and internationally. Improvement of research quality can help the realization of a qualified and dignified state of which the main indicator is international publication from the country's researchers and academicians (DIKTI, 2013, iv). This is because *"within a scientific article, scientists present their research questions, the methods by which the question was approved, and the results they achieved using those methods. In addition, they must present their analysis of the data, and describe some of the interpretations and implications of their work"* (Carpl, Engger & Kuldell 2009).

Currently, POLBAN has 11 scientific journals which distributed in 10 majors and one fields of general studies. All of these journals are meant to regularly publish the results of lecturers' research, as well as lecturer-students' collaborative research, especially for senior students. The intention is that the scientific journals produced can be read and known by colleagues, students, and even the public. Generally, these journals already published continually since eight years ago. Although these have not been accredited yet, but the journals have been approved as sientific journals. Articles published within these journals are mostly scientific articles written by POLBAN lecturers in accordance with their own expertise and their research or study results. In each release or edition, it usually contains 8-9 articles.

5   Discussion and conclusion

The findings from this study offer an overview of the research management aspects and process for developing an exploration model of research management in higher eduation. A number of studies on research management have been conducted by international experts have been reviewed, but the topic is still unexplored in Indonesia. The research management exploration model can help higher education institutions to ensure the way they manage their

research as an aset of the institution, especially to strengthen their research capability. In practice, the researcher needs to maintain their capability in conducting research; however strategically the institution need to take care of their researchers in order to achieve highly research performance.

As described earlier that the purpose of conducting research is not merely for the sake of research, but as part of the implementation of the three duties which are to strengthen the teaching and learning as well as to provide high quality of resources for community services.

The findings show that there are key factors that influence the performance of research management in Polytechnic as higher education. The factors include:

1) research policy,

2) research programs,

3) research funding,

4) research process,

5) monitoring and evaluation,

6) researcher's competencies,

7) research facility,

8) Information and Communication Technology,

9) dissemination of research's results.

These findings support three key elements of research management identified by Santosa (2007, 1), that is "external environment, structural factor which serves as hardware and cultural factor which serve as software for allowing research community to engage in a political dynamics". This study needs to continue with wider respondents for comparison such as adding more polytechnics to participate, state as well as private polytechnics.

6 Recommendations

Researcher recommends the Head of Research Department to develop four strategies to eliminating weaknesess and strengthening achievement of the process of conducting research especially in Bandung State Polytechnic and possibly in other similar institutions:

a. Strategy for Optimalization Research Direction
The development of research direction in POLBAN needs to be made more strategically to achieve POLBAN's vision. The development need to be done with participatory approach and included representative from faculy and related knowledge area of expertise, in order for the lecturer to intengrate the stated direction during researh proposals development.

b. Research Funding Strategy

The purpose of research funding strategy is to encourage and enable polytechnic obtaining research funding through make use of potential assets owned by polytechnic, including establising research cooperation with industries and develop mechanism for commercialization of research products.

c. Strategy for Optimizing Research Processes

The purpose of optimizing the research processes is to provide a clear implementation process and quality as well as an easy procedure with minimal cost. The suggestion is by integrating research quality assurance and information and communication technology to achieve effective and efficient research processes.

d. Strategy for Optimizing the Utilization of Research Results

The results of research conducted by politechnic lecturers are potential to stregthen the three main duties of polytechnic as well as to obtain economic benefit. A holistic and good mapping sistem of utilization the research products is one alternative that can be carried out by politechnic leaders.

References

Beerkens, H. J. J. G. (2004). Global Opportunities and Institutional Embededness: Higher Education Consortia in Europe and South East Asia, Center for Higher Education Policy Studies, University of Twente. In Organisation for Economic Co-Operation and Development (OECD) (2009). Higher Education to 2030, Vol 2: Globalisation, Centre for Educational Research and Innovation. Online: http://www.oecd.org/publishing/corrigenda (retrieved 23.07.2013).

Bogdan, R. C. & Biklen, S. K. (2007). Qualitative Research for Education: An Introduction to Theory and Methods. 5th edition. New York: Pearson Education.

British Council (2012). The Shape of Things to Come: Higher Eduction Global Trends and Emerging Opportunities 2020, Report. Online: http://ihe.britishcouncil.org/news/shape-things-come-higher-education-global-trends-and-emerging-opportunities-to-2020 (retrieved 13.07.2013)

Creswell, J. W. (2008). Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research. 3rd edition. New Jersey: Pearson Education Ltd.

Dikti- Kemdikbud (2013). Panduan Penilaian Kinerja Penelitian Perguruan Tinggi Tahun 2013 edisi ke IX. Online:
http://www.library.cqu.edu.au/tutorials/litreviewpages/DocumentID:PROD22470 (retrieved 14.08.2013).

Gibb, A., Haskins, G., & Robertson, I. (2009). Leading the entrepreneurial university: Meeting the entrepreneurial development needs of higher education institutions. Said Business School, University of Oxford.

Gibbons, M., Limoges, C., Nowotny,H., Schartzman,S., Scott, P., & Trow, M. (1994). The New Production of Knowledge: The Dynamic of Science and Research in Contemporary Societies, London: Sage Publications.

Green, J. & Langley, D. (2010). Professionalizing Research Management. London: University of Bristol: PRM Report.

Hoy, W. & Miskel, C. G. (2008)., Educational Administration: theory, research and practice. 8th edition. New York: McGraw Hill.

Ismaun (2010). Philosophy of Educational Administration. Bandung.

Johnson, B. & Christensen, L. (2000). Educational Research: Quantitative and Qualitative Approaches. Allyn and Bacon, Pearson Education Company.

Latour, B. (1987). Science in Action: How to Follow Scientists and Engineers through Society. Cambridge, Massachusetts: Harvard University Press.

Lepori, B. & Attar, L. (2006). Research Strategies and Framework Conditions for Research in Swiss Universities of Applied Sciences. KTI/CTI.Di download from www.kti-cti.ch.

Ministry of Education (2010). Māori Economic outcomes from Tertiary (factsheet). Wellington: Ministry of Education.

OECD (2005). Higher Education Management and Policy. Special Issue: Entrepreneurship. Volume 17, No. 3. Paris: OECD Publishing.

OECD (2009). Higher Education to 2030. Vol 2: Globalisation. Centre for Educational Research and Innovation. Online: www.oecd.org/publishing/corrigenda (retrieved 23.07.2013).

Punch, K. F. (2009). Introduction to Research Methods in Education. London: Sage Publication.

Research University Futures Consortium (RUFC) (2012). The Current Health and Future Well-Being of the American Research University – A Report. Online: www.researchuniversitiesfutures.org (retrieved 01.08.2013).

Santoso, P. (2006). Managing Transformation Toward An International Research University: Lessons-Learned From Gajah Mada University. Paper presented at UNESCO Forum on Higher Education, Research and Knowledge Colloquium on Research and Higher Education Policy, 29 November – 1 December 2006. Paris: UNESCO.

Satori, D. & Komariah, A. (2011). Metodologi Penelitian Kualitatif. Alfabeta, Bandung.

Republic of Indonesia Law Number 12 Year 2012 about Higher Education.

Welker & Cox (2006). A Report on Research Activities at Research University, Research Management Review, Vol.15, Number.1, Winter/Spring 2006.

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