DESIGN AND APPLICATION OF PIs IN INDONESIAN HE: KEY POLICY IMPLICATIONS

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ABSTRACT

This literary studies focuses in discussing key political implications in the design and application of Performance Indicaators (PIs) in Indonesia include competition and government's agenda on research in HE. It is found that the competition is mainly addressed by the current practice of Journal Accreditation as giving benchmark for quality in research. This government's agenda on research has caused some dilemmas in managing education as complex process. Some suggestions are given in answering to these dilemmas. First, PIs should be regarded as products of current situations and demands. Second, application of the design will have to be assisted by the nature of the institution. PIs should also not be considered as absolute indicators for quality but rather as catalyst toward development.

Keywords: *PI, research, Indonesia*

ABSTRAK

Studi sastra ini fokus dalam membahas implikasi politik yang penting dalam desain dan penerapan indikator kinerja (PIs) di Indonesia termasuk kompetisi dan agenda pemerintah penelitian HE. Diketahui bahwa kompetisi terutama ditangani oleh praktik jurnal akreditasi sebagai memberikan patokan untuk kualitas dalam penelitian. Agenda pemerintah pada penelitian ini telah menyebabkan beberapa dilema dalam mengelola pendidikan sebagai proses kompleks. Beberapa saran diberikan dalam menjawab untuk dilema ini. Pertama, PIs harus dianggap sebagai produk saat ini situasi dan tuntutan. Kedua, aplikasi desain akan dibantu oleh sifat dari lembaga. PIs juga tidak boleh dianggap sebagai mutlak indikator untuk kualitas tetapi sebagai katalis terhadap pengembangan.

Kata kunci: *PI, penelitian, Indonesia*

INTRODUCTION

The global trend of 'new public management', quality and competitiveness in Higher Education (HE) system has been escalating for at least three decades. Among the reasons is the more and more decentralised nature of governments. Through the increase of autonomy, HE institutions receive more freedom to decide their own education process. Another reason is the rise of competition, which comes from the business sector (Morey, 1999; Cave, Hanney, Henkel & Kogan, 1997; Foskett & Lumby, 2003). HE institutions are in competition to show *efficiency*, *effectiveness* and *value for money* (Cave et al., 1997; Levacic, 1999). Accordingly, Performance Indicators (PIs) become central in delivering evidence for quality HE.

Performance Indicators (henceforth PIs) is a difficult concept of indicating quality. Most of the times the design and application of PIs are heavily political. Cave et al. (1997) suggests a comprehensive definition on PIs as:

> "...a measure- usually in quantitative form- of an aspect of the activity of a higher education institution. The measure may be either ordinal or cardinal, absolute or comparative. It thus includes the mechanical applications of formulae (where the latter are imbued with value or interpretative judgements) and can inform, and be derived from, such informal and subjective procedures as peer evaluations or reputational rankings." (p. 24)

However, despite the comprehensive design of PIs, the applications retain many dilemmas. It is for this reason that investigation of PIs in Indonesia will be both interesting and important. This is because Indonesia's HE is vastly growing and is looking for good experiences for references. Despite its emphasis on research, Indonesia's HE is aimed to develop the whole entity of human potentials. In this sentiment, the paper will be asking questions, such as: (1) what are the main issues in the design and application of PIs in Indonesia; (2) what are political implications from such practice; and (3) what are the ways forward for PIs in Indonesia.

Throughout the discussion, the paper will be structured into following sections: Background Information on HE in Indonesia followed by literature review in the third section. Section four will discuss the main issues on the design and application of PIs in Indonesia, which focuses on key political implications. Section five will be the Ways Forward, which is built to suggest some possibilities for further development of PIs in Indonesia's HE. Finally in the Conclusion major issues as well as implications for further research will be delivered.

Indonesia's Geographical, Economical and Social-Politic Features

Indonesia enters the 60 years of independence with thousands of islands scattered through the archipelago. Despite its disparity the government governs the country under 33 provincial authorities. Previously, there was strong centralised government based in Jakarta, in the main island of Java. However, the reformation movement in 1997 changes the face of politics in the country into a more decentralised government.

The rise of decentralisation gives each province more autonomy for generating income. The nation also becomes more open to outside changes, including the global market influence. In addition to this, the nations' multicultural nature gives way to differences and freedom of expressions. This includes more autonomy to manage education institution according to the needs of the stakeholders.

HE in Indonesia started as early as 1900s, with some Dutch educated locals. In 1940s HE is fully owned and funded by locals. Among the first universities were UGM and UI. These old universities have good standing and regarded as favourite universities. Further established HE

institutions include ITB (Bandung Institute of Technology) and IPB (Bogor Institute of Agriculture), which have international recognition. Overall, there are about 70 public HE institutions and 1700 private HE institutions across the archipelago at the moment.

Funding for HE is generated from three sources: government, public fund, and foreign countries' financial support, according to PP 60, 1999. Other government regulation, PP 61, gives guidelines for HE institution's budget plan, which later on be used as a proposal for government's funding. Despite the multi channels of sources, in practice, most funding comes from the institution. The government supports up to 30% of the allocated budget plan, the institution generates 67% of the budget and other 3% may be gained through competition, such as grants for research projects. Government's subsidy is usually determined by the number of students and the reputation of the HE institutions. Reputation usually refers to old universities, such as UGM, UI, ITB and IPB.

Quality in HE is observed through the peer-review system by the National Accreditation Body (BAN-PT). This body is established in 1994 as a quasy-government body, with the main task to award accreditation through process of quality assessment. Independent but closely related to *BAN-PT* is the working practice of Journal Accreditation. The Journal Accreditation works every 3 years in assessing performance oh HE research through their research publications. The body works in peer-review assessment scheme and awards ranking to good performance in journal publications. Criteria for good performance in research are set by the members of the body but these criteria are closely related by government's agenda. PP 60 is governments Regulations on HE (PP 60), in which HE aims to: (1) preparing students as members of community with academic and or professional capabilities who are able to apply the knowledge and enrich their fields of knowledge, advancing technology and generate appreciation on arts; and (2) as well as to develop and distribute knowledge, technology and art with the implication to applications to elevate society's standard of life and to enrich national heritage of arts.

Key Issues in Design and Application of PIs in HE

There are three key issues in the design and application of PIs. First, PIs should exist to indicate that quality is pursued (Cave et al., 1997). Second, there is the issue of education as input-output system, that the best input will give the best results (Levačić, 2000). Third, the international trend of competition in education puts HE under scrutiny to give evidence for worthiness (Foskett & Lumby, 2003; Morey, 1999).

As depicted from the definition by Cave et al (1997) one main issue is the signalling function of PIs on education process. These signals or indicators should be mutually agreed and can be objectively measured (Cave et al., 1997). Cuenin (1986) underlines this measurability as needed for 'something which is difficult to quantify' (p. 6). This is because education is complex and need to be carefully judged (Sizer & Yorke in Cave et al, 1997; CVCP in Cave et al., 1997). Therefore, in contrast with *managerial statistics*, PIs are not measuring or evaluating performance but are used as point of reference of what essential in education (Cave et al., 1997). PIs do not serve as absolute measures to a condition or process (CVCP/UGC, in Cave et al., 1997). Instead, by the indicators HE institutions can focus on the essentials in HE. This is where PIs become a point of reference to the process of education in HE.

Another central issue in designing PIs is the *input-output* system in education (Levačić, 2000). This system suggests that like other production systems, education results will be determined by its inputs and process. Through putting the best *inputs* and by making sure that the *process* has gone well, the *outputs* will excellent. This is why PIs are needed, because people in HE needs some indicators for what counted to be best *input*, *process* and *outputs*.

Inputs include students' academic level at the point of entering the education. Good facilities and high-qualified lecturers are also included in good *inputs*. *Outputs* are covering issues such as time for completion the study, in which the quickest the better. High academic achievement is also included as good outputs, as well as high research activities. During the *process*, HE institution will be expected to show that *effectiveness* and *efficiency* are achieved. Levačić (2000) explains that *effectiveness* is reached when an HE institution's *outputs* match with the expectations of the institution. *Efficiency* can be shown when minimum resources used, including financial resources, bring out maximum *outputs* or results.

In similar tone, Johnes & Taylor (1990) mentioned *production theory* which considers education as the process to transform *inputs* into *outputs*. Cave et al. (1997) points out the importance of having indicators or 'guide' (CVCP/UGC, in Cave et al., 1997, p. 23) to what *inputs*, *outputs* and *process* should exist in the system. They elaborate the system with *outcomes*/further *outputs*, as seen from Figure 1.

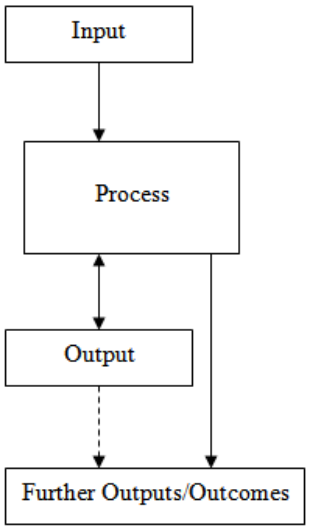

Figure 1 Production process in HE
Source: Cave et al. (1997, p. 26)

Outcomes can be resulted from re-processing of intermediate input or the *output* (Richardson, in Cave et al., 1997). For example, an HE institution conducting an internship programme for students with lecturing positions potentials. Through this *process* of internship, the *outputs* are the students' academic achievements, whereas the *outcomes* will be the trained academic staff, if the candidates decided to join in the institution as lecturers. From this example, it can be said that such *process* has added value to the students.

From the *input-output* system, Cave et al. (1997) select 14 PIs for HE (appendix 1). These are grouped into indicators for *teaching* and *research*. One indicator in the area of *research* is the number of *research publication*. By counting and comparing the number of research publications across HE institutions, performance can be judged. Institution with bigger number in research publications will be considered as performing better than others. However, these indicators can be misused, as high number of research publications alone cannot guarantee that research has been done properly in terms of quality in that particular institution. Therefore, Cave et al (1997) also warn the possibilities of *manipulability*. Manipulability can happen when high measure/statistics of the indicators are mistaken as good performance. Although Gray (1995) suggests not to use extensive numbers of indicators that can 'drive out good answers' or missing the essentials in HE, *manipulability* shows that PIs only represent some parts of education process.

The global influence of businesslike management to public sector has introduced HE to competitive atmosphere (Morey, 1999; Cave et al, 1997; Foskett & Lumby, 2003). This is because economic and social process is giving significant influence to the directions of education (Cave et al, 1997). For the purpose of giving evidence for quality, Sizer (1992) says that PIs are better than simple management statistics because PIs have the reference to an achievement or objective.

In order to use PIs for the purpose of comparing performance, several methods can be applied. According to Cave et al (1997) there are at least four techniques in evaluating performance, which are *Cost-Benefit*, *Cost Effectiveness*, *The Efficiency Frontier* and *Regression Analysis*. *Cost-Benefit* analysis tries to capture the rate of return to investment in HE. The idea is by calculating the benefit from the increment gained from the earnings associated with HE. The cost used in HE is seen through subjects of study as well as from the degree of study. The benefit is seen as the discounted value from the increment of salary related to the education in HE. it is a difficult calculation because there are many other possible factors resulting to the increase of the salary.

Cost-Effectiveness analysis has a less ambitious method by calculating the use of funding (inputs) to the physical units (outputs) purchased. This calculation will be possible for comparison when the item or units are similar, but every HE institution has different needs and therefore may not allocate their budget for similar items.

Efficiency Frontier collects information about outputs from relatively similar inputs. One example for this is the comparison between similar size universities through the outputs of Art and Science Graduates. The performances are put in graphics, with each axis represent the number of graduates from two categories. The frontier is reached when a line connecting points of best performances. The line becomes a benchmark for other universities by making a line from the *nort* (0) through the university's point to the frontier. The distance between the university's point to the frontier shows the difference in performance to best practice. Although much used in economic or development studies, this method has not been frequently used in education field (Cave et al, 1997, p. 33).

Regression Analysis seems to be used more by people in education field. This is because by using scatter plot, the trend set the regression line, as a kite mark for the performances. The performance of a particular HE institution is shown by a vertical line drawn to the regression line. This method is also used in calculating value added in school sector. By looking through the key issues in PIs, the next part will show how these are applied in the designs and applications of PIs in different contexts. Examples from UK, USA and other countries give sight to what considered as best practises in different situations.

In the UK, the discussion on PIs became official since Sir Alex Jarrat's report in 1985. This white paper was presented as the result of deep investigation on HE, with recommendations to make HE more accountable and more corporate like. It was well advised to every HE institution to have clear objectives, aiming to achieve *value for money*, and that Vice Chancellors should act as chief executives for their institutions (Cave et al, 1997, p.4). Accordingly, it was suggested that there should be a kind of indicators on these issues.

The design and application of PIs in the UK has been densely political (Cave et al, 1997). These are important for some reasons. First, by initiating observation on HE national benchmark is made possible. Second, the formulation of PI in 1986 was closely related to government's funding for HE. Henceforth, the government has revised its funding formula to one which is closely related to HE achievements/performance. For this objective, the government introduce the use of Research Assessment Exercise (RAE), which formulates funding according to the performance of research in HE institution.

The RAE evaluates research activities through a number of criteria, including the number of research publications. The RAE appears in 1-5 ranks, with 1 represents the lowest research performance. The government funding will be given to universities with ranks 3, 4 and 5 in their research performance. These are the ranks suggesting the national reputation research. Since 1996, there are more ranks: 3a and 3b, as well as 5 and 5*, with further descriptions on the split ranks (Appendix 2). The latest development in the RAE system is the 2005's report by Sir Gareth Roberts. The white paper is also called as Roberts' Report and will become a reference for measuring research activities in UK's HE for the year 2006-2010.

From the UK experience, there are three key *outputs* for HE in UK. They are: highly qualified man-power, highly qualified research, and other social benefits (Cave et al. 1997, p.44). This is why research has considered as vital in HE. However, application of RAE has invite some dilemmas, including those universities, which are strong in teaching but not considered as performing well in research. Recent examples of teaching universities to receive fewer funds show the need to further analyse the formulation of PIs. Other drawback from over valuing performance is the closing down of less popular and less profitable courses or faculties. As the result, there will be many important science or field of studies become extinct in the future.

In the USA, HE performance is measured through peer-review mechanism. The concept of PIs has been used under different terms since the 1970s (Cave et al, 1997, p.70). The design and application of PIs in the USA are driven by competition in the market force, and as politically influenced compared with the UK experience. There is no single policy for PIs and each state may apply different ways to investigate performance of HE institutions, under the peer-review nature.

A case study of ten states on the development in HE's PIs reveals 'variety of motives and uses for state systems of PIs' (Richardson, in Cave et al., 1997). As the result, HE institutions are inclined to have their research evaluated by colleagues in similar field of study. HE institutions can also publish their performance under their own criteria. The 'un-systemised' PIs in the USA are justified by two reasons. First, there are multi interests in HE as there are many stakeholders in HE. Second, funding for HE mostly comes from outside the government and the government gives very wide opportunities to HE institution to compete for funds. However, it is suggested that a more consistent rankings or PIs will make HE in the USA more dependable in terms of quality.

In the Netherlands, PIs are part of the reforms in the public management, from centralised to a more decentralised management (Neave, 1987). The Netherlands' experience is similar to the UK, in which funding is allocated through formula related to HE performance. The 'new public management' (Pollitt, 1995) offers more autonomy in HE to allocate their funding for the increase of performance.

In Australia, research performance in HE is measured using the Research Quantum (RQ) since 1994. In comparison to UK's RAE, the Australian's RQ is more quantitative and depends solely on *outcomes*, such as the number of research publications; whereas UK's RAE includes qualitative judgements from experts. The RQ measures research activities by using independent variables posited by the government (the Department of Employment, Education, Training and Youth Affairs/ DEETYA). The PIs include *student-staff ratio*, *the number of staff with PhD's qualification* and *research income*. Research becomes the major element under scrutiny for HE reputation because it is seen as the immediate *outputs* of HE process.

Some dilemmas in the design and application of PIs in Australia include the issue of *value added*. The occurrence of RQ implies that good teaching universities are not really important in delivering good education because good students are still going to learn and succeed in the employment no matter the quality of teaching in HE institutions. Research has given so much emphasis that value is not added though teaching but through funding because students will benefit from the reputation of the institution in the work place.

Similar to the experience in the UK, research is considered to be more important that teaching. Research shows that HE institutions with high research activities have benefited by getting more funding and applicants because of the reputation, regardless their teaching qualities. Drawing from Marginson's (1997) typology, *standstone* universities and the *Utechs* are the ones benefited from RQ. This is because those *standstone* universities have gained reputation as good universities and therefore retain their research reputation through recruiting more researchers. *Utechs* are less old universities with high emphasis on research, which also gained benefit from RQ. On the other hand, small universities (*wanabee* or *new* ones) are in difficult positions because their research is not as strong as their teachings. In addition, to further improve the teaching performances there are no increase in funding because of the RQ system. This favouritism has proven the limitation of PIs in assessing HE performance.

DISCUSSION

Design and Application of PIs in Indonesia's HE: Key Political Implications

There are two key issues in the design of PIs in Indonesia's HE. First, the need to keep up with international rapid movement toward quality in HE. Second, the national economic condition, which aimed at revitalisation through industry. These issues will be discussed in turn as foundation to arguments on what indicators are for HE research in Indonesia.

International Trends

President Susilo Bambang Yudhoyono in the commemoration of National Education Day, 2 May 2005, said that Indonesian's education system is left behind in comparison with other South East Asian countries, such as Malaysia and Singapore. He further underlines the down image in quality and development, which is very contrast to 1960s success. During those years, Indonesia was the first destination for Malaysians to pursue further studies. The reason for such failure is due to the absence of a 'planned, systematic, thorough and on-going national education system'. In addition to this, the President addresses basic problems in Indonesia's education, which include inadequate salary for lecturers, poor physical resources and inequity of education opportunities. Furthermore, corruption and the low economic growth have complicated the situations and prevent HE to be able to enter wider international competition.

In relation to the situation, government set an accreditation body to work as a free agency for quality investigation. The National Accreditation Body for HE (BAN-PT) works under peer-review scheme reviewing reports and paying visits to HE institutions before deciding the rank of accreditation. However, in practice, BAN-PT acts as a lengthening of hand of the government. Indicators for quality are set by the government and financial accountability becomes part of the assessment. In specific, the government set up a new agency in relation to research in HE, which is Journal Accreditation. This is particularly because following international trend, research in HE is important to show the contribution of HE in the society. Furthermore, the government has high expectations on economy revitalisation through rigorous research development in HE, which is linked up with industry.

From the previous Literature Review, t is interesting to find out how practice of quality assessment through indicators in Indonesia resembles with the practice of some countries. From Table 1, Indonesia's scheme of accreditation is compared with the practice of PIs in other countries.

Table 1 Map of practice of PIs in different countries

ISSUES / COUNTRIES	UK	USA	NETHERLANDS	AUSTRALIA	INDONESIA
GENERAL AREA					
REASONS FOR PIs	1. value for money 2. accountability 3. better management (Cave et al, 1997, p.42)	1. value for money 2. accountability 3. better management (Cave et al, 1997, p.42) 4. strong competition	1. value for money 2. accountability 3. better management (Cave et al, 1997, p.42)	1. value for money 2. accountability 3. better management (Cave et al, 1997, p.42)	1. value for money 2. accountability 3. better management (Cave et al, 1997, p.42) 4. economy revitalisation
DOMINANT INFLUENCE IN APPLICATION	Government's intervention	Market force/competition	Government's intervention	Government's intervention	Government's intervention (masqueraded in market force)
GOVERNMENT INVOLVEMENT	Strong	Loose	Strong	Strong	Strong
RESEARCH AREA					
METHOD OF EVALUATION: RESEARCH AREA	Research Assessment Exercise (RAE)	State- Based Peer-Review	--	Research Quantum (RQ)	Journal Accreditation
FUNDING ALLOCATION FOR RESEARCH	Up to 60%	None (Market driven)	--	Up to 11% (Australia)	3%
CRITIQUE ON APPLICATION	Favouritism (discriminating Teaching) Value Added	No system-Very Loose and Relative	Favouritism for Research (discriminating Teaching)	Favouritism for Research (discriminating Teaching)	No clear system

From Table 1, Indonesia has no clear system in conducting investigation of quality through PIs. The no-system is justified for several reasons. First, considering the changing in political situations in Indonesia, it is better to have a more flexible practice; the change from centralisation to decentralisation influences education in Indonesia. Before, the government controlled the management and financial decisions of HE, but recently HE has more autonomy. The shift toward decentralisation makes the government has to act carefully in terms of telling what HE should have or do. Second, there is a high emphasis on research that can revitalise the economy. By giving more freedom to research activities, the government expects there will be more research activities, especially those that are related to technology and science. On the other hand, this will invite business sector to easily make use new inventions or findings from research. The end results will be the increase in economy. However, more concern toward intellectual property rights has increased and the government is to blame for lack of control toward research.

It is also noticed from the table that Indonesia shares similarities with the UK and the USA. In one hand, the existence of peer-review which is driven by economic factor of competition of market forces is similar to those happening in the USA. On the other hand, the existence of Journal Accreditation Body resembles to the UK's strong government's intervention. As seen from other countries, such as the Netherlands and Australia, government has strong influence in HE. Journal Accreditation Body is a quasy-government agency, with the members fully appointed by the Ministry of Education. However, the government does not impose recommendations for development as applied to National Accreditation Body for HE institution or courses. This duality further reveals the dilemma between encouraging activities of research and at the same time trying to maintain quality.

Research as Means to Economy Revitalisation

As explained earlier, the government relates education as means to nation welfare. This means good teaching will be shown also from the increasing research's activities. Furthermore, research in the area of technology and science is considered to be better than research in social related areas of study.

According to statistics from Journal Accreditation Body, the research performance from 1999-2004 increases around 30%. This is recorded from the number of publications across leading universities in Indonesia. These figure are in both areas of studies: Social area of study and Science/Technology area of study. Details on progress for each area of study can be seen from the table below:

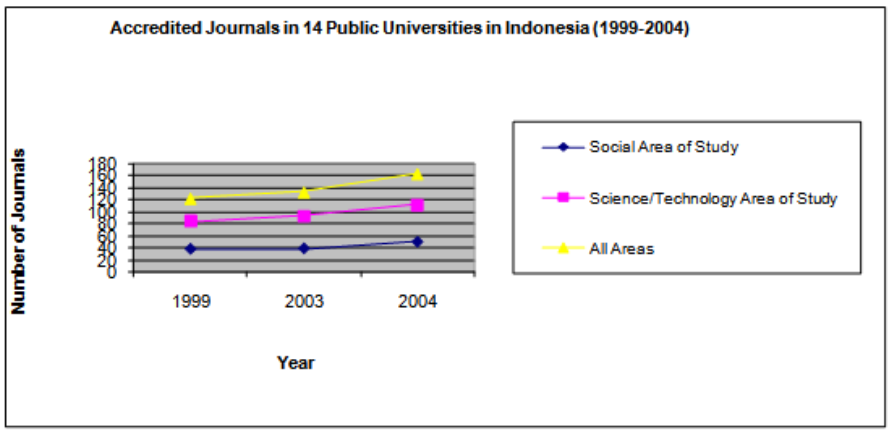

Figure 2 Performance on research volume from journals (1999-2004)

From Figure 2, there are more publications on the area of Science/Technology. The government puts high emphasis on the importance of 'building the economy and increasing national income, to support all areas in national development, especially in the area of education'. This makes research activities in the area of studies of Science and Technology become indicators of quality in HE. In addition to this, the long-term plan for HE underlines the interconnectedness between science and technological development with social and economic needs will be made possible through research in HE. This is how HE research is expected to bring the rate of return to the society.

Research in Indonesia's HE has always been considered as part of public service. This is served by the arrangement of research by Research and Public Service Division (LPPM) in every HE institution. This division also sends every student to do a field-study in rural areas in the final year of study as a compulsory requirement for graduation. The 3-5 months allocation of students is intended to give both students and people in the society the benefits of study in the HE institution. However, due to financial and impracticality issues, most of the HE institutions opted out the practise since the last five years.

The 3% allocation for funding through Research grants is considerably non-effective. This is because through the design, the government prefers research with income potentials to the economy. Thus, looking from the national trend, science/technology related research is more likely to enjoy the big share of the sum. A domino effect arises, since "big" or universities with high reputations (as the result of Accreditation) get most of the funding they can build their research facilities and in return will come up with more qualified research. Smaller universities or relatively new ones have the completely opposite situation, resulting in no money for research and therefore no research to compete for funding.

Performance Indicators in Research

From above discussion, there are several indicators of performance in Indonesia's HE research, they are: (1) research activities, especially related to Science and Technology (through number of research journals); (2) research income (through working projects with industry); and (3) research degree holders (doctorate degree holders or professors).

Research activities through number of publications are displayed by the yearly report of Journal Accreditation, while the others are considered as additional indicators and not published. The first indicator is still considered as effective way to assess the performance of HE institution. However, this stored some problems as manipulability and inconsistencies become more apparent in the application of these PIs.

Application of PIs in Indonesia's HE Research

From the report of Journal Accreditation body, the research performances of leading universities can be seen in Figure 3.

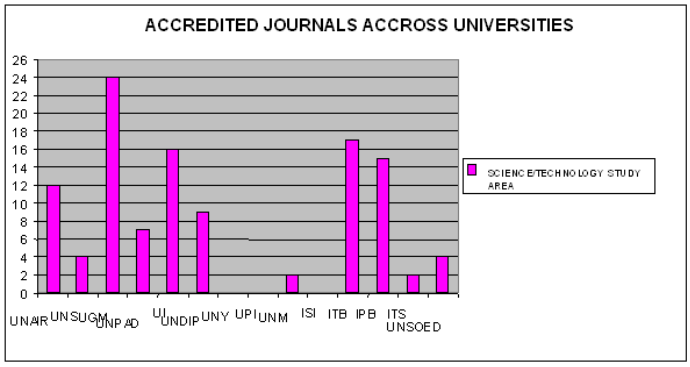

Figure 3 Research performance in the science/technology areas of study

Research in the Science/Technology Area is dominated by the four big universities: UGM, UI, ITB and ITS. However, it is quite surprising that the technology based universities, ITS and ITB are behind in terms of research activities. Although this does not imply the less-performed research quality compared to top two, more can be done to help the volume of qualified research. One of the proposed applications will be to turn these technology-based universities as the mother base camps for research in science/technology areas. This means that government should invest on building big and strong laboratories situated in both universities first. As other non-science/technology-based universities can generate income from science/technology-based research, these laboratories are not owned by the two universities and thus can be used by other universities.

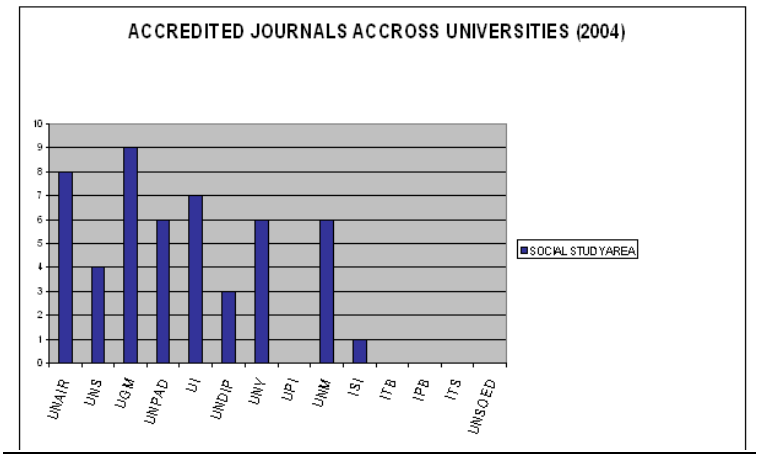

Figure 4 Research performance in the social area of study

Two leading universities, UGM and UI, have a competitor in the Social Study Area, UNAIR. As seen also from previous figure this university does not have a good performance in its science/technology based research. This indicates the specialisation in the area of Social Studies. As the bigger numbers of students are enrolled in the Social/Humanities Studies, this may also imply that this university generates its income through the tuition fees. Research in these social/humanities area can be more focused in conjunction to professionalism, in equipping graduates for working environment and as generating solutions in bridging the gap between theories and applications in the work-field. In collaborating with other universities, the leading universities (UNAIR, UGM and UI) can also open consultation bureaus based on the research they conducted.

From the diagram also can be seen two universities with similar performance in research, UNY and UNM. Both institutions concentrate on education area of studies. They can also work in collaboration conducting research with other similar institutions in other islands and areas across the country. The government also can give additional funding by paying their service when consulting or supporting the needs of schools.

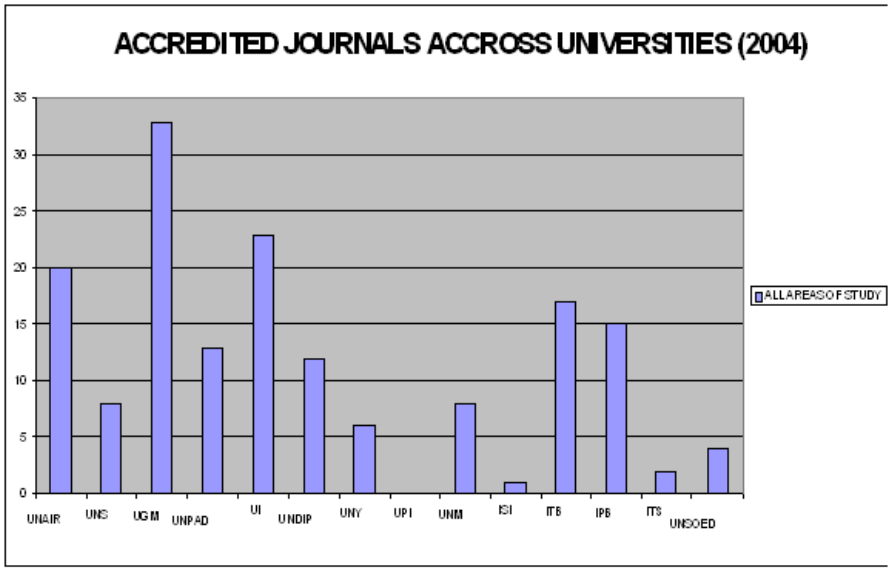

Figure 5 Performance of research in both areas of study

In overall performance UNAIR turns out to be ahead compared with ITB and ITS. This may indicate that through the use of PIs, quality is seen through evidence. This finding is surprising because both ITB and ITS are considered as 'leaders' in the area of research. The performance of UNAIR may be resulted from the bigger awareness of research in the institution. Accordingly, socialization on the importance of research should be done continuously, both by the government or top management of each HE institution.

However, as the data is taken from the Journal Accreditation Body, these do not represent the whole population of research activities recorded from the journals. Such universities, such as UPI with no record on research activities may only reluctant to register their journals to the Journal Accreditation Body for administrative reasons, such as paying the fees.

Research in Indonesia is always connected with the issue of benefiting the society. This mission for research comes closely to the theory of connecting HE with its environments. Levacic (2000) when discussing *effectiveness* and *efficiency* of educational institution follows Mintzberg's (1979) concept on organizational structure. An organization, according to Mintzberg (1979) has an

operational core, organizational support and external environment in which the organization operates. Accordingly, Levacic (2000) argues that an educational institution should adopt an open system model, which depends on its external environment to function. Quinn (1988; 2003; Quinn, Faerman, Thompson & McGrath, 1996) suggests the need to be responsive to the needs of the environment.

In relation to *output*-driven organization, Bush (1995) gives a hands-on model of Rational Model, which contains a 4-stages process to reach the organization's objectives. Based on the formula, the steps cover four main issues of: Problem Orientation; Designing solutions; Applying the Design; and Evaluation. By combining theories possible solutions to problems/dilemmas can be broaden (Quinn, 2003) and this should be adapted to the context or situation of the HE institutions.

The Way Forward for PIs In Indonesia's HE

From the description of current practice of PIs in Indonesia's HE, the main problems are: (1) there is the 'tug of war' between autonomy and control in the design and application of PIs in Indonesia's HE; (2) the application of PIs favour big and old universities and not small universities with quality research; (3) Journal Accreditation as favouring more on research on technology/science rather than social areas of study; and (4) there is contradiction between rhetoric of government's regulation on HE with government's economic agenda on research.

Some suggestions can be opted in addressing such problems. In addition to complexity and disparity of HE in Indonesia, some suggestions may have to be further adjusted to areas or conditions of HE institution. Many of the problems can be worked out by understanding the position of research as illustrated from Figure 6.

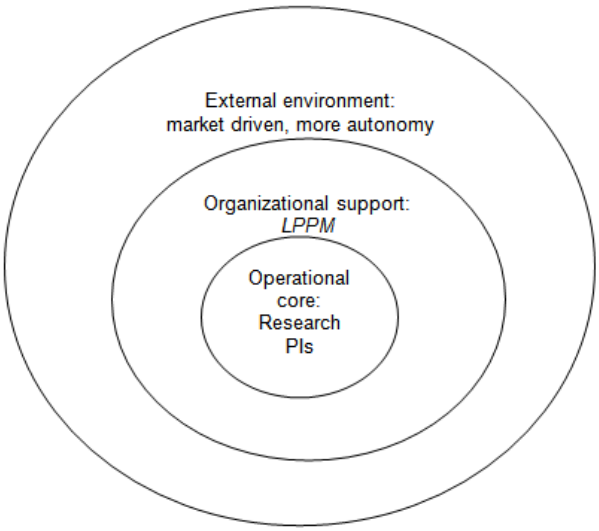

Figure 6 Indonesia's HE as Structured Organization: Research Area

Based on Mintzberg's (1979) core activities in an organization, in HE, research relates with the society through HE institution. This suggests that research activities will also be influenced by what happens in the society or in the organization.

In regard with the issues of autonomy versus control and research nature in the country, explanations will be generated by looking at the diagram. In the centre is the operational core, which is the central circle. This is where the PIs affecting the course of the research in the institution. The next circle is the organisational support, which is *LPPM* or the Development and Public Service Division.

This is the division established to serve the public through projects in the university. One of the project is the field-work, which sends final year students to reside in villages and apply their knowledge for the development of the villages. The outer circle is the external environment, or the real world, which include government and economy situations. From the diagram, research the HE institution will reach or affected by the world through the HE institution.

The environment in Indonesia includes change from centralisation to decentralisation. Competition in the market driven environment puts high emphasis on income generating possibilities. This combination puts HE in Indonesia with opportunities to manage their own institutions and generating their own income. However, the transition to decentralisation still need some time to have full manifestation of more democratic government. One possible way to cope with this problem is to use PIs as suggestion rather than absolute standard for development.

From the *Problem Orientation*, there are two problems from the working practice of Journal Accreditation. First, old and big universities tend to benefit from Journal Accreditation, no matter what quality of research they have. One reason is because old universities have better resources to conduct big and important research. This leaves small new universities left further behind when trying to keep up with doing more research. Another reason is that big universities possess more abilities to recruit better and more researchers, who in the end will boost research performance of the big universities.

Second problem is that research in science related area is more favourable than those related to social related studies. In designing solution to this problem, both government and HE institution should refer back to the intention of research, to develop full potentials of the people. Therefore, there should be equal attention in research with fast results, such as new technology inventions, and research which entails long term but fundamental principles, such as on education reform.

Before applying any design for PIs development, both government and universities should work together. The government has its Higher Education Directorate, which may become the benefactor for development in HE performance. This will be done through the function of *LPPM*, which will act as middleman between research potentials in the institution and possible 'buyers', such as industry and government or wider society. In addition to this, LPPM will also act as quality control division, which concentrates in conducting self-evaluation on the research activities within the institution. Furthermore, small universities can work in collaborations with other universities to have joint laboratories in order to revitalise research activities.

The evaluation can be carried out through peer-review basis. This can be done as part of self-evaluation conducted by LPPM. Other possibilities will be on revising PIs used by Journal Accreditation to be more comprehensive. When applying the Open System version on Rational Model (Levačić, 2000), evaluation will also take place with the response of wider society upon the performance of research. This is because people will eventually choose quality.

CONCLUSION

From the discussion in the chapters, key political implications in the design and application of PIs in Indonesia include competition and government's agenda on research in HE. The competition is addresses by the current practice of Journal Accreditation as giving benchmark for quality in research. Government's agenda on research has caused some dilemmas in managing education as complex process. From the discussion, some suggestions are given in answering to these dilemmas. First PIs should be regarded as products of current situations and demands. Second, application of the design

will have to be assisted by the nature of the institution. PIs should also not be considered as absolute indicators for quality but rather as catalyst toward development. Finally, further studies should be conducted in relation to further exploration of PIs in Indonesia's HE. Longitudinal research may benefit to come up with more accountable system, which can cover both teaching and research in HE. This should be done under the consideration of the changing political and economical landscape of the country and with consideration on the complexity and disparity of Indonesia's HE.

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APPENDICES:

Appendix 1. 14 PIs in UK's HE
Appendix 2. RAE categorisations

Appendix 2.

RAE GRADES	
5 *	Quality that equates to attainable levels of international excellence in more than half of the research activity submitted and attainable levels of national excellence in the remainder.
5	Quality that equates to attainable levels of international excellence in up to half of the research activity submitted and to attainable levels of national excellence in virtually all of the remainder.
4	Quality that equates to attainable levels of national excellence in virtually all of the research activity submitted, showing some evidence of international excellence.
3a	Quality that equates to attainable levels of national excellence in over two thirds of the research activity submitted, possibly showing evidence of international excellence.
3b	Quality that equates to attainable levels of national excellence in more than half of the research activity submitted.
2	Quality that equates to attainable levels of national excellence in up to half of the research activity submitted.
1	Quality that equates to attainable levels of national excellence in none, or virtually none, of the research activity submitted.

LIST OF ABBREVIATIONS

BAN-PT	*Badan Akreditasi Nasional* (National Accreditation Body)
CVCP	Committee of Vice-Chancellors and Principals and University Grant Committee
DES	Department of Education and Science
HE	Higher Eduation
ITB	*Institut Teknologi Bandung* (Bandung Institute of Technology)
ITS	*Institut Teknologi Surabaya* (Surabaya Institute of Technology)
LPPM	*Lembaga Pengembangan dan Pengabdian Masyarakat* (Development and Public Service Division)
PIs	Performance Indicators
UGM	*Universitas Gadjah Mada* (Gadjah Mada University)
UI	*Universitas Indonesia* (University of Indonesia)
UNAIR	*Universitas Airlangga* (Airlangga University)