COMPARATIVE STUDIES ON KEY INDICATORS USED IN PERFORMANCE MEASUREMENT SYSTEM OF POLYTECHNICS' ACADEMIC STAFF

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Abstract

Polytechnic Transformation Plan is launched to reinforce the role of polytechnics and technical education in Malaysia. The third thrust of the Plan puts forth the need to equip polytechnics' teaching personnel and support staff with high skills and competency (MoHE, 2009). As a result, performance of teaching personnel needs to be evaluated to ensure the efficiency and effectiveness of teaching personnel in polytechnics and thus, it is crucial to assert the key indicators used. Based on the literature review, the tentative key indicators identified include, teaching and supervision, research and innovation, administrative tasks, professional activities and services to community. These key indicators are tested in polytechnic context on comparative basis between Northern and Central Region in Malaysia. Researchers employed hybrid/mixed method as the research approach for this study because the method elaborate or develop analysis by providing richer details, and initiate new line of thinking through attention to surprise and provide fresh sight. Amongst the six strategies introduced by Creswell (2003), concurrent embedded strategy is implemented to empirically test the research objective. The purpose of this strategy is to use quantitative data and results to assist in the interpretation of qualitative findings through triangulation. Researchers interviewed the Directors and/or Deputy Directors/Heads of Department of the polytechnic on face-to-face semi-structured basis. In addition, questionnaires developed are distributed to academic staff of the polytechnics to gather their perspective on the key indicators of academic Performance Measurement System. The data collected via interviews are transcribed and translated into English for data analysis process using thematic coding. Besides that, quantitative data are described and analysed using Statistical Package for the Social Science (SPSS) as a tool.

Keywords: Academic Staff, Performance Measurement System, Polytechnic, Key Indicators

1.0 Introduction

Higher Education Institutions (HEIs) in Malaysia plays critical role in transformation of a nation by contributing quality graduates. Furthermore, HEIs are seen as medium to enhance individuals with knowledge, skills and professionalism to meet the need of national human resources for national development (UNESCO, 2004). Arguably, universities should emphasised academic knowledge and scientific innovation while polytechnics should focus on skills training and development. The role of polytechnics has gradually become significant in building technical human capital, especially in automation and mechanization technologies (MoHR, 2008).

In Malaysia, there are 27 polytechnics, administered by the Department of Polytechnic Education (MoHE, 2010). On 20th November 2009, the Polytechnic Transformation Plan was put forth to further reinforces the role of polytechnics and technical education in Malaysia (MoHE, 2009). Principally, the Transformation Plan outlined four thrusts, consisting of: (1) enhancing polytechnics towards becoming the students' choice and preferred institution that is at par with universities; (2) development of programs and research in niche areas that representing the different strengths of each polytechnic; (3) equipping polytechnic teaching personnel and support staff with high skills and competency; and (4) development of an excellent work culture and image (MoHE, 2009).

Thus, academic staff play an important role in the achieving the intended outcomes as aligned with Transformation Plan. Past studies indicated that performance of academic staffs has significant impact on students' performance (Adeogun & Osifila, 2009; Bajah, 1979). A comprehensive yet balanced key indicators used in academic's performance measurement system (PMS) should be in place. Therefore, this study intends to evaluate the key indicators used in PMS of academic staffs in six polytechnics in Malaysia (i.e. 3 polytechnics in Central Region and 3 polytechnics in Northern Region). Researchers also attempt to evaluate the differences in key indicators between premier and non-premier polytechnics.

2.0 Literature Review

This section outlined the tentative five key areas namely; (1) teaching and supervision; (2) research and innovation; (3) administrative tasks; (4) professional activities; and (5) services to community from past literature. Past studies identified that teaching and supervision as one of the main areas that should be included in academic staffs' performance measurement system (e.g. Collins & Palmer, 2007; Irtwange & Orsaah, 2009; Mohamad Ishak, Mohd Ali & Wan Mustaffa, 2007; Suhaida, & Yuzainee, 2009; Wan Mustaffa & Kamis, 2007; Whittington, 1988). Moreover, data from the employee handbook in few universities official website indicated that teaching is one of the dominant areas to be assessed (Refer to Appendix 1). Besides that, teaching is one of the activities carried out by academic staffs in educational institutions (Comm & Mathaisel, 1998). Generally, teaching refers to helping (or, strictly, to try to help) someone to learn something, however, what is learnt need not necessarily make contribution to the learner's education (Langford, 1978). Langford (1978) further elaborated that learning depends on

further considerations beyond those which lead us to say that they are teaching. Therefore, in the context of academic staffs in educational institutions, there is a strong linkage between teaching and education (Langford, 1978) and thus, teaching in polytechnics is referred as helping someone to learn something technically for application in their career pathway.

Besides the importance of teaching as identified above, in order to quantify the areas of teaching and supervision, Mohamad Ishak et al (2009) suggested that teaching load, number of students supervised, the quality of teaching and involvement in co-curriculum activities should be indicated in performance measurement system for academic staffs. Few other scholars also reiterated that key indicators for teaching performance should consist of teaching load, teaching skills, teaching approach, teaching material preparation, teaching innovation and student's appraisal to teacher (Kuo & Chen, 2002; Tummala & Sanchez, 1982).

Besides teaching and supervision, research and innovation has become a recent addition to the transformation efforts in higher education. The meaning of research and innovation in the context of American education system is defined by Boyer (1990, p.10) as a variety of creative works, whose "integrity was measured by the ability to think, communicate and learn". Past studies delineated that research and innovation is one of the areas that should be included in the performance measurement system for academic staffs (eg. Comm & Mathaisel, 1998; Irtwange & Orsaah, 2009; Mohd Ali & Wan Mustaffa, 2007; Mohamad Ishak et. al, 2009; Turk & Philips, 2005; Wan Mustaffa & Kamis, 2007). Thus, research and development of innovative ideas, products and processes should be undertaken by academic staffs and be evaluated, in line with the directions in the Tenth Malaysian Plan and New Economic Model. As reference to Appendix 1, employee handbook from the universities' official website shown that research and innovation is one of the key areas that are evaluated.

In an empirical study on UNITEN, in measuring the research and innovation area, there are six key indicators that need to be included, such as approved research project, level of involvement, project completion, research fund, academic paper and other writing such as books, monographs, edited books, popular books (Irtwange & Orsaah; Mohamad Ishak et al., 2009). Many other researchers put forth key indicators, for example, academic periodicals, number of papers published in conferences, periodical quality index, published monograph and technical report, gained patent awards for research and the number or sum of research plans in charge (Jaunch & Glueck, 1975; Kuo & Chen, 2002; Tummala & Sachez, 1982). The key indicators mentioned above are included in this study.

Previous scholarly studies also delineated that administrative task undertaken by academic staff should be included in the measuring performance of academic staff (e.g. Comm & Mathaisal, 1998; Irtwange & Orsaah, 2009; Kuo & Chen, 200; Mohd Ali & Wan Mustaffa, 2007; Mohamad Ishak et. al, 2009; Wan Mustaffa & Kamis, 2007). Employee handbook for academic staffs on university official website also shown that administrative tasks are evaluated (Refer to Appendix 1). Administrative tasks ranged from departmental chairs, deans, vice presidents, presidents and other occupying positions that are carrying different levels of administrative positions

regarded as academic administrators (Englehardt et al., 2000). On the other hand, Weingartner (1999) outlined the responsibilities of academic administrators by reflecting on the types of institutions of higher education and identifying the basic responsibilities of academic administrators – primarily, serving as leaders in assisting their own institutions to achieve its goals. He further pointed out that academic administrators tend to be more to the academic rather than the clerical side of administrative work and such academic administrators "works with faculty" and are "concern of their students" (Weingartner, 1999). Several key indicators should be taken into consideration, such as, holding a post as administrative director, degree of participating in department affairs and commissioner of committee (Deutsch & Malmborg, 1985; Kuo & Chen, 2002; Measak & Jauch, 1991; Tummala & Sachez, 1982).

Besides the above mentioned, past studies indicated that academic staffs also undertake professional activities by holding positions in professional associations and/or providing professional advices/services through consultancy projects (Comm & Mathaisel, 1998; Kuo & Chen, 2002). Such professional contributions should be included in measuring performance of academic staff (eg. Irtwange & Orsaah, 2009; Mohd Ali & Wan Mustaffa, 2007; Mohamad Ishak et. al, 2009; Wan Mustaffa & Kamis, 2007).

Professional activity in this context is providing professional services, industrial attachment of academic staff and participation in commercial activities such as offering of consultancy services or expertise advices to industry. Moreover, industrial attachment is important to ensure continuous updating of new technology and new knowledge of academic staff and increase understanding on needs of industry. Seddon (1997) argued that the success of an engagement initiative or activity within a community is used as the measures of the degree of a person's involvement. Thus, in polytechnics context, success of academic staff in providing professional services can be measured using key indicators such as repeat consultancy projects, completion of industrial attachments, contribution to professional associations/bodies in monetary or in expert advices and repeat request for conducting training workshops for industry. Past literature also put forth other indicators such as striving practice and employment opportunity for the students, conducting professional lecture, advisor of consultation projects and contributions in professional academy (Deutsch & Malmborg, 1985; Kuo & Chen, 2002; Measak & Jauch, 1991; Tummala & Sanchez, 1982).

Past studies also indicated that service to the community is another area that need to be included in measuring performance of academic staffs (e.g. Comm & Mathaisel, 1998; Irtwange & Orsaah, 2009; Mohd Ali & Wan Mustaffa, 2007; Mohamad Ishak et. al, 2009; Wan Mustaffa & Kamis, 2007). Community services is defined as services which are identified by an institution of higher education, through formal and informal consultation services to local non-profit, governmental and community-based organizations, as designed to improve the quality of life for community residents, particularly low-income individuals, or to solve particular problems related to their needs, including such fields as health care, child care, literacy training, education (including tutorial services), welfare, social services, transportation, housing and neighbourhood improvement, public safety, crime

prevention and control, recreation, rural development, and community improvement; and work in service opportunities or youth work as defined in the National and Community Service Act of 1990 (Higher Education Technical Amendments of 1993). Key indicators that should be included in measuring performance of academic staff include involvement in committee of community establishment, member of professional association/body, being reviewer and/or internal and/or external examiner and other community/voluntary services (Mohamed Ishak et al., 2009). Some researchers indicated that indicators such as participating in social activities in specialised area such as performing arts, etc should be included into performance measurement system of academic staffs (Deutsch & Malmborg, 1985; Kuo & Chen, 2002; Measak & Jauch, 1991; Tummala & Sachez, 1982).

The following section put forth the research methodology used in this study and followed by research findings on the key indicators used in measuring performance of polytechnics' academic staff by five key areas.

3.0 Research Methodology

The proposed research aims to employ mixed research method approach with concurrent *nested strategy* (Creswell, 2003) in the data collection phase. Researchers used both quantitative and qualitative methodologies concurrently in an attempt to confirm and cross validate findings within its study. Quantitative approach is used to identify the obvious findings but qualitative approach allows collection of rich data in descriptive manner. This mixed research method approach encourages triangulating of multiple sources data to ensure quality, reliability and validity of data collected.

Semi-structured face-to-face interviews are conducted with directors and/or deputy directors and/or head of department of polytechnics because relational approach is crucial in getting rich comments and feedback. There are eight interviews conducted (See Table 1). Moreover, researchers are able to probe further and read the body language of respondents. Hence, phone interviews will not be as effective as face-to-face interviews to gain confidence and true feedback from respondents. A set of interview questions is developed to evaluate the key indicators that are used in measuring performance of academic staff in polytechnics. The interviews are audio-taped, transcribed, translated and analyzed using thematic coding (Miles & Huberman, 1994; Yin, 2003) by using Nvivo as a tool.

Table 1:
List of Interview Respondents

Respondent	Category
R1	Director
R2	Head of Department
R3	Head of Department
R4	Deputy Director
R5	Head of Department
R6	Head of Department
R7	Director

R8	Deputy Director

Thereafter, self-administered questionnaire is distributed to the academic staffs in polytechnics on convenient sampling basis. Questionnaire is distributed to 100 academic staffs but there are 87 usable questionnaires collected. In addition, questionnaire is structured to include open ended questions, close-ended questions, questions that require ranking response and statements in Likert scale to gain feedback from respondents. The Likert Scale is from 1 Least Important to 5 Most Important. The internal reliability of the questionnaire developed is tested using Cronbach Alpha and the score of 0.92 achieved implies a high reliability (Refer to Table 2). Besides that, the reliability results indicated good reliability in evaluating the opinions of lecturers on five areas, namely: (1) teaching and supervision; (2) research and innovation; (3) administrative tasks; (4) professional activities; and (5) services to community.

Table 2:
Reliability Results

Variable	Cronbach Alpha Score
All Indicators	0.920
Research and Innovation	0.906
Administrative Tasks	0.856
Services to Community	0.851
Professional Activities	0.753
Teaching and Supervision	0.707

Data collected via self-administered questionnaires are analyzed by using Statistical Package for the Social Sciences (SPSS) as a tool. The results are used to describe the key indicators used in five key areas in measuring performance of academic staffs in polytechnics and to validate the results from qualitative data. Comparison is also performed to identify differences in key indicators from the perspective of Northern and Central Region as well as qualitative comments on key indicators between premier and non-premier polytechnics.

4.0 Key Indicators Used in Measuring Performance of Academic Staffs in Polytechnics

There are five key areas that academic staffs in polytechnics are evaluated, namely: (1) teaching and supervision, (2) research and innovation, (3) administrative tasks, (4) professional activities and (5) services to community (See Figure 1). However, in each of the key areas, there are different key indicators used to measure the performance of academic staffs. Thus, this study evaluated the key indicators used in the five key areas of PMS of academic staff in polytechnics' context in the following sections, respectively. These key indicators are further analysed to identify differences in key indicators between Regions (Northern and Central Regions) and classification of polytechnics (premier and non-premier polytechnics) in Malaysian context.

Benchmarking Theory is applied as the underpinning theory in this study. The theory delineated the fundamental assumption that benchmarking is "a process of self-evaluation and self-improvement through the systematic and collaborative comparison of practice and performance with competitors in order to identify own strengths and weaknesses, and learn how to adapt and improve as conditions change" (as cited in Harris & Mongiello, 2006). Benchmarking theory is based on the idea of comparing the performance of academic staffs with the benchmark set by the respected polytechnics. Benchmark is a form of motivation that will encourage the academic staffs to perform at the desired level. Hence, five areas are identified with its key indicators in evaluating, in which the indicators are used to quantify each area.
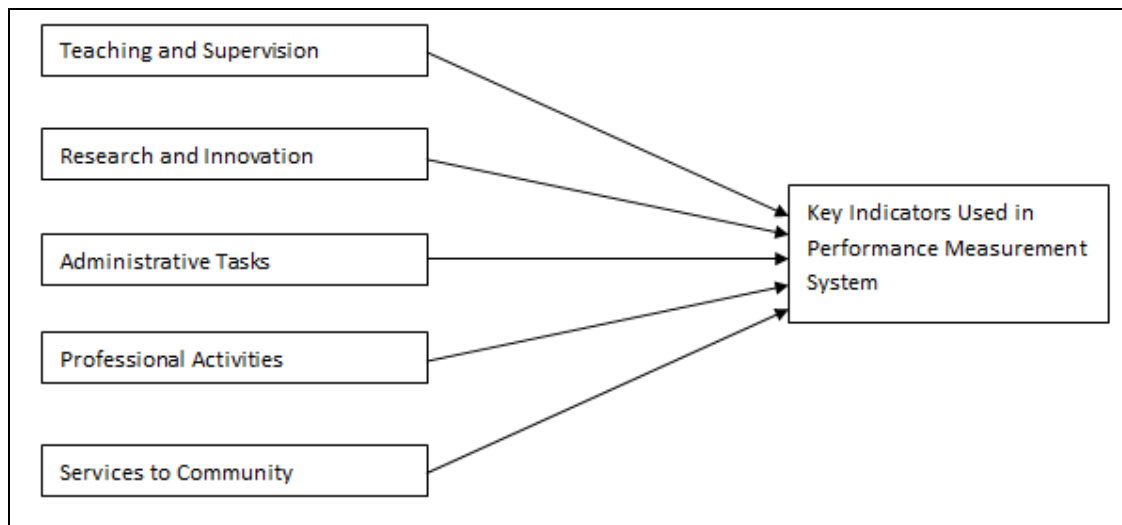

Figure 1:
Conceptual Framework of Performance Measurement System for Academic Staffs in Polytechnics

4.1 Teaching and Supervision

All the respondents (R1-R8) agreed that teaching and supervision is one of the main core activities carried out by academic staffs in polytechnic. R8 further elaborated that all categories of academic staffs are required to teach at least 16 hours per week, as stated in the promotional criteria too. Despite the high teaching load of academic staff, respondents (R2, R5, R6 and R8) revealed that there are two main tools that are used to evaluate the lecturing performance and delivery namely, *Instrumen Penilaian Pensyarah oleh Pelajar (Students' Evaluation on Teachers)* and *Instrumen Pemantauan Proses Pengajaran – Pembelajaran di Politeknik (Evaluation on Teaching and Learning Process in Polytechnic).* In these tools, key indicators such as students' assessment, evaluation from peer and Head of Department on teaching method/delivery and innovative teaching delivery are included. The evaluation methods and areas are similar between polytechnics in Northern and Central region. Besides that, teaching and supervision of students is utmost important area in evaluating academic staff performance in newly established polytechnics.

On the other hand, five key indicators in teaching and supervision are studied in this study via survey to determine if there were any differences in the opinions from academic staff in Polytechnics from Northern and Central Regions (Refer to Table 3). From the survey findings, polytechnics in Northern and Central Region showed minor differences in all key indicators. The survey findings are consistent with the interview findings where participants indicated high teaching load in polytechnics, supervision of students' projects and importance of students' evaluation on teaching delivery. There is no significant difference between premier and non-premier polytechnics except that newly established polytechnics concentrate on teaching and supervision as key area for measuring performance of academic staff more than other key areas as compared to established polytechnics.

Table 3:
Analysis of Teaching and Supervision by Region

Indicators		Mean	SD	1	2	3	4	5	Total
Teaching load	Northern	4.53	0.584	-	-	2	18	27	47
	Central	4.18	0.712	-	1	4	22	13	40
Student Evaluation	Northern	4.11	0.814	-	3	4	25	15	47
On Teaching Method	Central	4.12	0.822	1	-	5	21	13	40
Supervision of	Northern	4.04	0.779	1	-	7	27	12	47
Student Projects	Central	4.12	0.563	-	-	4	27	9	40
Peer Evaluation	Northern	3.79	0.858	1	3	8	28	7	47
On Teaching Method	Central	3.88	0.791	1	1	6	26	6	40
Co-curriculum	Northern	3.79	0.883	1	3	9	26	8	47
Involvement	Central	3.88	0.757	1	1	5	28	5	40

1 Least Important, 2 Less Important, 3 Neutral, 4 Important, 5 Most Important
SD – Standard Deviation

4.2 Research and Innovation

From the interview findings, all respondents indicated that academic staffs should carry out research and innovation related activities especially in relation to developing technical expertise and nurturing technological innovations. R5 & R6 further advocated that research and innovation is one of the promotional criteria for academic staffs especially in established polytechnics. R5 said that "*if the academic staffs do not do research, then there is no chance for academic staffs to get promotion…….*". However, R1 commented that "*sometimes polytechnics want to duplicate from the universities, like doing research, but the research must be suitable for the requirement of Polytechnics*".

Despite the above mentioned, research and innovation element/area is evaluated and included in the *Laporan Penilaian Prestasi Tahunan (Annual Review on Performance Report)* of polytechnics*.* The key indicators used to evaluate the work are: (1) quantity of the research; (2) quality of research (impact); (3) level of effectiveness in completing research; and (4) ability to complete research project. According to respondents R5 and R6, feedback from conference presentation should also be included in measuring performance of academic staff in polytechnics.

Despite the inclusiveness of research and innovation as key area in measuring performance of academic staff, newly established polytechnics are struggling in recruiting teaching staff (R1) while other polytechnics are struggling in stimulating research culture (R2-R8). There is no significant difference on key indicators for research and innovation between regions (Northern and Central Region) and classification of polytechnics (premier and non-premier).

Table 4:
Analysis of Research and Innovation by Region

Indicator		Mean	SD	1	2	3	4	5	Total
Approved Research Project	Northern	4.06	0.704	-	1	7	27	12	47
	Central	3.95	0.552	-		7	28	5	40
Involvement in Research Project	Northern	4.06	0.639	-	1	5	31	10	47
	Central	4.12	0.516	-	-	3	29	8	40
Successful Collaboration	Northern	4.19	0.711	-	1	5	25	16	47
	Central	4.18	0.501	-	-	2	29	9	40
Completion of Research Project	Northern	4.32	0.695	-	1	3	23	20	47
	Central	4.28	0.506	-	-	1	27	12	40
Research Funding	Northern	4.11	0.787	-	2	6	24	15	47
	Central	4.00	0.555	-	-	6	28	6	40
Research Output	Northern	4.23	0.633	-	-	5	26	16	47
	Central	4.18	0.549	-	-	3	27	10	40
Attainment of Award	Northern	4.09	0.717		1	7	26	13	47
	Central	3.88	0.686		1	9	24	6	40
Presentation	Northern	3.79	0.806		4	9	27	7	47
	Central	3.88	0.516			8	29	3	40
Published Academic/ Technical Paper	Northern	4.26	0.706		2	1	27	17	47
	Central	4.15	0.483			2	30	8	40
Published Academic Book	Northern	3.89	0.729		3	6	31	7	47
	Central	3.88	0.686		1	9	24	6	40
Published Textbook	Northern	3.79	0.832	1	3	7	30	6	47
	Central	3.80	0.791		3	8	23	6	40
Published Popular Book	Northern	3.53	0.856	2	1	18	22	4	47
	Central	3.48	0.905	2	2	14	19	3	40
Published Translated Book	Northern	3.66	0.841	1	3	12	26	5	47
	Central	3.55	0.904	1	4	11	20	4	40
Journal Publication (High Impact)	Northern	3.85	0.859	1	2	9	26	9	47
	Central	3.85	0.662		1	9	25	5	40
Conference Proceeding	Northern	3.72	0.852	1	3	10	27	6	47
	Central	3.68	0.797	1	1	12	22	4	40
Published Chapters in	Northern	3.68	0.837	1	3	11	27	5	47

				1	2	3	4	5	
Books	Central	3.68	0.797	1	2	9	25	3	40
Published in Magazine	Northern	3.21	1.020	2	9	18	13	5	47
	Central	3.60	0.810	1	1	15	19	4	40
Published Monographs	Northern	3.06	1.030	4	9	16	16	2	47
	Central	3.38	0.740	1	2	19	17	1	40

1 Least Important, 2 Less Important, 3 Neutral, 4 Important, 5 Most Important
SD – Standard Deviation

As per survey findings, there are 18 key indicators studied to determine if there are differences in opinions of polytechnics' academic staffs in Northern and Central Region (refer to Table 4). The survey findings are consistent with the interview findings. Most survey participants indicated importance of research activities but academics faced great challenges in balancing research activities with the heavy teaching load, not to mentioned family and other commitments. Despite the importance of research funding and outputs, completion and involvement in research projects as indicated in Table 4, academic staffs in polytechnics are less favourable in scholarly activities such as conference proceedings and publications inclusive of journal, books, monographs etc. Academic staff in polytechnics in Northern Region is more concern with attainment of awards as compared to Central Region. Survey findings further revealed that polytechnics' academic staffs in Northern Region appear to be more aggressive in research activities as compared to Central Region.

4.3 Administrative Tasks

According to a respondent (R7), administrative task is to administer the students. R2 also advocated that academic staffs are not undertaking 'real' administration works. Thus, administrative tasks are not the main task of academic staffs, but are included as one of the promotion criteria. The key indicators for administrative tasks are involvement and participation, in other words, contribution of academic staff by helping in preparing documents (namely, certificate, report, appointment letter, course accomplishment certificate, appreciation certificate and participation certificate) and holding of positions within the polytechnic or department. Interview findings revealed that respondents from polytechnics in Northern and Central Region shared the same opinion on including administrative tasks as measuring performance of academic staff. Newly established polytechnics require its academic staff to contribute in handling of administrative roles within department or institution (R1).

Table 5:
Analysis of Administration Tasks by Region

Indicator		Mean	SD	1	2	3	4	5	Total
Committee Member	Northern	4.23	0.758	-	1	6	21	19	47
	Central	4.00	0.716	-	-	10	20	10	40
Head of Department/	Northern	4.13	0.900	-	3	7	18	19	47
Unit	Central	4.25	0.588	-	-	3	24	13	40
Course/Programme	Northern	4.13	0.900	-	3	7	18	19	47
Co-ordinator	Central	4.25	0.630	-	-	4	22	14	40

1 Least Important, 2 Less Important, 3 Neutral, 4 Important, 5 Most Important
SD – Standard Deviation

There are three types of administration tasks included in survey to determine if there are differences in the opinions of academic staffs in polytechnics in Northern and Central Region (Refer to Table 5). From the survey analysis, there is agreement in inclusion of administrative tasks as key area in measuring performance of academic staff in polytechnics. Moreover, the administrative posts are of voluntary basis in assisting the Admin Office, overseeing the allocation of teaching workload, course related and handling of students' queries. Survey findings revealed that academic staff in polytechnics are highly involved in administrative tasks and/or hold administrative position in one way or another. However, most of the survey participants in Central Region ranked administrative tasks as the least important key area in measuring their performance, despite the administrative load allocated to academic staff of polytechnics (See Appendix 2).

4.4 Professional Activities

According to one of the respondents (R7), academic staffs are required to participate in attachment programme as one of the promotion criteria and to enhance his/her industrial and technological knowledge. However, R1 revealed that there is no industrial attachment programme for academic staffs in newly established polytechnics. Despite the above mentioned, the involvement of polytechnics' academic staff in professional activities is evaluated as tasks outside formal duties, which included in *Laporan Penilaian Prestasi Tahunan (Annual Review on Performance Report)*. The other indicators included in the report comprised of professional output, technical knowledge and skills as well as individual's quality as part of successful consultancy services provided. The interview findings revealed similar comments in Northern and Central Region on key indicators of professional activities. In addition, there is no significant difference between premier and non-premier polytechnics except that newly established polytechnics do not evaluate academic staffs on the area of professional activities.

Table 6 shows the analysis of four key indicators used in measuring of performance of academic staff in the area of professional activities in Malaysian context. There is no significant difference in opinions of academic staff in Northern and Central Region but survey participants indicated that there is less preference on using repeat consultancy projects and monetary contribution to professional associations/bodies as indicators. Survey findings further revealed that academic staff in polytechnics highly involved in conducting training workshops for industry. Academic staff in polytechnics contributed less in consultancy projects and monetary contributions to professional associations/bodies.

Table 6:
Analysis of Professional Activities by Region

Indicator		Mean	SD	1	2	3	4	5	Total
Providing Consultancy	Northern	3.87	0.797	-	3	9	26	9	47
Services	Central	3.92	0.616	-	1	6	28	5	40

				1	2	3	4	5	
Monetary Contribution	Northern	3.70	0.805	-	4	12	25	6	47
To Associations	Central	3.78	0.577	-	-	12	25	3	40
Conduct Training	Northern	4.17	0.564	-	-	4	31	12	47
Workshops	Central	4.18	0.549	-	-	3	27	10	40
Industrial Attachment	Northern	4.06	0.818	-	3	5	25	14	47
	Central	4.05	0.552	-	-	5	28	7	40

1 Least Important, 2 Less Important, 3 Neutral, 4 Important, 5 Most Important
SD – Standard Deviation

4.5 Services to Community

All the respondents agreed that service to community should be included in measuring performance of academic staff in polytechnics. Interview results also revealed that academic staffs are engaging in community activities and/or providing their services to community at large (R2, R5, R6 and R7). R2 revealed that there are many community related activities carried out by the department. Nonetheless, R1 pointed out that service to community is not one of the academic staffs' key areas in measuring academic staff performance.

On the other hand, survey findings shown that academic staff in polytechnics in Central Region appeared to be more involved in NGOs/associations, community and/or voluntary services (See Table 7). The survey findings are consistent with the interview findings where there is not much emphasise in providing services to the community. This result is also supported by the ranking of indicators where most of the survey participants ranked services to community as the least important area in measuring performance of academic staff in polytechnics, comparatively (Refer to Appendix 2).

Table 7:
Analysis of Services to Community by Region

Indicator		Mean	SD	1	2	3	4	5	Total
Committee Involvement	Northern	4.02	0.678	-	1	8	27	11	47
	Central	4.18	0.446	-	-	1	31	8	40
Professional Bodies	Northern	4.10	0.755	-	1	9	21	16	47
Membership	Central	4.15	0.580	-	-	4	26	10	40
Reviewer or Internal/	Northern	3.88	0.746	-	3	7	29	8	47
External Examiner	Central	3.98	0.733	-	1	8	22	9	40
Involvement in NGOs/	Northern	3.59	1.004	1	6	13	19	9	47
Associations	Central	3.82	0.781	1	-	13	18	8	40
Community and	Northern	3.71	0.879	1	3	14	22	7	47
Voluntary Services	Central	3.90	0.744	-	1	10	21	8	40

1 Least Important, 2 Less Important, 3 Neutral, 4 Important, 5 Most Important
SD – Standard Deviation

5.0 Discussion and Recommendations

This section puts forth discussion and recommendations for practical implementation purposes. In Malaysia, newly established polytechnics concentrate on teaching and supervision and administrative tasks as the key areas in measuring performance of academic staff as compared to other polytechnics which have a more balanced performance measurement system. Despite the above mentioned, most survey participants indicated the importance of teaching and supervision in polytechnics environment by ranking it as highest unanimously (Refer to Appendix 2).

In the Transformation Plan, each polytechnic should be encouraged to determine its strategic direction and niche area to realise the vision of Tenth Malaysian Plan and NEM. Then, polytechnics should embark in technical research, knowledge and technology transfer to enable nurturing and developing of fore-front innovative ideas as compared to academic and fundamental research carried out by universities. The research and innovative ecosystem need to be nurtured in efforts to build a critical mass of technical and skilled workforce.

Besides that, the quality of teaching delivery and curriculum need to be enhance effective students' learning. Polytechnics should also be encouraged to collaborate with international renounce technical institutions to further enhance its curriculum, exchange of technical expertise and knowledge/technology transfer. On the other hand, academic staff of polytechnics should be encouraged to be involved in industrial attachment exercise to be abreast with the current development in technological advancement.

In short, "what is measured is what is achieved" where polytechnics' management need to determine the key indicators in each key areas in measuring the performance of its academic staff. The determination of such key indicators and key areas need to be aligned with the strategic direction of the polytechnic.

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Appendix 1

University Name	Teaching	Research	Administrative Tasks	Service to Community	Supervision	Professional Activity
Malaysia						
University Malaya	Yes	Yes	Yes	-	Yes	
University Putra Malaysia	Yes (40%)	Yes (40%)	-	Yes (20%)	-	
International Islamic University Malaysia	Yes	Yes		Yes	Yes	
United States						
University of California	Yes	Yes		Yes		Yes
University of Illinois	Yes	Yes		Yes		
University of South Alabama	Yes	Yes		Yes		
UK						
University of London	Yes	Yes	Yes		Yes	
University of Sunderland	Yes	Yes	Yes	Yes		
University of Portsmouth	Yes	Yes	Yes	Yes		
Canada						
University of Athabasca	Yes	Yes	Yes	Yes		
University of Calgary	Yes	Yes		Yes		Yes
University of Manitoba	Yes	Yes		Yes	Yes	
Australia						
University of Newcastle	Yes	Yes	Yes	Yes		Yes
University of Adelaide	Yes	Yes				
University of South Australia	Yes	Yes	Yes		Yes	Yes
Monash University	Yes	Yes	Yes			
University of Queensland	Yes	Yes		Yes		
University of Southern Cross	Yes	Yes				Yes

Appendix 2

Ranking of Key Areas (Northern Region)

Rank	Teaching and Supervision	Research and Innovation	Administrative Tasks	Professional Activities	Services to Community
1	40	2	2	2	1
2	5	19	13	7	3
3	0	11	12	20	5
4	0	9	11	15	11
5	2	6	9	3	27
Total	47	47	47	47	47

1 Most Important, 2 Important, 3 Neutral, 4 Less Important, 5 Least Important

Ranking of Key Areas (Central Region)

Rank	Teaching and Supervision	Research and Innovation	Administrative Tasks	Professional Activities	Services to Community
1	37	1	1	0	1
2	1	19	5	14	1
3	0	11	7	16	6
4	0	7	9	8	16
5	2	2	18	2	16
Total	40	40	40	40	40

1 Most Important, 2 Important, 3 Neutral, 4 Less Important, 5 Least Important