

# An Experience of Readiness Study in Production Based Education System

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**Abstract:** The purpose of this study is to examine the readiness in implementing acquired technology of production based education (PBE) system. The study also investigates the relationship between undergraduate students and lecturers in term of demographic types. Data was collected from set of questionnaire to undergraduate students and lecturers. This study used SPSS for the purpose of data analysis. An internal level of readiness in educational institution should generally have to ensure the successfulness of PBE implementation. In other words, the results support this research in identifying its internal level of readiness in implementing PBE. The findings of this study support hypothesis that can be used as a general guideline to other educational institution which intends to implement PBE system. Therefore, this study recommends with same outputs but required different approaches suit with levels of education and types of courses offered.

**Keywords:** readiness, production based education, institution

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## 1.0 INTRODUCTION

Production Based Education (PBE) means combination of education and production in learning environment. Students are directly involved with production environment closely similar to what is being practiced in industries. Traditionally, the education or training is structured from the theory into laboratory experiment for theory validation and followed by practical exercises for skill acquisition and development. Generally, PBE system is entirely dissimilar with common education system practiced in Malaysia nowadays. Through PBE, student will be exposed with real production of working environments since it is highly interrelated with production basis. Students by themselves will control overall production cycle starting from product design, simulation, determine and choose the appropriate process flow, setting machine parameters, control products' quality, prepare standard operation procedure (S.O.P) and testing. There are many factors which should be taken into consideration for educational institution before acclimatizing with PBE in order to suit with levels of education and types of courses offered. In most university subjects, the dominant mode of teaching consists of lectures, tutorials and laboratory practical sessions with assessment strongly focused on examinations<sup>[1]</sup>. Teaching in higher education is a complex process which can be affected by many factors. These include teacher and student characteristics, institutional

culture and approaches to teaching and learning demonstrated by teachers and students<sup>[2]</sup>. However, the teacher has been identified by many writers as a key factor in the process of teaching and learning. Mostly teachers' clarity has constantly been recognized as an important criterion of teaching excellence<sup>[3]</sup>. They pointed out that clarity related to the teachers' ability during the delivery of material. According to<sup>[4]</sup>, the following behaviours denote teachers' clarity: using relevant and concrete examples, asking questions, synthesizing and summarizing material periodically, repeating difficult points or ideas, stressing important points, writing key terms on board, suggesting practical applications and signaling transition from one topic to the next

## 2.0 MATERIALS AND METHODS

Based on the Cloverleaf Model and BEACON Model, this study has identified four important independent variables that may contribute to the internal level of readiness in implementing PBE. Independent variables are variables that cause, influence or affect outcomes. The independent variables are lecturer's capabilities, management readiness, readiness based on the availability of physical equipments and facilities and student's understanding. The dependent variables are variables affected by the independent variables; they are the

outcomes or result of the influence of the independent variables [5]. In this research, the dependent variable is the internal level of readiness in implementing PBE system. Fig. 1 shows the theoretical framework of this study.

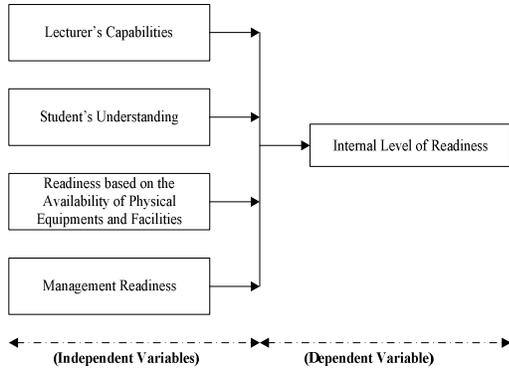


Fig.1 Theoretical Framework of this study

In this study, the entire population is used as a sample due to small population size. Research was carried out by administering a set of questionnaire to undergraduate students and lecturers. Details about the respondents that covered in this study are as shown in Table 1. Lecturers and students were surveyed using different questionnaire according to the different items which author going to explore. There are 48 items altogether including the questions in the demographic section. Moreover, it can help respondents to give more appropriate answer with regard to their position and role in implementing PBE. The questionnaire used in this study is divided into two parts, Part I and Part II both for lecturers and students. Part I measures the demographic background of the respondents while Part II deals with dependent and independent variables. Part II of lecturer’s questionnaire consist of four sections, A to D. Section A to C deal with independent variables-lecturer’s capabilities, management readiness and readiness based on the availability of physical equipments and facilities while Section D measures dependent variable-Internal level of readiness.

However, part II of student’s questionnaire consist only two sections, E and F. Section E measured independent variable-Student’s understanding while section F measures dependent variable-Internal level of readiness. Items in the questionnaire were constructed and developed by modifying, which had been applied as a technology transfer readiness assessment tool in The Cloverleaf Model and Technology Readiness Index (TRI) [6]. From [7], in examining how technology readiness (TR) influences customers’ perception and adoption of self-service technologies. However, some of the items were developed by author for the purposes of this study. In used the five-point Likert-type scale to measure the human management system, intellectual capital and organizational

performance which related with this research in measuring the internal level of readiness of educational organization in implementing PBE [8]. For this study, five-point Likert scale was used to tap into individual’s perceptions, ranging from 1 (strongly disagree) to 5 (strongly agree) for all the items in the questionnaire. Before the data were used to test the hypotheses, all items in the scale were subjected to reliability analysis.

Table 1: Categories and Number of Respondents

Categories of Respondent	Number of Respondents (N)	Cumulative
Undergraduate Students	39	39
Lecturers	35	74

### 3.0 RESULTS AND DISCUSSION

Implementation of PBE system in an educational institution gives a big challenge to its internal stakeholders and has significant impacts to the organization since PBE deals with two outputs professional graduates and saleable products. This study involved two groups of respondents, lecturers and students. Hence, data analyses are divided into two parts. First part explains research findings and analysis as regard with collected questionnaires received from lecturers is shown in Table 2. Second part explains research findings and analysis as regard with collected questionnaires received from students is shown in Table 3. Table 4 shows the overall result of readiness study both for different groups of respondent, lecturers and students. Perception of lecturers to the internal level of readiness in implementing PBE system positively and significantly influenced by two independent variables – Management readiness ( $b=0.662$ ) and Readiness based on the availability of physical equipments and facilities ( $b=0.392$ ). R-square value of 66.9% shows that there are other factors which influenced lecturers’ perception on the internal level of readiness in addition of three independent variables discussed here. This phenomenon is similar to students’ perception on the internal level of readiness with R-square value of 19.9%. As a result, it is about 80.1% of students’ perception on the internal level of readiness influenced by other factors which are not identified in this study.

The closer the r-value to 1, the stronger the correlation between variables. As shown in Table 4.0, the Management readiness with the highest value of ( $r = 0.639$ ) gives the big impact to the internal level of readiness from lecturers’ point of view. Refer to column 5 with respect to lecturers’ data; the high mean on the three determinants (3.57) which is 71.4% represents the level of lecturers’ perception on the internal level of readiness.

The highest mean is Perception of Management Readiness (4.06), followed by Perception on Readiness based on the Availability of Physical Equipments and Facilities (3.35) and the lowest is Perception of Lecturer’s Capabilities (3.31). Mean of students’ Perception on the

Internal Level of Readiness (3.83) is higher than lecturers’ perception (3.36). Details about the demographic data of lecturers and student as shown below.

Table 2: Demographic data of lecturers

Demographic Type	Description	Number	Percentage
Gender	Male	25	71.4
	Female	10	28.6
Age	20 – 30	23	65.7
	31 - 40	10	28.6
	41 - 50	2	5.7
	51 - 58	0	0
	59 and above	0	0
Department	Composite	9	25.7
	Plastic	9	25.7
	Ceramic	8	22.9
	General	8	22.9
	Studies	1	2.9
Academic Qualification	No Response		
	Certificate	0	0
	Diploma	0	0
	Bachelor	33	94.3
	Master	2	5.7
Working Experience	PhD	0	0
	Others	0	0
	Yes	23	65.7
	No	11	31.4
Teaching Experience (years old)	No Response	1	2.9
	0	14	40.0
	<1	13	37.1
	1 - 2	3	8.6
	3 - 5	2	5.7
	9 - 10	2	5.7
>10	1	2.9	

Table 3: Demographic data of students

Demographic Type	Description	Number	Percentage
Gender	Male	25	64.1
	Female	14	35.9
No. of Semester	Semester 1	13	33.3
	Semester 2	26	66.7
Course Attend	Dip. in Polymer	27	69.2
	Composite	8	20.5
	Dip. in Plastic	4	10.3
	Dip. in Ceramic		
Previous Secondary Education stream	Vocational	12	30.8
	Science	12	30.8
	Accounting	2	5.1
	Islamic	5	12.8
	Others	8	20.5

Table 4: Overall Result of Readiness Study

Variable of Readiness	Mean	Regression		Correlation
		Beta Value	R Square	r –Value
Lecturers	3.36	$Y_{(lecturers)}$	0.669	-
Students	3.83	$Y_{(students)}$	0.199	-
Lecturer’s Capabilities	3.31	- 0.194	-	0.091
Student’s Understanding	4.65	0.446	-	0.446
Management Readiness	4.06	0.662	-	0.639
Availability of Physical Equipments and Facilities	3.35	0.392	-	0.458

### 5.0 CONCLUSION

This study revealed that the internal level of readiness of educational institution has positive relationship with management readiness and readiness based on the availability of physical equipments and facilities. Internal level of readiness is very crucial to the educational institution before performing technology acquisition process to prevent its implementation from failure. This study also indicates that lecturers and students have different perceptions toward educational institution readiness. Nevertheless, there is no variation between perception of technical and non-technical lecturers to the internal level of readiness in implementing PBE. In identifying its internal level of readiness in implementing PBE, its findings can be used as a general guideline to other educational institution which intends to implement PBE system since this system is concerned with same outputs but required different approaches depending on the requirements of levels of educations and types of courses offered.

### REFERENCES

- [1] Maureen Tam, “ Measuring the effect of higher education on university student”, *Quality Assurance in Education*, Vol. 10, No. 4, pp 223 – 228, 2002.
- [2] Mohammad S. Owlia, Elaine M. Aspinwall, “A framework for the dimensions of quality in higher education”, *Quality Assurance in Educatio*, Vol. 4 No. 2, pp. 12–20, 1996.
- [3] Halia C. Silins, Rosalind Murray-Harvey, “Students as a central concern school, students and outcome measure”, *Journal of Education Administration*, Vol. 38 No. 3, pp. 230-246, 2000.

- [4] Nigel Ford, "Towards a model of learning for educational informatics", *Journal of Documentation*, Vol. 60, No. 2, pp. 183-22, 2004.
- [5] Creswell, J. W., *Research Design: Quantitative, Qualitative, and Mixed Methods Approaches*. SAGE. Thousand Oaks. USA, 2003.
- [6] Louise A. Heslop, Eileen McGregor, May Griffith, "Development of a technology readiness assessment measure: The cloverleaf model of technology transfer", *Journal of Technology Transfer*, Kluwer Academic Publisher, Netherlands, 2001.
- [7] DJ. Petzer, AD. Berndt, SG. Saunders, "The impact of the Technology Readiness Index (TRI) on Banking services in Emerging Economies", 2008.
- [8] Youndt, "Human Capital, Capabilities & Competitive Advantage", *International Review of Business Research Papers* .Vol. 5 No. 5, pp. 25-36, 2009.