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## Internal Factor Analysis of Research, Innovation & Commercialization Unit (UPIK) Politeknik Mukah Sarawak

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### Abstract

The Research, Innovation & Commercial unit (UPIK) is one of the units supporting the Key Performance Indicator (KPI) at Politeknik Mukah Sarawak (PMU). However, due to Covid 19 pandemic, all the program related to staff and students must be postponed and change to online. Movement Control Order (MCO) implements in Malaysia, results teaching and learning online based where staff and students cannot enter the institutions. These situations make harder for the UPIK to organize program, seminar, and activity to reach the KPI. The functions of this unit are to align research, publishing, innovation, grants, and commercialization among PMU staffs and students. The purpose of this study was to examine the strength and weakness factors in UPIK hence suggestions for improvement to increase the KPI for the coming year can be made. The research is a pilot project. The analytical method used in this research is the Internal Factor Analysis method, by means this study aims are to look at the analysis of strength and weakness factors in UPIK from the internal side of the organization. Quantitative analysis using the survey form has been circulated among PMU staff directly involved with UPIK in the fourth quarter of 2021. Results from the internal factor analysis found UPIK had strengths versus weaknesses.

**Keywords:** UPIK, Internal Factor, Strength, Weakness

### Introduction

Politeknik Mukah Sarawak is one of the technical and vocational education and training (TVET) providers. TVET educators in Malaysia are primarily responsible for teaching, learning, and training, as well as the planning, management, delivery, and assessment of a variety of programs and the development of curriculum in an education program. They are frequently involved in providing feedback on training sessions as well as ongoing support as needed. They are also expected to participate in research and development activities while evaluating the progress of students on specific projects (O'Sullivan, 2010). The Research, Innovation & Commercial Unit (UPIK) at PMU is a unit under the supervision of the Deputy Academic Director (TPA) whose role is to coordinate research, publication, innovation, grant, and commercial papers. This unit contributes to KPI 21, the number of research papers published by Polytechnics and Community Colleges in the current year, and KPI 22 i.e., the number of innovation products applied in the current year (KPI

Dictionary, 2021). Hence, this unit plays an important role in determining PMU performance between Polytechnics and Community Colleges throughout Malaysia. However, due to Covid 19 pandemic, all the program related to staff and students must be postponed and change to online. Movement Control Order (MCO) implements in Malaysia, results teaching and learning online based where staff and students cannot enter the institutions. These situations make harder for the UPIK to organize program, seminar, and activity to reach the KPI.

An internal factor analysis is made to look at the strengths and weaknesses of UPIK in supporting PMU performance. Among the strengths of UPIK is having experienced and competent staff and experts in various fields (Almerich et al., 2016; Ally, 2019; Wagiran et al., 2019; Jafar et al., 2020). In the Polytechnic and College Community Scheme (Polycc), Research, publication, and innovation are one of the criteria for staff to apply for the high post. As these criteria are important, research and innovation activities receive support from management. This is proven by the existence of the International Technology and Innovation International Conference (TECHON) that has been recognized and maintains research collaborations with internal and foreign institutions.

While the weaknesses identified as staff are freed with high hours of teaching and side tasks and the post of Head of Research Unit (KUPIK) is an internal appointment only, are demotivated staff and the morale also low (Hadjiah, 2015). Furthermore, no special or allocated funds given to research and innovation, lack of active multidisciplinary research and innovation groups, grants offered and limited to competition from public and private universities as well as lack of policies encouraging employees to engage in cooperation with external industries /institutions (Watt,2002; Horth & Bunhner, 2014; Ismail et al., 2018; Osman & Kamis, 2019). The purpose of this study was to examine the strength and weakness factors in UPIK so aforementioned issues stated can be improved in the future.

## **Methodology**

The population of this study is PMU staffs and students. Meanwhile, sample studies were collected from UPIK department coordinators, management members, and PMU students. Data were collected using a questionnaire, with a random sampling technique, to 16 staffs and students in PMU. This number meets the needs of pilot research since according to Fink, the minimum number for a pilot study is 10 (Saunders, 2007). The data collection was carried out during the 4<sup>th</sup> quarter of 2021. The analytical method used in this research is the Internal Factor Analysis method since this study aims to look at the analysis of strength and weakness factors in UPIK from the internal side of the organization (Fatimah, 2016; Freddy, 2006). Internal Factor Analysis is the formulation of the company's internal factors, which are used to (1) analyse the company's personal and environmental conditions; (2) analyse internal conditions in the form of weaknesses and strengths of the organization; (3) Internal Factor Analysis is also used to determine the strengths or strengths and weaknesses or weaknesses of an organization in its environment. Strengths are defined as organizational/company activities that are running well or resources owned by the company, while weaknesses are defined as organizational/company activities that are not going well or resources that are needed, but not owned (Fatimah, 2016). The Internal Factor Analysis is summarized in the Summary of Internal Factor Analysis (IFAS). The stages of making the Summary table of the Internal Factor Analysis are as follows:

- a. Determine the factors that are strengths and weaknesses.

- b. Determine the weight of each factor from 1.0 (very) very important to 0.0 (very) not important.
  - c. Determine the assessment for each factor with a member scale ranging from 4 to 1, based on the influence of these factors on the condition of the company concerned and or analysis of possibilities or opportunities in the future.
  - d. Determine the score, by multiplying the weight of each factor by its rating (weight x rating).
  - e. Determine the total weighted score of the company, by adding the weighted score, like information on how the company responds to strategic factors in its internal environment.
- The factors that become strengths and weaknesses in the application of standards and guidelines for the UPIK operations are as shown in Table 1.

Table 1: Internal Factor Analysis (IFAS).

*Internal Factor Analysis (IFAS)*

No	Strength
1.	Have experiences and expert staff in various fields
2.	Research and innovation activities supported by management
3.	Have a known TECHON research conference
4.	Have a collusion relationship with international institutions in organizing international conferences
	<b>Weakness</b>
5.	Staff saddled with high teaching hours and side tasks
6.	Lack of a network of collaborations with outside institutions and industries
7.	No special funds are given to research and innovation.
8.	Lack of active multidisciplinary research groups
9.	Lack of encouraging policies for staff to engage in cooperation with industry/institutions

**Result and Discussion*****Internal Factor Analysis Summary (IFAS)***

As previously mentioned, the Internal Factor Analysis Summary (IFAS) is used to analyse and evaluate internal factors that are relevant to the research objective. The internal strategic factors that influence the UPIK for the implementation of IFAS from the researched businesses are summarized and presented in Table 2. The score value is obtained from the multiplication between Weight and Rating, and the Total Score is the sum of the overall scores of each factor (strengths and weaknesses). After the internal factors are identified, the calculation of the weight and rating values of these factors is arranged in the Internal Strategic Factor Analysis Summary (IFAS) table. The total score for the strength factor is 1.68 and the weakness factor is 0.73, and the total score for the internal factor is 2.41.

Table 2: Internal Factor Analysis (IFAS).

**INTERNAL FACTOR ANALYSIS (IFAS)**

<b>NO</b>	<b>Strength</b>	<b>Weight</b>	<b>Rating</b>	<b>Score</b>
<b>1</b>	Have experiences and expert staff in various fields	0.09	4	0.36
<b>2</b>	Research and innovation activities supported by management	0.09	4	0.36
<b>3</b>	Have a well-known TECHON research conference	0.14	4	0.55
<b>4</b>	Have a collusion relationship with international institutions in organizing international conferences	0.14	3	0.41
	<b>Total</b>			<b>1.68</b>
	<b>Weakness</b>			
<b>5</b>	Staff saddled with high teaching hours and side tasks	0.05	2	0.10
<b>6</b>	Lack of a network of collaborations with outside institutions and industries	0.09	1	0.09
<b>7</b>	No special funds are given to research and innovation.	0.09	2	0.18
<b>8</b>	Lack of active multidisciplinary research groups	0.09	2	0.18
<b>9</b>	Lack of encouraging policies for staff to engage in cooperation with industry/institutions	0.09	2	0.18
	<b>Total</b>			<b>0.73</b>
	<b>Total Strength &amp; Weaknesses</b>	<b>9</b>		<b>2.41</b>

Source: Research Data Processing Results, 2021

Based on the results of data processing, it is known that in terms of UPIK operations, total score for internal factors shows UPIK has more strengths compared to the weaknesses. This is based on the assessment that for the total internal factor score, the closer the value is to 1, the more internal weaknesses are compared to strengths, while the closer the value is to 4, the more its strength versus its internal weakness (Freddy, 2006). The number obtained is 2.41 indicating a number whose value is closer to 4, which means that it has more strengths than weaknesses. These strengths, as defined earlier, reflect the UPIK activities (in this case are running smoothly). The results of this study can also be used as a reference that the UPIK has the potential for PMU performance and competitiveness potential with the strength of the internal factors.

However, despite having more strength factors, there are still weaknesses that are recommended to be improved. Funds for research and innovation need to be allocated and the opportunity for collaboration with the industries is also low because PMU is situated in remote areas. This reason is supported by Enyaosah, 2016 and Tanha et al., 2011 that the lack of adequate venture capital or fund for innovations will decrease the performance and quality. Although PMU has an expertise in conducting a research in all the departments, there are still lack active multidisciplinary research groups due to high credit hours in teaching and other side tasks (Hadijah, 2015; Shirley et al., 2015).

## Conclusion

The purpose of this study was to examine the strength and weakness factors in UPIK for better improvement in the future. Based on the results of the internal factor analysis in this study, it can be ascertained that UPIK has many factors compared to the weakness factor, which means that UPIK is in positive direction. However, despite having more strength factors, there are still weaknesses that are recommended to be improved to achieve the KPI target.

The implications of this finding, UPIK need more aggressive strategy to obtain the fund for research and innovation. This very important, without any funded fund from the institutions, research and innovation with the industrial and other organizations, hard to implement and achieve KPI for PMU. Furthermore, the limitations, of this research can be extend to external factor analysis, the use of different analytical technique and different units or organisations.

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