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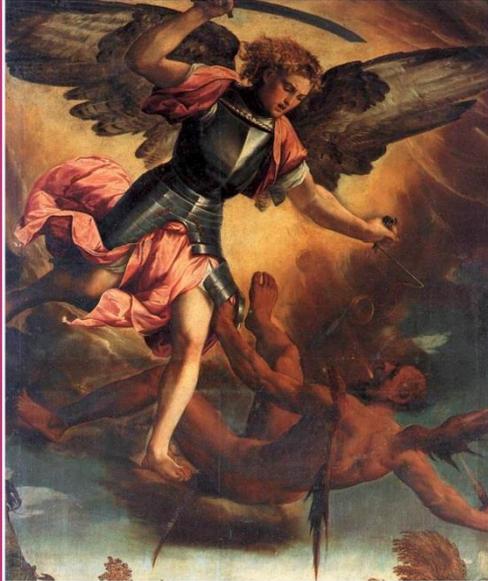
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An Empirical Study on Challenges and Strategies to Employability for Graduates

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Abstract

This paper aims to examine the challenges and strategies for graduate employability. A bilinear cost function is offered to formulate strategies in addressing challenges, that expresses outcomes and benefits as a result. This paper offers strategies that can be used as options to overcoming challenges to enhance employability for the graduates. A proposed framework and checklist are provided that includes advanced training, probation, professional qualification and certifications, endorsed-employer skills, among others. It is hoped that readers will consider the results of this study as strategies to resolve the employability challenges.

Keywords: Employability, Graduates, Challenges, Strategies, Training.

Un estudio empírico sobre desafíos y estrategias para la empleabilidad de los graduados

Resumen

Este documento tiene como objetivo examinar los desafíos y las estrategias para la empleabilidad de los graduados. Se ofrece una función de costo bilineal para formular estrategias para enfrentar desafíos, que expresan resultados y beneficios como resultado. Este documento ofrece estrategias que se pueden usar como opciones para superar los desafíos y mejorar la empleabilidad de los graduados. Se proporciona un marco de trabajo propuesto y una lista de verificación que incluye capacitación avanzada, período de prueba, calificación profesional y certificaciones, habilidades del empleador respaldado, entre otros. Se espera que los lectores consideren los resultados de este estudio como estrategias para resolver los desafíos de la empleabilidad.

Palabras clave: Empleabilidad, egresados, retos, estrategias, formación.

1. INTRODUCTION

The world today seeks for better and better candidates for employment, as the industry undergoes dynamic shifts in the economy. More so, this demand is felt by universities, as they craft and offer programs that are deemed relevant to the industry. Producing graduates who are ready and apt is one of the key objectives for a typical university. Nevertheless, there seem to be some differences in

the interpretation of the word 'readiness' from the viewpoints of the university and the employer.

For the academic institution, like colleges, polytechnics and university, they produce trainable graduates who are ready to serve the industry, and the expectation is that they will be trained further by the employer to acquire more skills or sharpen their capabilities. On the other hand, it seems that the employer expects graduates to be ready and be able to meet their expectations instantaneously upon joining employment. So, this mismatch has often been brought to the roundtable at various levels for enhancement at preparation and training levels. As a novel strategies, in this study, results will be a proposed framework, based on a bilinear cost function to show dependency in the relationship between challenges and strategies. A checklist will also be provided subsequently.

2. AIM OF STUDY

This paper aims to examine the challenges and strategies to employability for graduates. With the demand from the industry to be more ready for employment, students are now equipped with knowledge and skills that are deemed appropriate for applications at work later. Even though with the inclusion of practical training within the curriculum, students still need to enhance further their readiness to serve the industry.

The objectives of the study are as follows:

1. To examine the challenges faced by students and graduates
2. To examine the strategies to overcome challenges to employability

In line with the objectives, the research questions in this study are:

1. What are the typical challenges faced by students and graduates?
2. what are strategies to overcome the challenges delineated by respondents, who are various parties involved in employability?

The outcome of this study will be a proposed framework, based on a bilinear cost function to show dependency in the relationship between challenges and strategies. A checklist will also be provided subsequently.

3. SIGNIFICANCE OF STUDY

This study will provide a unique mechanism through a framework derived from the bilinear cost function towards understanding the challenges of graduate employability, and how they relate to formulating strategies, addressing those issues involved with regards to employment. This study will also highlight any salient issues that should be considered by stakeholders for future improvements. The contribution will be three-fold namely practical, methodological and theoretical

4. BACKGROUND INFORMATION

Kanuka & Smith (2019), in their study, perceived that it is important to have certifications and credentials when seeking for a job, in their case of teaching in higher education. Kluge et al. (2019) made suggestions to employers on the use of interventions that may influence the success of employment programs of different training. Marrington, O'Shea & Burton (2019) pointed out that work-based learning helps with developing skills and actual work experience. As such, students are aware of what is expected by employers. Mohd Salleh, Mapjabil & Legino (2019) presented a study on graduate work-readiness (GWR) challenges from the viewpoint of stakeholders, facilitating human resource development and fit for role purposes.

Dhakal, Prikshat, Nankervis & Burgess (2019), presented several findings from studies pointing to the direction towards GWR, vocational education incorporating stakeholders' considerations. A study by Waring, Vas & Bali (2019) offered an outlook on the transition between educations to employment. The study indicated no employability issues in their country as they reduce foreign labour force, and at the same time introduced upskilling of competencies of the local human workforce while encouraging for automation in small-medium businesses (Yang et al., 2019; Soo et al., 2019; Maksimović et al., 2016).

As far as measuring performance, Otrusanova & Pastuszkova (2012) provided options through 3E's, 'Economic, Effectiveness and Efficiency' in a typical in their case for a public administration performance. About our current study, 'Economical' means that the programs are at a cost-effective and worth the spending of the resources towards improving the skills and capabilities of the students and graduates, that is seen to be profitable and beneficial. 'Effectiveness' means that the outcome of the programs undergone by the participants are effective in that it was evident in the students to have improved their communication, skills and on-the-job performance.

In other words, the programs taken works! Also, 'Efficiency' relates to well-organised programs, making the participants are more competent, and they have become more resourceful. As far as funding for training is concerned, Waring, Vas & Bali (2019) indicated that the encouragement towards automation and mechanical could be made possible through generous grants as well as subsidies as an investment in technology (Indriastuti, 2019). It can be seen that the few selected literature examined areas of challenges and proposed some strategies as a measure to overcome while indicating that in general, some level of training and exposure helps students and graduates in developing skills and employers' expectations (Bakas & Smagulov, 2016; ArayaGuzmán et al., 2018; Nazoktabar & Tohidi, 2014).

Also, it can also be considered that organizations might sponsor for the training required, a win-win for both the students and

graduates as well as the employers as they too prepare their potential employees before joining on board (Svetlana et al., 2016; Hojati et al, 2014).

5. METHODOLOGY

The approach to this study is a mixed method, one that is experimental, and vignette based on data drawn up from actual observation. The qualitative part of the study will make the study unique in that measures of the challenges and strategies, explained by a bilinear cost function approach. Before this, possible models of dependency are investigated to determine the most suitable function of modelling the dependency. This means that when challenges are more, the strategies to address should also be substantial; in other words, weights can be assigned to the scale of the challenges.

The study assumes the authenticity and accuracy of information and data used, based on the responses received. A control group of a class of 20 students at the postgraduate level, three lecturers, and three employers were used in this study for response data. The questions cover the following areas:

1. In your opinion, what are the challenges with employability?
2. What are the strategies that will address those challenges?

The responses are both quantitative and qualitative, then transcribed accordingly by simple spreadsheet and administered onto a Matlab software before the possible models are weighted and results produced.

A BI-LINEAR COST FUNCTION APPROACH TO RESPONSE DATA

It should be noted that when there are basically two variables in the current study, that in the law of small number of responses, Fisher's Exact test can be used to test significance of the relationships (AzizKhairulfazi, 2004); in this case the two variables are i) the challenges, being the input and ii) the strategies, is the output with a function to an outcome of employability.

Applying the recommendation given by Goodwin (1996), the mathematical functions involved will take the following forms (AzizKhairulfazi, 2004):

1. Normal distribution for the outcome of a relationship

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}; -\infty < x < \infty$$

2. The cost function for this application is the bilinear form

$$\text{where } c(x) = \begin{cases} c_1(\mu - x); & x < \mu \\ c_2(x - \mu); & x > \mu \end{cases}$$

3.

This means that there is a cost involved when the employability is compromised, hence the cost of employability. This cost refers to the challenges and strategies not aligned to address employability.

Then, the decision analysis will be based on minimising the expected cost, as follows:

$$E(c(X)) = \int_{-\infty}^{\infty} c(x) f(x) dx$$

$$= \int_{-\infty}^{\mu} c_1(\mu - x) \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} dx + \int_{\mu}^{\infty} c_2(x - \mu) \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} dx$$

The mathematical function then extends onto the dependency model from this bilinear approach, the graph of which given in Figure 1.

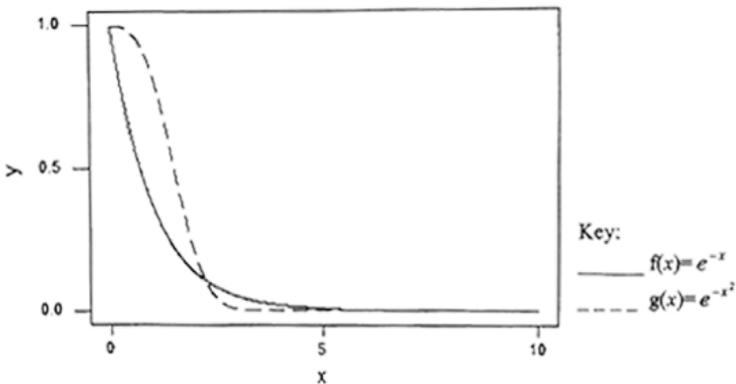


Figure 1: Possible models for the dependency of y on x

This means that there is input involved, i.e. x , when the actual outcome or return, i.e. y , is more or less the expected performance or output. Input takes the form of monetary investment, time, opportunity loss, any penalty etc. The actual outcome would be the benefits; the increased salary gained in post-training jobs and skills developed. The measure may also consider the 3E's and is based on a capture of the input-output relationship that will be able to deduce the gains or losses as a result of the training programs conducted. The bilinear function serves the purpose of showing a proportionate change between before and after the training programs taken.

Figure 1 may take the form of dependency observation that when challenges are present, strategies will reduce those challenges to enhance employability.

Proposed Framework And A Checklist

Based on the results of the analysis from the models given, the following framework is deduced in Figure 2, to capture challenges, strategies and employability.

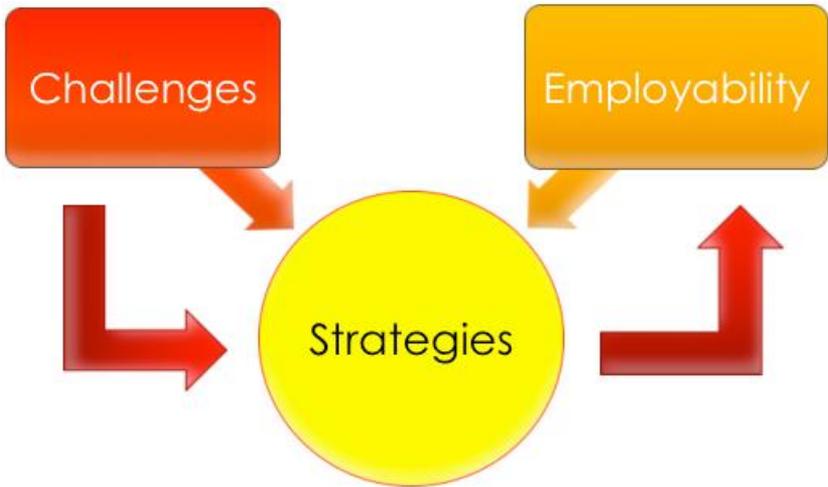


Figure 2: A Cost Bilinear Function to Employability: Challenges and Strategies

If the challenges are identified, and strategies formulated to address the challenges, then employability will be enhanced. The following challenges and strategies are listed in Table 1, delineated from the respondents’ input:

No.	Challenges (Issues)	Strategies (Actions)
1.	Monetary investment	Measure by 3E's and monitor
2.	The appropriate training placements	Criteria conforming to a requirement by industry
3.	Scope of work	choice of training placements - must find the right fit and placement, on-the-job learning and applications, on-campus firms

4.	Academic performance of students	Intervention during and after, case studies in class, role play, self-assessment
5.	Readiness to employability	Training, part-time employment and networking programs, better CV development, extra curriculum, career advice
6.	Communication, confidence, introvert, personality and attitude	student exchange programs, public speaking, competition
7.	Poor acceptance of real-life work	supervision, academic advisor and close mentoring, endorsed-employer skills, probation

Table 1: Challenges and Strategies

It can be seen that the checklist above is not exhaustive, as there is bound to be some other challenges and issues experienced by parties involved in employability, followed by the suggestions towards strategising and re-strategising mechanisms to address problems accordingly. When the new era arises, so will challenge and new ideas and strategies, even innovation should be functional to contribute to solutions.

6. CONCLUSION AND RECOMMENDATION

It can be seen from the above that it will be a constructive journey for a student and graduate to go through before reaching the

ultimate goal in their career, to be successful at the helm of their profession. As indicated earlier, this study contributes in terms of the three areas:

1. Theoretical - various perspectives are found in the literature; the current study brings mathematics as an application to address challenges and strategies, thus enhancing the body of related knowledge.

2. Methodological - a unique approach employed here is with the bilinear cost function and dependency modelling that facilitate an alternative explanation of the relationship between challenges and strategies for employability.

3. Practical - An insight into challenges and strategies will provide a better preparation and plan from the employers' perspective, an understanding to bridge theory and practice in terms of employability.

As for future work, it is recommended to test the effectiveness of such strategies by the specific disciplines, as an enhancement to the increase or decrease of employability. The current study is indicative towards the drive towards ensuring graduate readiness to employability, in line with that of Kanuka & Smith (2019), Kluve et al. (2019) and Marrington, O'Shea & Burton (2019), among others.

As a conclusion, this paper has attempted to offer the strategies that can be used as options to overcoming challenges to enhance employability for the graduates. The proposed framework and checklist are provided that includes advanced training, probation, professional qualification and certifications, endorsed-employer skills,

among others as some actions for the strategies proposed. It is hoped that readers will consider the results of this study as strategies to resolve the employability challenges.

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