Program-Budget Marginal-Analysis for University Strategies concept of Planning and Execution

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Abstract

Research addressing budgeting allocation planning on budget allocation and execution planning on Priotization of strategies are scanty in literature. This study presents program-budget marginal-analysis for university budget planning and execution aimed at priotizing budget allocation on strategies used for improving university rating. The research will illustrate the program-budget marginal-analysis with little adjustment to suit the university strategic budget allocations. This paper proposes a conceptional frame work for budget planning execution on university strategies. The framework for implementing PBMA will identify the total amount of available resources or funding allocated to priorities, examination of the current allocation activity, evaluation of benefit of cost of expansion with regards to both existing and new introduced strategies, in any of the existing services in use, which is effective with fewer resources allocation. Alternatives to be allocated fewer resources with greater effectiveness included in the priotized list. The budget allocation has the potential to maximize efficiency of each strategic allocation for improving the university rating.

Keywords: Program-Budget, Marginal-Analysis, Strategies, University.

1.1 Introduction to Budget allocation

Budget is an important part of all financial plan for organization and businesses. Budget are set annually and involves allocation and reallocation of funds to plans, activities or strategies. The amount of funds allocated is of great concern to the organization and planning community especially with limited resources. Budgeting is aimed at planning of operations effectively, coordinate activities in an organization, and communicate plans to the management of an organization, to control activities spending and also to evaluate performance of an organization

(Huang, Zhang, Lee, Chew, & Chen, 2016; Robertson & Germov, 2015).

Having a budgetary system is not a guaranty that all planning efforts will be improved automatically. The budgetary allocation is used in planning processes with cost benefit prepositions hence the budgetary allocation are planned to be cost effective. Budget allocations forces the organization to plan ahead. The management has to deal with the complex problem allocating budget on activities with difficulty about easy and unknown solutions, thus forced to work within the framework of planning through difficult decision making process and responsibilities. This budget allocation clearly explains in a wider view the happenings in the organization.

1.1.1 Methods of budget allocation

Budget allocations are typically reviewed annually and set for a period of 12 to 24 months. Budget allocations are set based on previous budget expenditures, including changes in spending and allocation of budget for specific agenda. Such as adjustments in salaries, recruitment of new staff and also death of existing staff. The budget allocation is aimed at taking into account expenditures as well as miscellaneous expenses for unforeseen circumstances (Xiao, Lee, & Ng, 2014). Resources allocation is done when planning organizational activities. The organization decides whether resources should be allocated or reallocated. The basic point of concern is what proportion of resources to be allocated to each activity. This procedure of decision making is a multi-criteria decision-analysis (MCDA) problem and of great importance for minimization of cost and maximization of profit.

1.1.2 Budgeting Process:

Budget process is regarded as a detailed and quantitative plan of organizational finances. It used to represent financial plan of an organization over a specific period of time. This can be long period plan (2-10 years) short period (1-2years) (Hossain & Rahman, 2014). Budget provides a transparent expenditure of organizational funds. (Kerr et al., 2014) believe budget is a process of financial decision of an organization, when managed wisely compels management planning, provides clear expectations used to judge subsequent performances, and also promotes effective communication and planning among different segment of an organization.

1.1.3 Budgeting in University System

Budgeting is used within strategic and operational planning unit in most universities. It is used in dealing with the university present and future problems in an organized design. Budgeting on

strategies is a continuous process used in allocation of limited resources to meet the university needs with price tag attached to each strategic activity (Hilburg, 2010, Deering, 2015). Budget allocation provides a framework for an efficient and transparent allocation of limited resources and used as a guide to decisions and activities of the university management. It has become a tool used by the university to control direct and translate financial decisions. Budgeting models are designed to support policy implementation, it is not considered as a substitute for policy making.

Decision makers consider existing financial expenditures and limit expenditures with available resources. Budget is a very important planning process in the university and it is becoming more important to the university strategic planning units. With difficulty in planning on strategies in the university system, budget planning is used to improve decision making on allocation and reallocation of resources to strategic activities. The budget helps the university management in tracking institutional progress by performance evaluation on resources allocation decisions.

Every university has its own approach and method of budgetary allocation. (Deering, 2015) shows four types of budget allocations,

1. Centralizing control, this is regarded as executive budgeting
2. Performance based budgeting, used to seek measures and cost in an attempt to balance between cost and outcomes of various strategic activities in the university.
3. Program, planning and budgetary system. This method of budget allocation links cost to objectives and show transparency in the role of planning in budgeting.

4. Incentive based budgeting, this is the combination of performance based and strategic planning budgeting. This research focuses on this approach.

2.0 Problem Statement

Strategies are used as a guide by most universities as a key indicator to assess the university and equipping the universities with challenges and realities of this millennium. Unfortunately most universities set up their specific strategies without considering the limited availability of resources, which is very relevant which leads to fund mismanagement.

To improve the rating of the university through strategy Priotization for budget allocation and reallocation of resources to improve the university ratings. The review of previous strategies is crucial, knowing which strategy is cost effective with maximum benefit for improving university rating. Hence the decision of whether to maintain the budget for existing strategies or to reallocate the resources to new introduced strategies for better university rating. One possible way of making a better decision on budget allocation is through implementation of program-budget marginal-analysis (PBMA)

3.0 Methodology

The approach for this concept paper on Program-Budget Marginal-Analysis for University Strategic Planning and Execution involves three main steps:

Step 1: Identification of Strategies

The first step involved in this research will be to consider the common KPIs of different universities focusing on student development. An example is as shown in table 3.1 below.

Table 3.1 Similarities in Strategies to Achieve the KPIs.

NUMBER	STRATEGIES	UNIVERSITIES
1	Wealth creation	UUM and Worcester universities.
2	Entrepreneurship	Cornel university, UUM and IIUM.
3	Scholarship	UUM, USM, Oxford, Essex, Worcester universities.
4	Internationalization	UUM, USM, UTM, UKM, IIUM.
5	Research	UUM, USM, UTM, UKM, IIUM, Oxford, Essex, Coast, Cornel, and Worcester universities.
6	Learning and teaching	UUM, USM, UTM, UKM, IIUM, Oxford, Essex, Coast, Cornel, and Worcester universities.

Next, the strategies will be shortlisted for the purpose of our research. The shortlisted strategies serve as the strategies to be considered in our hypothetical model. Then, the shortlisted strategies will be further broken into specific activities to achieve the given KPI.

The detailed explanation about each activity and the KPI set for each activity is given in table 3.2 below. Once the specific strategies have been defined, each specific strategy will be assigned with specific KPI.

Table 3.2: Activities and KPIs under staff intervention strategy

	ACTIVITY	DEFINITION	KPI
A	Workshop	Group knowledge sharing and intensive discussion to improve staff performance	Total number of first class students.
B	Scholarship	Staff given scholarship to improve the professionalization.	Total number of first class students.
C	Recruitment and retention of staff	The university retain professional employees and also employ more qualified staff.	Total number of first class students.
D	Teaching and research	Improving on research and teaching.	Total number of employed graduates

STEP 1.2

Compare the actual achievement with the given KPI for each activity. Through the measurement of the actual performance of a specific KPI with the expected achievement, i.e. KPI, the KPI can either be under or over achieved. The performance achieved in reality can be used to improve the goals based on what has been achieved in practice with an assurance of the best value being achieved to the particular organization being considered.

The best KPI can be achieved when there is a clear understanding of what needs to be given more or less priority, careful selection of the best KPI, understanding the difference in performance, willingness to change and adopt to the best KPI by introducing more or removing the less effective KPI and finally persistence in finding the best priority knowing fully well that the best result is not easily and quickly achieved.

STEP 1.3:

Introduce some new strategies that are believed can improve the achievement for the next cycle of the strategic plan.

Selecting the most influential strategies can be interpreted as an MCDA problem relating to different independent factors. Based on literature review implementation of PBMA can be applied on the MCDA problem through economic evaluators for setting priority with limited resources on KPI's focusing on students achievement.

The above KPI's effect on student achievements which reflects the vision/mission and goal of a university organization system through the measurement of KPI's of institutional progress towards the achievement of students improved performances PBMA

STEP 2 Applying PBMA

2.1 Program-Budget Marginal-Analysis

(Mitton, Dionne, & Donaldson, 2014) outlined seven steps for PBMA:

1. Determine the goal, aim and scope of setting the program
2. Identify the available resources for funding a particular program that is the program budget.
3. Conduct marginal analysis by taking the viewpoints of stakeholders, managers, service providers, consumers, and head of organizations in setting priorities.
4. Determine the decision making criteria to be used to maximize benefits or profits as well as minimization of cost.
5. Identify the options in the program for which choices are to be made. That is through the process of MCDA.
6. Evaluate the potential impact of investment and disinvestment in terms of benefit and cost.
7. Validate the outcome and the decision made in the process of allocation and reallocation of funds according to the ratio of cost-benefit.

This process outlined by (Mitton et al., 2014) will be modified as follows

1. The goal and scope of setting the priorities is about improving students achievements'
2. Identification of KPIs for funding about improving students' achievements, which is the program budget.
   - I. Total number of points allocated each KPI.
   - II. Points are distributed to strategies through stakeholders and head of institutions priority settings to achieve the total KPI points (expected points).
   - III. Money allocated to each strategy to achieve the expected points.
   - IV. Actual points achieved from each strategy
3. The ratio of money allocated to the points achieved by each strategy (marginal-analysis).
4. Determine which of the strategy has achieved the expected points.
5. Identify the KPIs in which choices are to be made, that is through AHP process of MCDA.

6. Evaluation of potential impact of each KPI to allocation and reallocation of resources in terms of benefit and cost.
7. Validate the outcome and the decision made in the process of KPI priotization of funds according to the ratio of cost-effectiveness.

3.2 COST-EFFECTIVENESS ANALYSIS (CEA)

The cost-efficiency analysis is referred to in most literature as an economic evaluator in general, it is a decision making analytical tool through the process of proffered choice identified among possible alternatives. It is also a mathematical process which aids in selecting the best approach in a visible and transparent manner (Drugs & Health, 2014 Smith et al., 2016).

This research proposed approach can be applied in different field of research not just on university rating. To organizations with MCDA problems, strategic planners, policy maker's decision makers on projects, having limited resources with the need to maximize the little resources, alternative plans can be compared and improved especially when strategy and key performance indicators are involved.

3.3 Step 3

This research will use a proposed methodology called the saaty's AHP technique. This proposed methodology uses a 9 Likert scale similar to saaty's scale. The procedure will take the following steps,

i. The traditional AHP pairwise comparison will not be applicable here, rather the 9 Likert scale where 1 represents the least important and 9 representing the most important.

ii. Evaluation will be done through transformation into saaty's AHP pairwise table for comparison with matrix $C = [c_{ij}]_{n \times n}$

iii. Algorithm
Let N be equal to number of criteria. The evaluation will be done based on the 9 Likert scale 1-9 as presented in step 1.
Suppose the rate of criteria I is r_i an criteria j is equal r_j, then c_{ij} will be evaluated as the value of comparison between criteria i and j, this will be determined as follows,
Let $b = r_i - r_j$
When

$$b > 0 \text{ then } c_{ij} = b + 1 \quad \text{Equation 1}$$
$$b = 0 \text{ then } c_{ij} = 1 \quad \text{Equation 2}$$
$$b < 0 \text{ then } c_{ij} = \frac{1}{(1-b)} \quad \text{Equation 3}$$

When the matrix for the saaty's AHP is obtained then the evaluation for each criteria can be used, using the usual AHP technique.
Flow chat

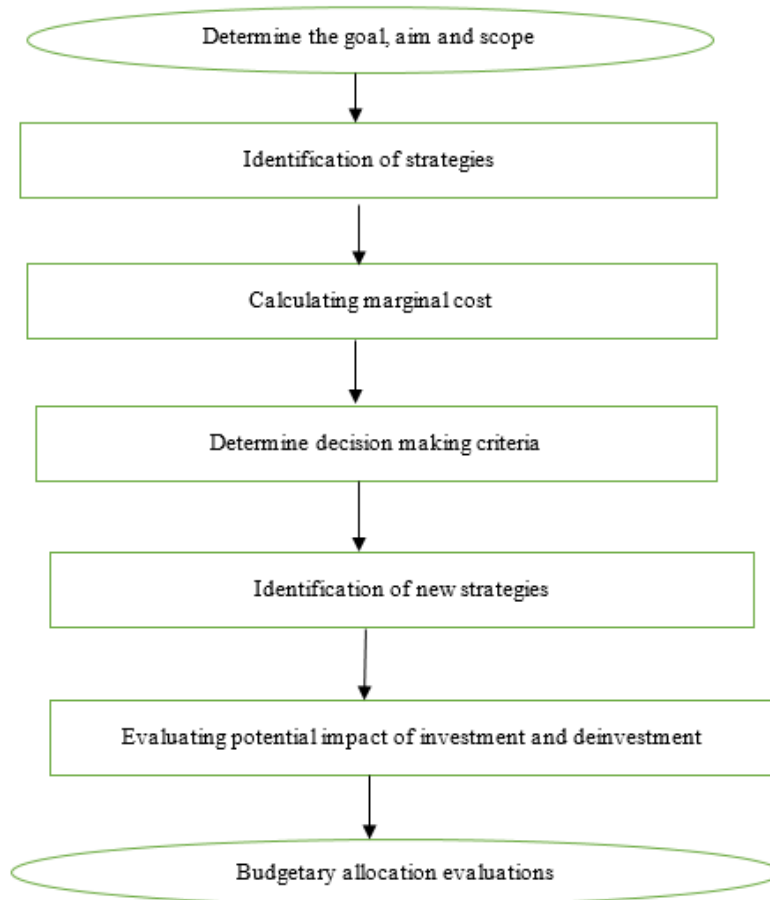
Figure 3.1 flow chat

4.0 Conclusions

This research proposes a budget allocation for university strategies. Program-Budget Marginal-Analysis for University Strategic Planning and Execution framework with the adjustment to suit the university strategic problem were presented. For priotizing the strategies used by the university to improve the university rating. The general objective of the adjusted PBMA is aimed at utilization efficiency of the adjusted model to assist the university management in budget allocation on both existing and new introduced strategies' used with less cost effectiveness detailed out with much accountability and transparency for greater university rating.

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