

An Understanding of the Different Selection Models used to Select Projects in an Organization

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Abstract:- Strategic management and project selection form the bedrock in the alignment of projects with organizational strategies and objectives. Organizations that are undertaking projects are putting so much time and resources to ensure that such projects are successful. The success of a project starts from idea conception unto the selection process and the actual implementation of the project. Taking the wrong approach at any of these stages can lead to project failure. The selection process is so prominent in dictating the outcome of the project. Projects should be seen helping the organization to achieve its goals and objectives. Therefore, in a situation where a particular project is not in that direction, then it becomes clear for management to drop off such project. In addition, management has limited resources that should be shared amongst these projects. Thus, there is the need for project to be selected based on certain criteria that should be set by the project selecting committee. The selection of these projects, helps management to concentrate resources on the ones that have direct link to the organizational goals and objectives. In essence, this concept helps management to prioritize their operations and hence put the organization in a very good footing to meet their overall strategic goals.

Keywords:- Senior Management; Profitability Model; Scoring Model; Numeric Model; Nonnumeric Model.

I. INTRODUCTION

Every organization has its goals and objectives. In achieving these objectives, it is imperative for the organization to develop real time strategy. There are many activities that should be undertaken by the organization in the realization of its goals. This ranges from routine activities to unique activities bounded by time, cost and scope (project). An organization can have several ongoing projects geared towards achieving its stated goals and objectives. The organization is challenged with how to select among the various projects, those projects that are in line with management strategy and those ones that can augment organizational performance. The selection process can be daunting and exhaustive, depending on the criteria used by the project selection team. There are numeric as well as nonnumeric models that can be used to select project. These are useful models that can help management in selecting the most appropriate project for the benefits of the organization. Like any other model, these ones are not

free from biasness and sentiments. The selecting committee has the responsibility to curb these vices and make the process fair and transparent for the good of all.

II. PROJECT MANAGEMENT MATURITY AND PROJECT SELECTION

An organization can have several projects running in order to achieve its ultimate objectives. The management of the organization should be carefully especially when dealing with several projects that are all geared towards organizational achievements; in order to realize the desired benefits for which these projects were initiated. The challenge most organizations faced in managing several projects is having competent personnel with the right skills to accomplish these projects successfully. However, the concept of project management maturity was introduced to help remedy this kind of situation. Project management maturity refers to the management style, methods, strategies and decision-making process employed in managing multiple projects based on its scope, time and needs (Crawford, 2007). Different organizations have varied levels of maturity depending on their capacity and strategic goals and objectives. An organization can reach full maturity when it is able to achieve the requirements and standards set for the project management effectiveness (Crawford, 2007). Project management maturity focuses on the capability of an organization to handle projects. It does not necessarily differentiate between multiple and single projects rather, it assesses an organization's project management maturity; thus, making the project management maturity an effective evaluation model used by organizations that are using project management to achieve organizational strategic objectives. Every organization has its policy and strategy in conducting itself in the business environment. Projects undertaken by an organization should be seen moving in that direction. Managers are faced with decision-making on a daily basis and most often, they tend to take a bias position. Some put their (departmental) interest above organizational interest, leading to slow organizational growth. Thus, the need for an adequate yardstick to help bring sanity in the selection process of projects. These yardsticks are known as project selection models and they support management in the selection process especially in cases where managers want to select projects for their personal gains or outright biasness. (Meredith & Mantel (Jr.), 2009) defines project selection as the method of assessing anticipated projects or groups of projects, and then selecting to implement some

set of them to accomplish organizational objectives. Project selection models are not absolute but they help project managers in making decisions. Each model has its merits and demerits that plays valuable role in the selection process. The appropriateness of a model depends on its ability to meet organizational goals from the project manager's viewpoint. However, these models have the following limitations:

- No single model has it all. A particular model can be appropriate for project A and yet not applicable for another similar project. This is because project selection depends on several factors including organizational goal, project objectives, resources needed to achieve the project and the organizational competence.
- The soundness of a model depends on the input (data). Insufficient or distorted input can lead to misleading results and hence influence the model selection process. Thus, reinforcing the need to properly verify every model before using it to make organizational decisions. A misleading model can be detrimental to the organization and to a great extent damage the credibility of the organization to its clients.
- Biasness on the part of the selection team. This team like any other team comprises of individuals that do favour the use of a particular model in project selection because of several reasons ranging from model simplicity to previous project selection model that worked. However, should biases should be mitigated especially when individual managers are doing so for their own interest. Organizational interest should supersede personal interest thus, the need for managers to abide by the set selection models of the organization during the selection process.

III. CRITERIA FOR CHOOSING PROJECT SELECTION MODEL

In project selection, each project idea is evaluated and chosen based on organizational preference. Every organization will choose a project in consideration of the potential benefits of that project to the objectives of the organization. The potential benefits are dictated by the outcomes of the project and that speaks to the underlying reasons for undertaking the project. In cases, where there are several interesting projects to select from in an organization, it becomes necessary for the organization to choose the project that best fit its strategy and has the highest possibility of success. The projects with low chances of success can be put aside in order to make available the limited organizational resources for the high priority ones (Monnappa, 2020). Selection models should help management in accomplishing the overall goal of the organization. (Souder, 1973) put forward the most important criteria required for choosing a project selection model and these are:

- Realism: This criterion looks at the practicality of choosing project selection model. It considers organizational objectives and capacity in making such decisions; knowing fully well that without such models

it becomes impossible for the organization to make adequate projects comparisons. It takes cognizance of the prevailing situations in the organization in terms of its capability to provide the resources needed for the chosen project selection model. In essence, this approach is holistic in nature as it matches organizational competence to what is obtained out there.

- Capability: The model should be robust enough to address both present and future challenges such as the internal and external factors militating against the project and these includes; strikes, wages, interest rate changes, staff attritions etc. The model should be robust enough to survive difficult periods.
- Flexibility: The model should be adequate enough to provide reliable results that the organization can rely on for decision making purposes. In addition, it should be relatively easy for effective modification purposes especially in response to changing circumstances in the project environments such as technological changes, political changes, economic changes, changes to organizational goals and potential risks situation that might erupts. Such model is preferred in the selection process of complex and high-risk prone projects.
- Ease of use: The model should be appropriate and easy to use. Should not be difficult to execute and understand. In fact, there should not be any special clarification or additional explanation to aid one in understanding its operations rather, its data and equipments should be easy to access and acquire. It should not bring unwarranted pressure on the organization in terms of recruitment of additional personnel.
- Cost: The model cost should not exceed that of the project cost and its intending benefits to the organization. However, the organization must consider the cost of data collection and the effective implementation of the chosen model. Both costs should be less than the implementing cost.
- Computerization: Data from this model should be easy and suitable to store and manipulate by computer systems. Because of the advancement of technology, it becomes imperative for a model that uses computer systems to be preferred in the selection process than models that are not. Computer friendly models give managers the edge in decision making.

IV. TYPES OF PROJECT SELECTION MODELS

Project selection methods usually focus on the benefits of projects to the organization. It particularly expresses senior management's concerns on whether the project will be able to achieve organizational objectives. However, the project is expected to improve the following in the organization; return on investment, competitive advantage, customer base, organizational perception especially to potential customers, organizational profitability and sustainability. In essence, the project should march the strategic goals of the organization. In most cases, if the project is unable to meet such goals, it becomes imperative for management to put it aside. Management will always support projects that are seem

helping the organization in accomplishing its strategic goals (Heldman, 2018).

(Meredith & Mantel (Jr.), 2009) put forward two types of project selection models and these are; numeric and nonnumeric models. The nonnumeric models are relatively simple and easy to use and some of its subtypes are thus:

- Sacred cow: This is a situation where the project is selected by an individual who is powerful in the organization (boss). This boss thinks management must look into the initiation of this project as it will be of immense benefits to the organization in his own eyes. Such project, when selected becomes “sacred”. Everyone is working hard to ensure that the project succeeds because it emanates from the boss. Even if the project is not doing well, no one dares say something because of fear of the boss, until the boss, personally realizes that the project is a failure and terminates it.
- Operating necessity: This model is used to select projects that are of need to the very existence of the organization. For instance, when the location of the organization is seriously threatened by natural disaster, it becomes incumbent on management to initiate a project for the relocation of the organization. In some other cases, the very product that enables the organization to have competitive advantage over its rivals becomes threatened and something must be done by management to either change the product or upgrade it in order to maintain its market leadership. In essence, this project is selected to remedy the operations of the organization and therefore requires management support.
- Competitive necessity: In this model, projects are selected primarily to enhance the competitive position of the organization. The project is selected either to gain competitive advantage or to maintain the competitive edge the organization has over its rivals in the market. It is worth noting, that the operating necessity takes preeminence over the competitive necessity but both models usually bypass the rigorous numeric analysis used for projects considered not too important for the existence of the organization.
- Product extension: This model is used in cases where management sees the need to differentiate its products in order to strengthen a weak link or extends the product line in a new way. This is usually devoid of numeric calculations and in most cases, management makes such decision on the premise that the project will cause significant impact on the performance of the organization.
- Comparative benefit: Used mostly in cases where the organization has several projects to choose from and it must select projects that of immense benefits to the organization. This selection process is made simple when the projects are easy to compare. For projects that are incomparable, it becomes challenging to make such selection decision. The organization has no prescribed method of selecting projects, but rather depends on management to choose the most appropriate projects that will benefit the organization. This model is widely adopted for making decisions on all categories of projects.

Although, some of these nonnumeric models of accepting or rejecting projects can be easily discarded as being unscientific; nevertheless, they are goal-focused and resonates the concerns of the organization. For instance, the sacred cow model is obviously supported by the authorities as this is like a baby to them. Therefore, management’s full commitment is required to enhance project success. Operating necessity model strives to ensure that the organization survives in the midst of challenges. It puts premium on the operation of the system. For example, a pure water producing company residing in flooding prone community might undertake a project to put preventive measures in place for subsequent floods. This model is not a numerical one therefore; less attention is given to statistical data and decisions are easily perceived. The challenge this model has, is its inability to address future problems. On the other hand, the competitive necessity model focuses on strengthening the organization’s competitive advantage in the global markets. For instance, adding value to your product to make it distinct from your competitors can give your organization the competitive edge. Here also, decisions are made easily but those decisions might not help in the future. Management should be watchful when using these models in making decisions.

The numeric models use quantitative techniques in establishing whether a project is worth selection. It can be divided into two; profitability and scoring models. In most organizations, profitability is used as the only means of project acceptance. Project selection models that fall within the profitability category are thus:

- Payback Period: Everyone investing in a business wants a situation where he/she will be able to recoup his investment within a period of time. However, the payback period establishes how an investor or an organization can regain its initial investment in a business or project within a stipulated time frame. It is the time required to recoup one’s invested money in a project. The shorter the time required to recover the invested money in the project, the better the project. A project with longer payback period is not considered favourable. Payback period is estimated by dividing the investment cost by the cash inflow. However, the payback period overlooks the time value for money. For instance, if you invested \$50,000 in a project with an annual cash inflow of \$10,000; the payback period for such project becomes:

$$50000/10000 = 5 \text{ years.}$$

In essence, the investor should have recouped his initial investment within five years period. Remember, the longer the payback period, the riskier the project.

- Net present value (NPV): It is also known as the discounted cash flow. This technique considers the cost of the project and its returns in evaluating project viability over a period of time. It is the difference between the present value of incoming cash and the present value of cash outflows. It refers to the present value of all expected cash flows, reduced back to the

present time at the appropriate discount rate, less the cost to acquire those cash flows. In essence, the NPV is a financial technique used to evaluate the profitability of an expected project and it is simply value minus cost. A positive cash flow implies a favorable project that is, a project worth undertaking by an organization and a negative cash flow points to a project that is unfavorable. Management usually accepts the project if the sum of the net present values of all estimated cash flows over the life of the project is positive. NPV unlike the payback period strongly considers value for money in any investment (Heldman, 2018).

- Internal rate of return (IRR): This financial technique is used to estimate the viability of a project. IRR is the rate of return that compares the present value of a project's expected gains with the present value of its costs. The IRR does not include external factors affecting the project but rather quantifies the rate of return over time for an investment. It is used by an organization to compare one project to another or to determine whether a particular project is viable. It is worth noting, that the higher the IRR, the higher the net cash flowing to the investor. A larger project with a lower IRR is more preferred by an organization to a smaller project with higher IRR, because the larger project will be able to generate higher cash flows. Therefore,

$$\text{IRR} = ((\text{Current value} - \text{Original value}) / \text{Original value}) * 100 \text{ (Hayes, 2019).}$$

- Benefit cost ratio: Known as profitability index. It is estimated using the net present value of expected cash flows divided by the initial cash invested in the project. The project is deemed acceptable when it has a ratio greater than 1. A profitability index less than 1, shows that the present value of the project is less than the initial investment capital; and that is not favorable for the project. On the other hand, a profitability index greater than 1, is favorable for a project and such project can be accepted by management. Profitability Index = Present value of expected cash flows / Initial investment in the project.
- Real options: The real option is geared towards reducing projects risks by comparing investment costs to the estimated project value. The argument is that a delay in project investment can lead to a corresponding increase in the net present value. Thus, a delay will allow time to elapse and hence reducing the risks associated with such project. The selection process is based on the value of the project. If the value reduces, then it is likely that such project might not meet the selection criteria.

There are several models used to determine profitability depending on the nature of the project, available resources and the priority of the parent organization. Nevertheless, the profitability models have several benefits and challenges. Some of the Benefits of the profitability models are:

- Easy to understand and apply.
- Most stakeholders are conversant with their use.
- Required data to estimate cash flows, payback period, rate of return etc. are readily available.
- Project risks can be estimated using some of these models.
- These models can serve as the scientific basis for decision making. The challenges are thus:
- These models tend to ignore the non-financial factors affecting project with the exception of risk.
- Estimation of cash flow and time value for money is a serious challenge with some of these models. For instance, the payback method does not account for cash flows beyond the payback period.
- These models are highly prone to errors especially during the early stages of data input.
- The IRR model can lead to several solutions.
- These models are biased towards short term goals.

In a bid to overcome the highlighted challenges of the profitability model, the scoring model was developed. In the scoring model, management through the selection committee set the parameters upon which a particular project is scored. These parameters point to the strategic objective of the organization. Several projects can be scored and the most suited project (the project that speaks to the strategic focus of the organization) will be preferred amongst the many. This model can be further divided into weighted and unweighted scoring model. The weighted scoring model is where numeric weights are given to the factors set by the committee; these are added up and the project with the highest score becomes the preferred choice. On the other hand, the unweighted scoring model is where management lists all the factors and allow the committee to score the project on each factor based on each individual criterion. Like the profitability models, scoring models have its own benefits and challenges. The benefits are:

- This model employs wide range of criteria to support management decision.
- A replica of management procedure.
- Easy and simple to use.
- There is so much flexibility in using this model.
- Weighted scoring model gives more weights to some criteria that are of immense significance to the organization than others.
- Challenges are:
- Scoring model is relative in nature.
- The unweighted scoring model assumes that all criteria are of the same importance.
- This model usually captures profitability as a criterion.
- Scoring models are direct in form and the factors are assumed to be independent.

In a nutshell, profitability models are aiming at the monetary or financial aspect of project selection with the exception of project risks. The scoring models are relative measure that allows several criteria to be used for estimation and decision-making. It is flexible enough to accommodate changes in management's decisions.

Numeric and nonnumeric selection models are used by organizations to select projects for implementation. When an organization is faced with natural occurrences like flooding, wildfires etc. that threatens its very existence, it becomes imperative to act. Since this is an emergency situation, it does not require much formal evaluation and hence, nonnumeric parameters can be used for the selection process. Numeric models require detail analysis that are not too appropriate for emergency situation. Rather, numeric models are more convenient in cases where cost is estimated.

V. WHY MANAGERS UNDERUTILIZE PROJECT SELECTION MODELS

- Some managers are not even aware of some of these models in project selection. It becomes a challenge for them to use models they have never seen and worked with before.
- Some managers because they want to control and manipulate the entire selection process, they will kick against the use of selection models. Bringing these models will lead to a transparent process which they are totally against.
- Some managers are stereotype and resistant to change. They are afraid of introducing models that do not suit their comfort. They believe things can be done using their old- fashioned methods hence, resisting current models.
- There at times the resistance comes from senior management. These senior managers are not familiar with recent selection models.

VI. CONCLUSION

Most organizations strive to achieve its strategic objectives through the use of projects; thus, making project management a vital tool to achieve organizational success. Organizations are willing to invest in projects that are of immense benefits to their operations. Therefore, the selection of projects is central to the organizational strategy and forms a core function of senior management's responsibilities. This emphasizes the reason why organizations are paying attention to the selection process. In as much as, this process is critical to the organization, it is not devoid of challenges of which are:

- The management of increasing number of ongoing projects in the organization to ensure project success.
- Allocation of organizational resources to ongoing projects in a timely and appropriate manner.
- Setting project selection criteria that best suit organizational goals and strategies.
- Choosing the most appropriate selection models that can address both financial and non- financial aspects of project management. The selected model should be able to identify and manage project risks.

In spite of these challenges, senior management must continue to show maximum commitment in ensuring that the correct actions are taken to meet the standards set by the selecting committee and it should be done in the interest of the organization.

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