



Management Innovation and Optimization: Novel Approach

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Abstract- A project manager has a certain amount of resources. To improve project management, it can either introduce innovative technology, and manage its resources in an innovative way. We call in this article: **innovative or innovative use substance**. For innovative substance, we will develop a **new user-friendly model** to guide project managers, and senior executives, town councils, and political leaders in their choice of use of technology in projects and mega-projects.

Keywords- innovative substance, innovative use, guide decision-making, innovation ranking, ultra-advanced quality innovation, Roman Era UAE Project Management

I. INTRODUCTION AND MOTIVATION

Project management is changing rapidly with the advances in technology and management techniques, empowered by the technical input and / or human. However, project managers, senior managers, policy makers and political

leaders face two key challenges, with, of course, different intensities:

1. They are not an idea they will gain if they use a given technology. It is therefore difficult for them to decide on a given investment if they do not know the return on investment. This becomes a critical issue with recurrent breakthroughs in new knowledge
2. They must ensure that they improve their use of resources.
The first point can help develop the second

Therefore, it is necessary to provide project management innovative to overcome these challenges. To that end, we present in this article the following concepts, which correspond to the set two challenges:

1. Innovation as a new substance

2. Innovation as a new use

We schematize these two types of innovation in the following figure:

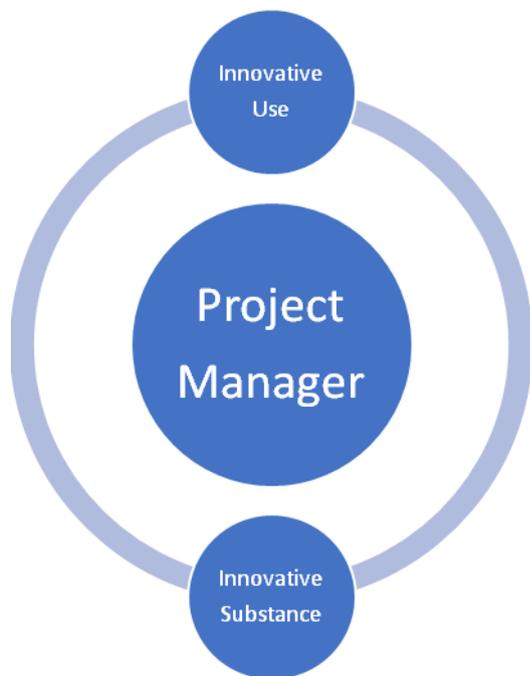


figure 1: Innovative use and innovative substances in project management

II. INNOVATIVE SUBSTANCE

In each project, new innovations can be adopted, adapted or developed based on the needs and objectives. In a globalized and modernized, it is necessary to seek gain, can be long-term and short technology, particularly with the development of revolutionary advanced technologies. To resolve this issue, we present a simplified model to

assess the impact of the use of technology, and the benefit to accordingly.

A given project are costs to achieve a given goal. The costs are related to the number of production units (eg, personnel, vehicles, infrastructure, etc.). Each production unit has a given unit cost and unit production data in order to achieve the objective of the intended project. We provide names for each of these parameters as follows:

Parameter	Meaning
C	Cost
C_u	Average unit cost
N	Number of production units
P_u	Average Unit Production

The project management problem can be modeled as follows:

$$\begin{cases} \text{Cost} & = N \times C_u \\ \text{Objective} & = N \times P_u \end{cases}$$



A director, officer, political leader, an investor, each at his level, aimed at the following:

{ *Reduce Cost*#
{ *Reach Objective*

The researchers in question require, in their own way, how, therefore, to reach the goal, even surpass, while reducing costs. The most obvious way is to reduce the production units. However, this will lead to not achieve the goal (ie). If in this article we suggest reducing the production units and thus reduce costs, and introduce innovative technologies to increase productivity and therefore make to achieve, if not exceed, the target. Unfortunately, this innovation is to be introduced at a cost, therefore, the overall cost will experience an increase. We define the investment cost of innovation:

$$N \times P_u < Objective$$

$$\begin{cases} Cost & = N_{inov} \times C_u + L_{inv} \\ Objective & = N_{inov} \times P_{u,inv} \end{cases}$$

Although the small number of the production unit required after the introduction of innovation and production acquired after the introduction of innovation:

Parameter	Meaning
N_{inov}	the new number required number of production units through innovation
$P_{u,inv}$	the new unit average production achieved through innovation

At this stage of our work, and to help project managers take a practical decision, we introduce the concept innovation rankings (adopted and adapted our work [1]).

1. Suboptimal:

$$P_{u,inv}(N_{inov}) = a \cdot N_{inov}^\alpha, \alpha < 1$$

It was then that the production units are underperforming. we are talking about a distraction

Parameter	Meaning
C_{inv}	the cost of investment in innovation

Therefore, the new project manager of the situation / managers / sponsors will be in is:



or a limitation that reduces performance. This is not an objective of our work

2. Manual-linear:

$$P_{u,inv}(N_{inov}) = a \cdot N_{inov}^{\alpha}, \alpha =$$

This occurs when production units are proportional to the results; This is a typical case of manual work using no or rudimentary technology use. Such is the case of small projects, in which, in general, project managers do not need advanced skills.

3. Advanced:

$$P_{u,inv}(N_{inov}) = a \cdot N_{inov}^{\alpha}, \alpha > 1$$

This occurs when well-advanced technologies are used, where the production units lead to results that are not proportionately better the results; this is a case of replacing manual tasks in the supply chain or production line by machines through automation

4. Ultra-Advanced:

$$P_{u,inv}(N_{inov}) = a \cdot e^{\alpha \cdot N_{inov}}, \alpha > 1$$

This occurs when production units are super efficient. This model is essential to follow the ideas of last decade and breakthroughs, and to implement and develop innovative ways. In this context include:

- of data mining algorithms
- modeling of Big Data
- The aerospace technology introducing into operations
- All the above combined and integrated with artificial intelligence, which ensures continuous process improvement and intense, techniques, algorithms and processes

We present the effect as follows:

$$\begin{cases} Cost &= \frac{Objective \times C_u}{a \cdot e^{\alpha \cdot N_{inov}}} + L_{inov} \# \\ Objective &= N_{inov} \times a \cdot e^{\alpha \cdot N_{inov}} \end{cases}$$

We denote the Ultra-Advanced Quality Innovation. The above means that, since the term is growing rapidly as shown in Figure 2, the term goes fast, and ultimately timely

$$a e^{\alpha \cdot N_{inov}} \frac{Obj_{j1}}{a \cdot t}, \quad \text{The}$$

project manager / leader / sponsor will manage to transform its traditional introductory problem following an innovated:

$$\begin{cases} Cost &= L_{inov} \# \\ Objective &= \text{very large (outstanding result)} \end{cases}$$

Therefore, the above analysis, we can deduce the following:

- The use of ultra-advanced innovations in mega projects, the project manager / leader / sponsor will be able to reduce long-term costs for essentially the cost of investment in innovation
- The use of ultra-advanced innovations in mega projects, the

¹ Note, we are talking about a meg-project, a large scale, thus indicating long term makes sense

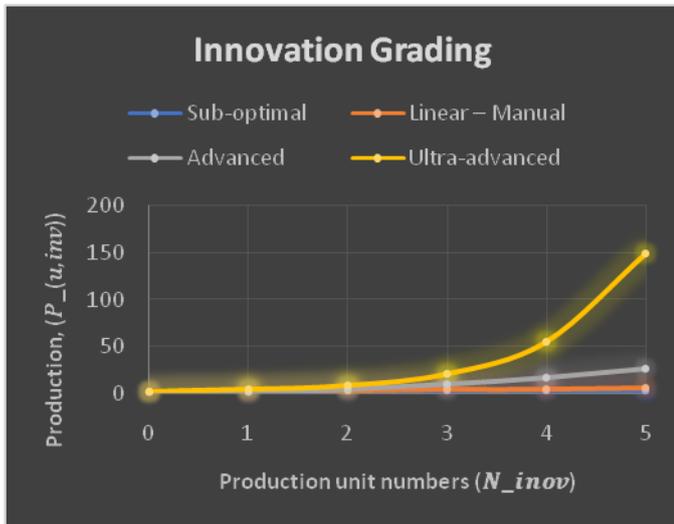


figure 2: Innovation ranking

We assume that the project manager / leader / sponsor of a mega-project (eg the city level, country level, global level, a large construction project, a major oil and gas or a telecommunications project, etc.) decide to use or develop an Ultra -advanced innovation. Therefore, the new issue will be:

$$\begin{cases} Cost &= N_{inov} \times C_u + L_{inov} \# \\ Objective &= N_{inov} \times a \cdot e^{\alpha \cdot N_{inov}} \end{cases}$$

So:



project manager / leader / sponsor will be able to exceed its planned target of unlimited exceptional and unexpected results

- Innovation will be used a quasi-free (free except amortization) estimate for future project managers. Therefore, reducing costs of these projects will be even more important in the initial project, in which the ultra-advanced innovation was introduced. Therefore, we can speak of a founding generation (which has supported the investment) that made it much easier for the next generation to manage projects and achieve success much easier and cheaper L_{inv}

III. CONCLUSION

Project managers and decision makers are facing many questions to answer regarding the investment to engage and gain wait. Moreover, not many countries, cities and mega-projects holders to go, which is apparently the most difficult choice to make: invest

heavily in innovation now to get great results in the future . We proved with an easy model to understand that in the long term, innovation is insurance to cut costs optimally and achieve the course objectives depending on the chosen innovation

IV. REFERENCES

1. S., H. "solving operational problems and research tools to optimize the allocation of resources"
2. S., H., "operating cost reduction framework based on optimizing the allocation of resources "