

# Continuous Improvement Framework for the Generation of Business Proposals: Case of Application of the Earned Value Method

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## Abstract

This study presents an applied research approach aimed at implementing a continuous improvement framework for the development of commercial strategies within an emerging company. The proposed framework integrates information gathering, data analysis, and strategic design within an iterative cycle supported by project management tools. Its primary objective is to structure commercial decision-making processes and enhance sales performance through measurable and replicable mechanisms. The methodology combines qualitative data collection, analytical processing, and project planning techniques, incorporating the Earned Value Method (EVM) as a control tool to monitor execution in terms of scope, time, and cost. The results demonstrate that EVM enables objective performance tracking, identifying schedule deviations (SPI = 0.67) while maintaining cost efficiency (CPI = 1.02). This facilitated the implementation of timely corrective actions and the consolidation of commercial strategies aligned with key performance indicators.

**Keywords:** Earned Value Method, Continuous Improvement, Business Strategy, Project Management.

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## 1. INTRODUCTION

In emerging business environments, particularly within newly established organizations, the absence of formal structures for commercial management limits the ability to develop consistent, measurable, and scalable strategies. This issue has been widely documented in the literature, which indicates that intuition-based decision-making reduces the effectiveness of commercial actions and hinders the evaluation of results (Blaikie, 2015; Berry, 2014).

In this context, continuous improvement approaches, particularly the PDCA cycle proposed by Deming, have proven to be effective mechanisms for structuring organizational processes through iterative phases of planning, execution, evaluation, and adjustment (Deming, 1986). In parallel, the incorporation of project management methodologies has strengthened planning and control across various organizational domains, including operations, logistics, and commercial strategies (PMI, 2002; Geraldi & Lechter, 2012).

Several studies have identified a growing trend in the adoption of project management tools to formalize processes and improve organizational efficiency. However, a gap remains in the literature regarding the integration of these methodologies into commercial management, particularly in the systematic generation of commercial proposals.

In response to this challenge, the present study proposes a framework that iteratively integrates information gathering, data analysis, strategy development, and performance evaluation through key performance indicators. This approach enables the transformation of data into structured commercial actions.

The distinguishing element of this work lies in the incorporation of the Earned Value Method (EVM) as a monitoring and control tool. EVM has been widely used in project management to integrate scope, time, and cost into a unified performance measurement system (Ambriz Avelar, 2008; Fleming & Koppelman, 2016). Its

application in the commercial domain represents an innovative contribution, as it enables the objective evaluation of strategy execution and the early detection of deviations.

Therefore, the objective of this study is to demonstrate the applicability of EVM as an evaluation mechanism within a continuous improvement framework aimed at generating commercial proposals, highlighting its impact on decision-making and on the consolidation of a portfolio of commercial strategies.

## 2. MATERIALS AND METHODS

The present study was conducted under a theory-application approach through the proposal and validation of a continuous improvement framework aimed at the development of commercial strategies within a real organizational context.

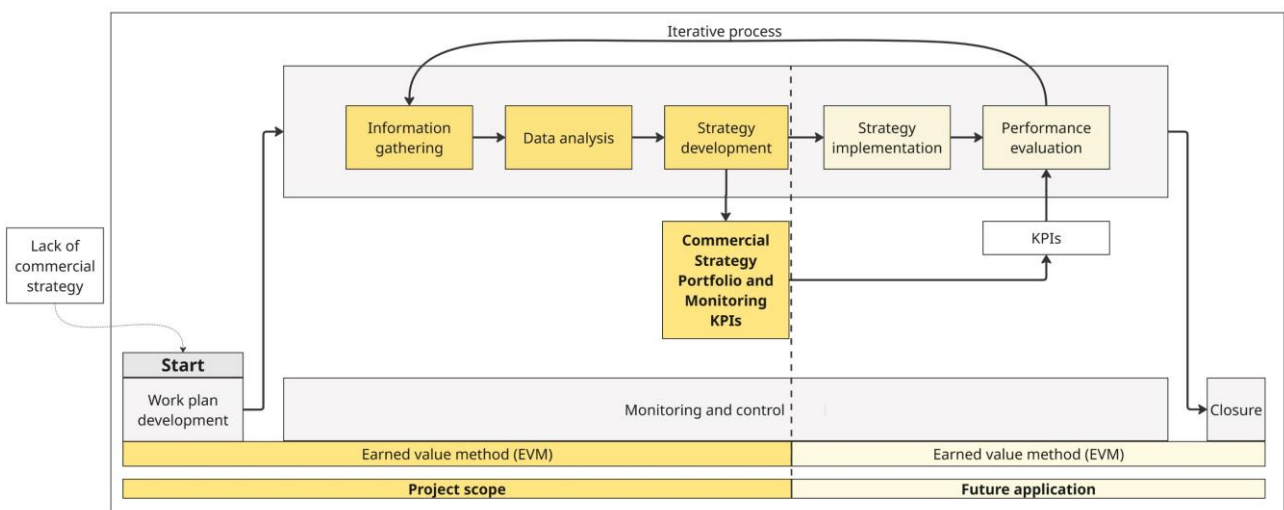
Unlike descriptive studies, this work seeks to demonstrate the operational usefulness of project management tools in the commercial function, particularly through the incorporation of the EVM as a performance control mechanism. It is important to note that, for validation purposes, EVM is evaluated up to the stage of commercial strategy development, as illustrated in Figure 1.

The methodological design corresponds to a non-experimental, longitudinal, single-case study, where the unit of analysis is the process of generating and executing commercial strategies. This approach enables the observation of performance evolution over time, particularly in terms of progress against planning,

aligning with the analytical logic of the EVM. In this sense, the research goes beyond merely describing the phenomenon, as it directly intervenes through the implementation of a structured framework, evaluating its effects under real conditions.

The proposed framework in Figure 1 is conceived as a system for transforming information into commercial decisions, rather than as a simple operational flow. Its stages, information gathering, data analysis, strategy development, and evaluation, fulfill specific analytical functions: reducing environmental uncertainty, translating information into actionable knowledge, formalizing decision-making, and closing the cycle through evidence. This structure follows the principle of continuous improvement, where each iteration builds upon previous results, generating cumulative organizational learning. The incorporation of EVM in the evaluation phase introduces performance quantification, shifting the approach toward a hybrid model with control capabilities.

The data collection strategy was designed to directly support the logic of the framework, prioritizing actionable information. Primary sources were employed through structured surveys aimed at capturing value perceptions and decision-making criteria, while secondary sources were based on historical data to validate observed behaviors. This combination allowed for the contrast between perception and actual behavior, a key aspect in the formulation of commercial strategies. In this context, data constitute the fundamental input that activates the continuous improvement cycle and sustains the model's adaptive capacity.



**Figure 1: Proposed framework for continuous improvement with support in project management**

The analytical processing was carried out through a structured workflow in KNIME software, which enabled the transformation of data into actionable insights through processes of data cleaning, segmentation, aggregation, and cross-analysis. However,

the methodological value lies in the applied analytical logic, where data are used as evidence for decision-making rather than as an end in themselves. This approach facilitated the identification of relevant market patterns, which were directly linked to the generation of

commercial strategies, thereby closing the gap between analysis and action.

A key contribution of this study is the conceptualization of commercial strategies as a manageable project rather than as isolated actions. To this end, a baseline was defined integrating scope (strategies to be implemented), time (execution schedule), and cost (allocated resources). This baseline not only serves a planning function but also becomes the reference point for measuring actual performance, enabling the application of EVM. In this way, commercial management acquires characteristics inherent to project management, incorporating structure, monitoring, and control.

EVM was implemented as the primary evaluation instrument due to its ability to integrate multiple performance dimensions. Unlike traditional commercial indicators, it allows for the analysis of progress against planned objectives, the relationship between effort and advancement, and the consistency between costs and generated value. The calculation of the indicators PV, EV, and AC provided a comprehensive view of performance, while the SPI and CPI indices facilitated interpretation. Monthly monitoring provided not only data but also a dynamic understanding of project behavior over time, which is essential for activating the continuous improvement process.

Finally, the methodological coherence of the approach is grounded in the integration of its components: the framework defines the process, data feed the analysis, the project structures execution, and EVM evaluates performance. This articulation ensures

an evidence-based system, reducing reliance on subjective interpretations. Furthermore, the documentation of the process, including manuals, indicators, and tools enables its replicability in other organizational contexts, particularly in companies seeking to formalize their commercial processes with limited resources.

### 3. RESULTS AND DISCUSSION

For the analysis of project performance, the following variables were defined in accordance with EVM: Planned Value (PV), understood as the budgeted cost of scheduled work; Earned Value (EV), corresponding to the budgeted cost of work performed; and Actual Cost (AC), defined as the incurred cost of the executed work. Based on these variables, performance indicators were calculated: the Schedule Performance Index ( $SPI = EV / PV$ ) and the Cost Performance Index ( $CPI = EV / AC$ ), which enable an integrated evaluation of project progress and efficiency through the S-curve presented in Figure 2.

The implementation of the proposed framework initially demonstrated the system's capacity to transform data into structured commercial decisions. Through the processing of information collected from primary instruments and historical records, it was possible to identify relevant market patterns, such as priority value attributes, differences between user profiles and decision-makers, as well as gaps in product perception. However, the main contribution lies not only in identifying these elements, but in their systematic translation into a portfolio of commercial strategies, thereby evidencing the framework's functionality as a mechanism for bridging analysis and action.

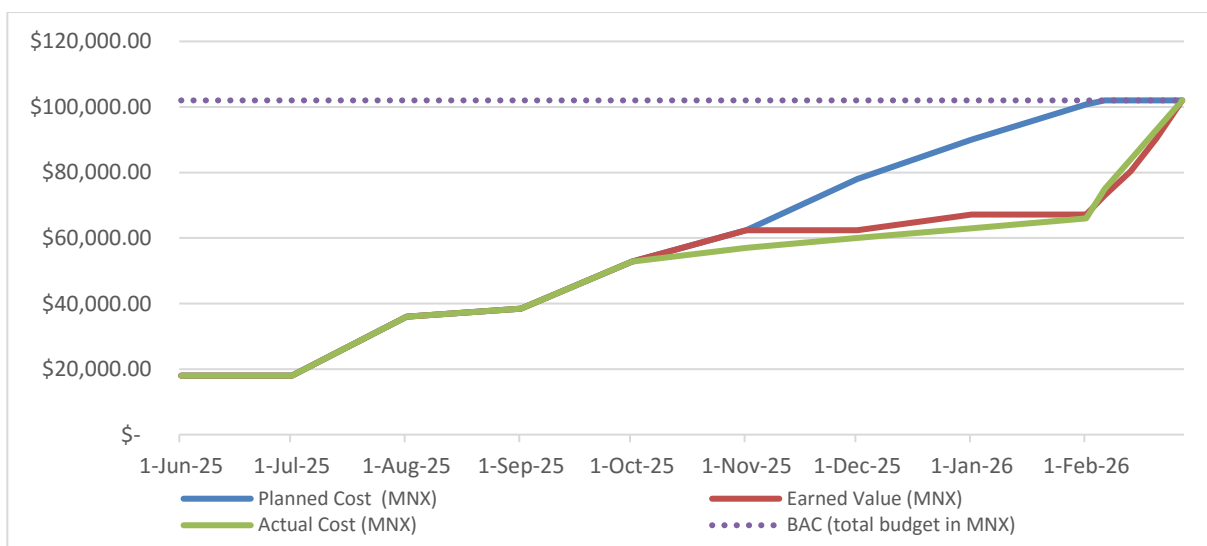


Figure 2: Earned value s-curve

In this context, the management of these strategies was conceived as a formal project, enabling the establishment of a baseline integrating scope, time, and

cost. This methodological decision proved essential for enabling the application of EVM, as it provided the reference point required to evaluate actual performance

against planned targets. As of February 1, 2026, the obtained values (PV = 100,800 MXN, EV = 67,200 MXN, and AC = 66,000 MXN) revealed a significant discrepancy between expected progress and the project's actual advancement.

The interpretation of these results, through the SPI and CPI indices, allowed for a deeper understanding of the nature of this discrepancy. An SPI value of 0.67 indicated a considerable schedule delay, while a CPI of 1.02 reflected cost-efficient execution. This apparent contradiction constitutes one of the most relevant findings of the study, as it reveals that the issue did not lie in resource utilization, but rather in the project's execution dynamics. In other words, the system did not present cost overruns, but rather a misalignment between the initial planning and the effort required to complete the activities.

This behavior is consistent with the project management literature, which establishes that analyzing indicators in isolation may lead to incomplete interpretations, making an integrated approach necessary to fully understand actual performance (Fleming & Koppelman, 2016). In this case, the combined interpretation of SPI and CPI made it possible to identify that the project was progressing more slowly than expected, even though resources were being used efficiently. This distinction is critical from a managerial perspective, as it guides decision-making toward process optimization and effort reallocation, rather than unnecessary budget adjustments.

Based on this interpretation, EVM transcended its traditional control function to become a mechanism for organizational learning. The generated indicators not only revealed deviations but also provided actionable information for the implementation of corrective measures. In particular, the identification of delays enabled adjustments in work intensity during subsequent phases, prioritizing critical activities and redistributing operational resources.

As a result of these actions, the project was able to partially recover from the accumulated delay and conclude within the established total budget, albeit with a slight delay relative to the planned completion date. This outcome is particularly relevant in newly established organizations, where the ability to adapt to deviations is a key factor in ensuring operational and financial viability.

From a broader perspective, the results allow for reflection on the role of EVM within the continuous improvement framework. Rather than functioning as a static measurement instrument, EVM operates as a dynamic component that feeds back into the system, strengthening the continuous improvement cycle. In this sense, performance measurement does not represent the end of the process, but rather the starting point for new

iterations, where the lessons derived from execution are incorporated into future planning.

Finally, the findings provide empirical evidence of the feasibility of integrating project management tools into the commercial function. The formalization of strategy through indicators, baselines, and control mechanisms enables a transition from an empirical approach to a structured one, where decision-making is data-driven. This integration represents a significant contribution by extending the use of EVM beyond its traditional application in engineering projects, positioning it as an effective tool for managing commercial strategies.

#### 4. CONCLUSIONS

The present study validates the application of EVM as an evaluation tool within a continuous improvement framework oriented toward commercial management. The obtained results demonstrate that the incorporation of this approach enables a transition from empirical schemes to structured, evidence-based decision-making models.

In this regard, it is concluded that EVM constitutes an effective mechanism for objectively measuring the performance of commercial strategies by integrating key dimensions such as scope, time, and cost. Furthermore, its articulation with the continuous improvement cycle enhances the organization's ability to iteratively adjust its decisions, promoting a systematic process of organizational learning. Likewise, the use of EVM-derived indicators facilitates the development and consolidation of a portfolio of commercial strategies grounded in data, thereby reducing uncertainty in decision-making.

Additionally, the proposed framework demonstrates relevant characteristics for adoption across diverse organizational contexts, as it is replicable in different environments, scalable according to the organization's level of maturity, and particularly suitable for emerging companies seeking to formalize their commercial processes.

Finally, as a direction for future work, the integration of predictive models is proposed to anticipate performance deviations before they occur, thereby strengthening the system's preventive capacity and expanding its contribution toward proactive management approaches.

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