

**(01-001) - Assessment of the first circumnavigation from a project excellence perspective**

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The "Project Excellence Baseline", published by IPMA, constitutes a framework for project evaluation. This document analyses the First Round the World project, one of the most relevant feats in the history of mankind, using this guide, following its evaluation methodology based on the study of historical documentation of the voyage in the three areas, nine criteria and the corresponding sub-criteria established by the model.

Keywords: excellent projects; magellan; elcano; circumnavigation; assessment; peb

**Evaluación de la primera circunnavegación desde una perspectiva de excelencia en proyectos**

La "Base de Excelencia en Proyectos para alcanzar la excelencia en Proyectos y Programas", publicado por IPMA, constituye un marco de trabajo para la evaluación de proyectos. Este documento analiza el proyecto de la Primera Vuelta al Mundo, una de las hazañas más relevantes en la historia de la humanidad, utilizando esta guía, siguiendo su metodología de evaluación a partir del estudio de documentación histórica del viaje en las tres áreas, nueve criterios y los correspondientes sub-criterios que establece el modelo.

Palabras clave: proyectos excelentes; magallanes; elcano; circunnavegación; assessment; peb

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## 1 Introduction

In 1996, the GPM *Deutsche Gesellschaft für Projektmanagement* developed a project excellence model, based on the EFQM<sup>1</sup> excellence model, which determines the excellence in organizations (Westerveld, 2003). This model for projects was the basis for the International Project Management Association, IPMA, for its Project Excellence Award up to 2002. In 2016, the Project Excellence Baseline (IPMA, 2016) was published by this institution.

According to IPMA (2015), a project is a “unique, temporary, multidisciplinary and organised endeavour to realise agreed deliverables within pre-defined requirements and constraints”. Furthermore, project success is described by this organization as “the appreciation of the project outcomes by the various interested parties” (IPMA, 2016). Understanding the concept of excellence within a project is not easy despite to several reasons. Initially, excellence is a subjective and widespread perception. Furthermore it needs to consider numerous aspects that could influence on (Demarco et al., 2003). The reference model itself considers project excellence as a state of consistently achieving outstanding results by skilfully integrating various project management aspects, such as people, purpose, processes, resources, and results.

This model for project excellence can be utilized to establish a comprehensive framework for initiating or ongoing project, program, or portfolio work. It also serves as a valuable tool for continuous monitoring to ensure the delivery of sustainable results. Additionally, the model can be applied for conducting audits or, more commonly, for the final assessment of project performance. By implementing this model, organizations can effectively evaluate the overall progress and success of their projects, leading to improved outcomes and enhanced project management practices. This approach promotes a proactive and systematic approach to achieving excellence in project execution and delivery.

In this study, the project excellence model is employed to evaluate a historically significant project, as it is the First Circumnavigation of the Earth by Magellan and Elcano. It is important to acknowledge that the model, originally developed for current projects, necessitates different consideration when applied to a project that occurred over 500 years ago. The interpretation of various aspects should be approached with a contextual understanding of the 16th-century societal norms, available resources, technological limitations, and the historical milieu. This approach ensures a comprehensive assessment of project excellence within the specific historical framework, providing valuable insights into project management practices of that era while recognizing the unique challenges faced by the expedition.

## 2 Objectives and justification

The focus of this analysis is the assessment of the expedition developed by Magellan and Elcano, as a project, considering the perspective of excellence proposed in the Project Excellence Baseline.

This document is enclosed in wider research, that includes the expedition description according to the model, its challenges and achievements identification, its strengths and weaknesses analysis and the assessment and its justification. Montero (2023) conducted a partial analysis of the rolls of excellence in this expedition.

History offers an enormous number of project examples, that could be used as a case study for the application of the excellence model. The knowledge, relevance or data access plays a relevant advantage for the research.

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<sup>1</sup> EFQM: European Foundation for Quality Management.

### 3 Excellence Project Model

#### 3.1 Structure of the model

The Project Excellence Baseline identifies three areas (Figure 1):

- People and purpose: The foundation of project excellence is the right people, the leadership to drive improvement and achievement.
- Processes and resources: The excellence is reinforced through appropriate processes and resources, used in an efficient and sustainable manner.
- Project results: The proof or excellence can only be with outstanding and sustainable results for all key stakeholders.

**Figure 1: Areas and their reason in the project excellence model.**



The model structure introduces three different levels:

1. Firstly, the three previously considered **areas**, that represent the main components of the model.
2. The second level corresponds to nine **criteria**, encompassing the key factors that make up the three areas, and allows measurement for development and benchmarking purposes.
3. Lastly, the model also identifies twenty **sub-criteria** that break it down and propose real practices for its implementation.

This schema is shown in the Table 1 sorted by area, then by criteria and, lastly, by sub-criteria.

**Table 1: Model areas, criteria, and sub-criteria.**

A. People & Purpose							
A.1. Leadership & Values		A.2. Objectives & Strategy		A.3. Project Team, Partners & Suppliers			
A.1a. Role models for excellence A.1b. Care for project stakeholders A.1c. Orientation towards project objectives and adaptability to change		A.2a. Managing stakeholders' needs, expectations and requirements A.2b. Development and realisation of project objectives A.2c. Development and realisation of project strategy		A.3a. Identification and development of competences A.3b. Recognition of achievements and empowerment A.3c. Collaboration and communication			
B. Processes & Resources							
B.1. Project Management Processes & Resources		B.2. Management of Other Key Processes & Resources					
C. Project Results							
C.1. Customer Satisfaction		C.2 Project Team Satisfaction		C.3. Other Stakeholder Satisfaction		C.4. Project Results and Impact on the Environment	
C.1a. Customer perception C.1b. Indicators of customer satisfaction		C.2a. Project team perception C.2b. Indicators of project team satisfaction		C3a. Other stakeholder perception C3b. Indicators of other stakeholder satisfaction		C4a. Realisation of results as defined in project objectives C4b. Realisation of results beyond project objectives, including impact on environment C4c. Project performance	

### 3.2 Project maturity

A maturity model is the basis for the development of the project excellence baseline. Following tables show scoring tables according to the criterium is assessed in a 0 to 100 scale.

**Table 2: Scoring table for People & Purpose and Processes & Resources areas.**

PLAN	DO	CHECK	ACT	Score
Defining a sound approach	Applying an approach systematically	Monitoring and analysing results of the chosen approach	Improving and integrating the approach	
An innovative approach is developed to meet the needs of the project	All relevant stakeholders are fully committed to the innovative/ significantly improved approach and systematically apply it	All relevant stakeholders are fully engaged in proactive forecasting of potential areas for improvement	All relevant stakeholders are fully engaged in the proactive improvement of the approach and integration beyond the project	up to 100
A proven approach is significantly improved to meet the needs of the project		Proactive forecasting of potential areas for improvement is driven by project leaders	Proactive improvement of the approach and integration within the project is driven by project leaders	up to 80
An approach is clearly agreed by all relevant stakeholders and fully aligned with the needs of the project	The approach is systematically followed by all relevant stakeholders	Results of the approach are regularly monitored and analysed	Effective actions are taken whenever analysis shows potential for improvement	up to 60
An approach is agreed with some relevant stakeholders and partially aligned with the needs of the project	Key elements of the approach are followed by relevant key stakeholders	Significant variances from planned results are noticed by project leaders within a reasonable timeframe	All major variances observed in key areas of the project lead to improvement actions	up to 40
Some approach is agreed with some relevant stakeholders	Some elements of approach are followed by some of the relevant stakeholders	Major variances in key areas are brought to the attention of project leaders	There are attempts to improve the approach when major variances occur	up to 20
No proof	No proof	No proof	No proof	0

**Table 3: Scoring table for Customer, Project Team and Other Stakeholder Satisfaction criteria.**

Perceived satisfaction level	Expected satisfaction level according to indicators	Link between the approach and satisfaction level	Comparison of the satisfaction level with the industry/sector benchmark	Score
C.1.a/C.2.a/C.3.a	C.1.b/C.2.b/C.3.b	IPMA PEM areas A & B		
Exceptional and expressed proactively	Fully supports exceptional satisfaction	The approach enabled the establishment of a new benchmark	A new benchmark established	up to 100
Exceptional		The approach directly led to exceptional satisfaction level	Outstanding in some areas	up to 80
Positive in all key areas	Positive in all key areas	Clear link in all key areas	Good in all key areas	up to 60
Positive in some areas	Positive in some areas	Clear link in some areas	Acceptable in most areas	up to 40
Neutral	Neutral	Weak link	Acceptable in some areas	up to 20
Negative	Negative	No proof, or approach clearly leads to dissatisfaction	No proof	0

**Table 4: Scoring table for Project Results criteria.**

Realisation of project objectives	Link between the approach and objectives realisation IPMA PEM areas A & B	Trends	Comparison of results with the industry/sector benchmark	Score
Substantially exceeded	The approach enabled the establishment of a new benchmark	Continuously above the benchmark	A new benchmark established	up to 100
Exceeded	The approach exceeded the objectives	Continuously exceeding expectations	Outstanding in some areas	up to 80
All realised	Clear link in all key areas	Continuously positive in all key areas	Good in all key areas	up to 60
Majority realised	Clear link in some areas	Continuously positive in some areas	Acceptable in most areas	up to 40
Only partly realised	Weak link	Periodic	Acceptable in some areas	up to 20
Negative	No proof	No proof	No proof	0

The scoring process concludes in a profile, or **vector of excellence**, comprising the three overarching scores. This vector is delivered from the individual scores corresponding to the sub-criteria, each estimated using the specific scoring table. According to the model, the final score for each area is then determined using the next formulas for the corresponding area:

$$\text{People \& Purpose: } \frac{A.1a + A.1b + A.1c}{3} + \frac{A.2a + A.2b + A.2c}{3} + \frac{A.3a + A.3b + A.3c}{3} \quad (1)$$

$$\text{Processes \& Resources: } \frac{B.1 + B.2}{2} \quad (2)$$

$$\text{Project Results: } \frac{\frac{C.1 + C.2 + C.3}{3} + \frac{C.4ab + C.4c}{2}}{2} \quad (3)$$

### 3.3 Approaches to the assessment

The Project Excellence Baseline is an adaptable and versatile framework, intended for a variety of applications. Predominantly, it is employed for ex-post assessments. However, its utility extends to promoting ongoing enhancement of project processes, ensuring sustained project performance, and conducting project audits (Montero, 2020).

These approaches encompass, on one hand, the areas, criteria, and sub-criteria applied in the specific project or programme, and on the other, the mechanism for the project evaluation or the framework for assigning scores.

## 4 First circumnavigation project

The first circumnavigation of the Earth, performed by Magellan – Elcano expedition, stands as a significant and transcendental event in the human history; not only for the historical context, when it is unfolded, but also for its advanced navigational and maritime achievements, its profound economic and commercial impacts. Furthermore, it altered the world's perception, initiating an early phase of globalization. The expedition, lasting three years and fourteen days, traversed approximately 69,918 kilometres across three oceans, skirting the coastlines of three continents. It commenced with a fleet of five ships and 245 sailors yet concluded with a single vessel and a mere eighteen survivors.

Ferdinand of Magellan, a Portuguese sailor, conceived and improved the idea of a new route to the Species Islands to the west, and found the adequate circumstances and supports in the King of Spain, Charles I.

On August 10, 1519, the Spice Armada expedition set sail from the port of Seville and successfully returned on September 8, 1522. On November 7, 1521, the ships Victoria and Trinidad reached the coveted Moluccas Islands, established friendly relations with the local king of Tidore Island, and loaded the vessels with spices, preparing for the return to Spain.

The initial stages of the journey proceeded as planned by General Captain Magellan, who navigated southward, following the usual route of Portuguese ships to present-day Rio de Janeiro. The search for a passage led the expedition to anchor at Puerto de San Julián for the southern winter, lasting 146 days, marked by a significant mutiny led by Juan de Cartagena, co-captain of the expedition, and the loss of the ship Santiago during exploration. On October 21, 1520, the fleet discovered the desired Strait of Magellan, navigating the 600-kilometer maze of islands and bays in just over a month without incident. During this time, the ship San Antonio deserted and returned to Spain.

The Pacific crossing to the Philippine Islands took 146 days, an unprecedented feat at that time. The journey to the Moluccas lasted almost eight months, involving contact with various local populations. Magellan met his death on April 27, 1521, on the Island of Mactan. Leadership subsequently passed later to Gómez de Espinosa and Elcano, who were elected by the crew.

The voyage began with five ships: the Santiago sank at the Rio de la Plata, the San Antonio deserted in the Strait of Magellan, and the Concepción was scuttled due to disrepair and insufficient crew. The Victoria was the first to begin the return journey, while the Trinidad attempted but failed to make the return voyage, sinking on its way back to Tidore.

On December 21, 1521, the Victoria, led by Juan Sebastian Elcano, embarked on the longest leg of the voyage without anchoring, lasting 153 days. This took them from Timor to

the Cape of Good Hope, across the South Indian and Atlantic Oceans, avoiding Portuguese ships. Lacking food, water, and with significant ship damage, Elcano and his crew anchored in the Cape Verde Islands. Although they initially pretended to come from America, they were discovered, and twelve sailors were captured. Elcano and the rest managed to escape and complete the first circumnavigation of the world.

## 5 Assessment of the project

Considering the different data collected for the research, the Project Excellence Baseline allows to assess the expedition within its three areas: people and purpose, processes and resources, and, lastly, results. This evaluation was conducted by the principal researcher acting as one of the assessors in the IPMA Global Project Excellence Awards.

From the people and purpose perspective, it is evident that the personalities of Magellan and Elcano, as well as the teamwork performed by the crew, and the interaction with the Spanish Crown or the native populations were key factors for the project success.

Based on the analysed information, an assessment has been carried out using the scoring table for the areas of People and Purpose, as shown in Table 5.

**Table 5: Assessment for the criteria A. People & Purpose.**

	Plan	Do	Check	Act	Score
<b>A.1. Leadership &amp; Values</b>					<b>40</b>
A.1a. Role models for excellence	60	40	40	0	35
A.1b. Care for project stakeholders	40	20	40	20	30
A.1c. Orientation towards project objectives and adaptability to change	40	40	80	80	60
<b>A.2. Objectives &amp; Strategy</b>					<b>60</b>
A.2a. Managing stakeholders' needs, expectations and requirements	40	40	40	20	35
A.2b. Development and realisation of project objectives	80	90	80	80	85
A.2c. Development and realisation of project strategy	100	40	60	40	60
<b>A.3. Project Team, Partners &amp; Suppliers</b>					<b>30</b>
A.3a. Identification and development of competences	80	80	40	40	60
A.3b. Recognition of achievements and empowerment	40	20	0	0	15
A.3c. Collaboration and communication	60	20	0	0	20
				<b>Total</b>	<b>45</b>

The analysis of the second area, Processes and Resources, demonstrates a well-defined project management approach. Magellan conducted thorough research using the available sources and collaborated with Ruy Falero, one of the preeminent cosmographers of the time, to design the expedition. Together, they meticulously planned and prepared the voyage, leveraging the expertise of the leading institution of the era, of the Casa de la Contratación. This involved delineating the route, as well as selecting and contracting the ships and crew. Although the formal discipline of Project Management was established much later, its principles have been historically applied, as evidenced in this case by considerations of time, cost, risk, and stakeholder management. The study also examines other crucial resources, such as navigational techniques used, characteristics of the ships, and essential equipment for the journey. Additionally, it is vital to consider how the key figures responded to significant challenges encountered during the voyage, such as food shortages and conflicts with indigenous populations.

Within the related data of this area, the result of the evaluation for Processes and Resources is shown in Table 6.

**Table 6: Assessment for the criteria B. Processes & Resources.**

	Plan	Do	Check	Act	Score
B.1. Project Management Processes & Resources	80	40	20	0	35
B.2. Management of Other Key Processes & Resources	60	40	80	80	65
	<b>Total</b>				<b>50</b>

Lastly, the successful implementation of proper practices in the two facilitating areas, People and Purpose, and Processes and Resources, leads to exemplary outcomes. The Magellan-Elcano expedition not only met its objectives but also accomplished the extraordinary first circumnavigation of the globe. The satisfaction of stakeholders is evident in the Spanish crown's elation with the expedition's success, as well as the joy of the survivors upon completing their titanic task. Additionally, it is important to note the expedition's strategic avoidance of contact with the Portuguese, which is another aspect of the voyage's management worthy of consideration. This assessment also highlights the significant historical impact of the expedition and its comparison to subsequent voyages to the Moluccas.

Evaluating these aspects, the Table 7 shows the scoring in the last area of the model.

**Table 7: Assessment for the criteria C. Project Results.**

	Perceived satisfaction level	Expected satisfaction level	Link between the approach	Comparison of the satisfaction	Score
<b>C.1. Customer Satisfaction</b>					<b>40</b>
C.1a. Customer perception	80		80	80	80
C.1b. Indicators of customer satisfaction		80	80	80	80
<b>C.2 Project Team Satisfaction</b>					<b>20</b>
C.2a. Project team perception	40		40	40	40
C.2b. Indicators of project team satisfaction	20		40	60	40
<b>C.3. Other Stakeholder Satisfaction</b>					<b>60</b>
C3a. Other stakeholder perception	60		60	80	65
C3b. Indicators of other stakeholder satisfaction		20	60	80	55
	Realisation of project objectives	Link between the approach	Trends	Comparison of results with the	Score
<b>C.4. Project Results and Impact on the Environment</b>					<b>75</b>
C4a. Realisation of results as defined in project objectives	100	80	20	40	60
C4b. Realisation of results beyond project objectives, including impact on environment	100	80	60	60	75
C4c. Project performance	100	80	80	100	90
	<b>Total</b>				<b>65</b>

Analysing the obtained score in this facilitator areas, and from the project excellence perspective, it has been observed that while the approach and execution were well performed in many sub-criteria, there was a notable absence of analysis, learning, and improvement during the expedition. As a result, the initially high scores in the "plan" and "do" columns were diminished by the scores in the "check" and "act" columns. A comprehensive academic project should encompass the entire PDCA cycle to ensure continuous improvement and scholarly rigor.

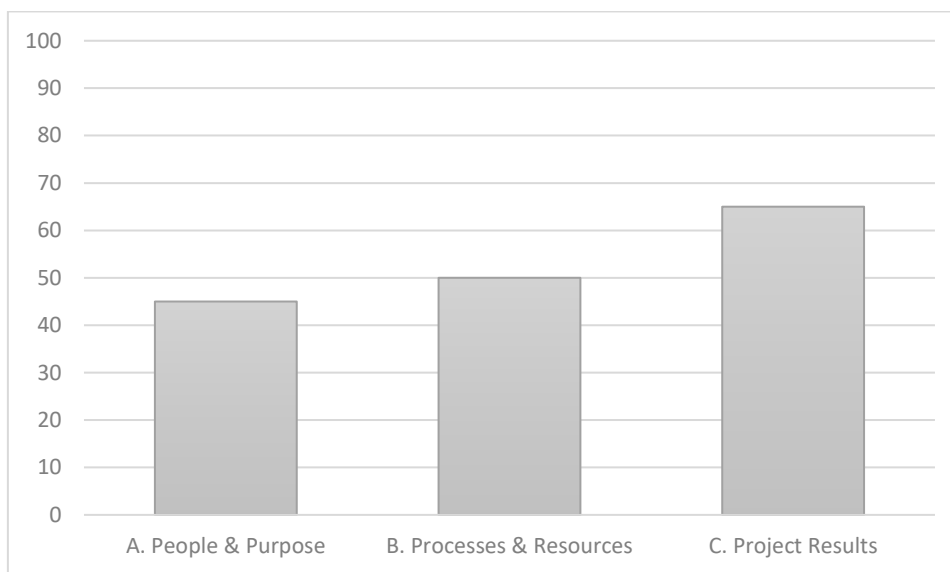


Furthermore, it is essential to highlight that several sub-criteria received high scores, indicating strengths in the project's objectives and strategy implemented during the expedition, as well as the development of competences among the crew, as well as about the results.

Even though there are weaknesses and areas for improvement, the most significant aspect of the expedition as an excellent project lies in the care given to the crew. Ensuring the well-being and safety of the crew members is crucial for the success of any project, including this expedition.

Based on the assessment and utilizing the equations (1), (2) and (3), this vector of excellence (45, 55, 65) is obtained and depicted in the Figure 2. This indicates that the expedition can be regarded as a result-driven project with a well-balanced connection to the facilitator areas. The vector of excellence reflects the successful achievement of objectives and highlights the corresponding integration of the facilitator areas.

**Figure 2: Project Excellence Baseline in the expedition.**



## 6 Conclusions

This document serves as a concise summary of a more extensive analysis conducted on the excellence of the Magellan and Elcano expedition, providing only a partial view. Each scoring presented here is justified based on the available data from this significant historical event.

The application of the Project Excellence Model to this expedition underscores the adaptability and relevance of contemporary project evaluation frameworks to historical feats. However, the analysis also highlights the necessity of contextualizing the model to align with the societal, resource-based, technological, and historical context of other time period. By doing so, the assessment transcends mere anachronistic comparison and evolves into a profound exploration of project management methodologies and challenges of the time. Consequently, this retrospective analysis not only enriches our understanding of historical project execution but also provides timeless lessons on the enduring principles of project excellence that transcend the boundaries of time.

The results of the assessment reflect a comprehensive analysis of the remarkable historical adventure that was the Magellan-Elcano expedition. The vector of excellence reveals notable scores in the areas of "people and purpose" and "processes and resources," with an extraordinary score in the "results" category. However, it's essential to acknowledge that this

scoring is influenced by the management of the crew, particularly in terms of their well-being and safety, which were greatly affected by circumstances such as scurvy.

In terms of excellence, it is important for a project to consider the PDCA cycle, and there are areas, especially related to resources, where improvements could have been made during the expedition. It is worth noting that the model used in this analysis is designed for projects in the present era and may not fully account for the unique characteristics of a 16th-century project.

Key factors contributing to the excellence of this project were effective leadership, high engagement levels among the sailors, interactions with various stakeholders such as the Spanish Crown, indigenous populations, and the Portuguese Crown, as well as a well-defined project management approach. Additionally, the utilization of advanced technology for that time played a significant role. As a result, the satisfaction of the Spanish Crown upon the conclusion of the expedition was substantial, and the overall impact on Spanish strategy and historical significance during that era was remarkable.

It would be intriguing to compare the findings of this research with other historical projects, particularly those conducted within a similar context and time period.

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