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Validation of a measurement instrument to assess the 10 elements for successful organizational transformations in Colombia's Valle del Cauca region

Validación de un instrumento de medición para evaluar los 10 elementos para el éxito de las transformaciones organizacionales en la región del Valle del Cauca en Colombia

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Abstract

The objective of this paper is to validate a measurement instrument based on a five-point Likert scale, which can be used to evaluate the implementation of the 10 Elements proposed for the success of organizational transformations in companies from diverse economic sectors in Colombia's Valle del Cauca region. This study was conducted in three stages: first, the design of the instrument, which included the 10 Elements (categorized into principals and basics) and 40 items (four for each element); second, the administration of the surveys to organizations; and finally, the statistical analysis that verified the reliability of the scale using specialized software, and validity through the work of discriminant and convergent statistics.

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The findings of the study were satisfactory, as demonstrated through the various descriptive statistical indicators used. The results concluded that this instrument can serve as a basis for academic and professional studies interested in evaluating the management of organizational transformation projects.

Overall, this paper provides a thorough and reliable validation of the measurement instrument and its usefulness for evaluating the success of organizational transformations in Colombia's Valle del Cauca region.

JEL Code: L21, L25, M10
Keywords: measurement instrument; validation; strategic transformational projects; organizational success; 10 elements; Colombia Valle del Cauca region

Resumen

El objetivo de este artículo es validar un instrumento de medición basado en una escala Likert de cinco puntos, que puede utilizarse para evaluar la implementación de los 10 elementos propuestos para el éxito de las transformaciones organizacionales en empresas de diversos sectores económicos en la región del Valle del Cauca en Colombia. Este estudio se llevó a cabo en tres etapas: primero, el diseño del instrumento, que incluyó los 10 elementos (clasificados en principios y básicos) y 40 ítems (cuatro por cada elemento); segundo, la administración de las encuestas a las organizaciones; y finalmente, el análisis estadístico que verificó la confiabilidad de la escala utilizando software especializado, y la validez mediante el trabajo de estadísticas discriminantes y convergentes.

Los hallazgos del estudio fueron satisfactorios, como se demostró a través de los diversos indicadores estadísticos descriptivos utilizados. Los resultados concluyeron que este instrumento puede servir como base para estudios académicos y profesionales interesados en evaluar la gestión de proyectos de transformación organizacional.

En general, este artículo proporciona una validación exhaustiva y confiable del instrumento de medición y su utilidad para evaluar el éxito de las transformaciones organizacionales en la región del Valle del Cauca en Colombia.

Código JEL: L21, L25, M10
Palabras clave: instrumento de medida; validación; proyectos de transformación estratégica; éxito organizacional; 10 elementos; Valle del Cauca Colombia

Introduction

As it is widely known, projects lead to strategic changes or organizational transformations. Daft (2007) defines organizational change as the adoption of a new idea or behavior by an organization. The term organizational change or transformation holds special significance in this article due to its close relationship with project management. In other words, organizational change is the pathway taken to transform an organization, enhance its effectiveness, and achieve its objectives. Organizational changes primarily involve structural modifications intended to alter the organizational structure, methods, and processes, among other aspects. Successful organizational transformations should focus on enhancing

organizational competitiveness to effectively respond to market changes, new regulations and standards, economic and technological innovations, and more.

Recognizing that projects support organizational transformations and propel organizations towards a new state, it is worthwhile to examine the concept of successful projects, including those that are part of these transformations. Many experts have offered various definitions of project success. According to Kerzner (2009), traditional metrics such as time, cost, scope, and quality have been the most significant factors in defining project success. More recently, professionals and academics have emphasized that success should also consider the achievement of a project's goals (PMI, 2017, p. 34). De Carvalho (2013) views project success as a subjective concept that depends on the evaluator's perspective. Other authors delve even further. For example, Andersen (2014) suggests that in order to capture the complexity of project success, it should be conceptualized as a multidimensional construct. He differentiates between the success of project management and the success of its deliverables. The former relates to the traditional criteria of the triple constraint (scope, time, cost), while the latter pertains to satisfying the strategic objectives of the project owner and meeting the needs of other stakeholder groups. For organizational transformation projects, project management and change management are crucial, which in turn influence the success of the deliverable or end result.

It is intriguing to observe the evolution of project management models and processes over the years, continually aiming to create success for organizations. Concepts such as maturity, governance, management models, and organizational transformation are frequently mentioned. In this context, Carvajal (2020) proposes a model for organizational transformation projects based on ten dimensions referred to as the 10 Elements. Why elements? This term draws inspiration from chemistry (Please refer to Figure 01), where the combination of two elements produces something as vital as water for the sustenance and survival of living beings. These 10 Elements must be considered to improve the high failure rate often associated with organizational transformation projects.

Carvajal (2020) posits the following hypothesis: “If organizations rigorously apply the 10 Elements to their processes and organizational transformation projects, they can reverse the high percentage of failed projects into successful ones” (p. 24). The aforementioned topic is extensive and somewhat complex to research and analyze. However, it presents a significant challenge to conduct research that yields reliable results and serves as a foundation for future studies supporting the hypothesis. The initial step is to design a survey-type measurement instrument that, once statistically validated, provides support and insights for research conducted by the faculties of Economic Sciences and Engineering at San Buenaventura University - Cali (Universidad de San Buenaventura - Cali).

Theoretical framework

Overview of the 10 elements model

According to Joslin & Müller (2015), there are different types of models and methods applied in project management, including standardized, personalized, or a combination of both. Despite the existence of numerous studies on the topic, there has been a challenge in unifying criteria to establish an ideal model that guarantees greater success. Wysocki (2011) suggests that the expression "one size fits all" does not apply in project management. Russo et al. (2002) also emphasize that the most successful management models are those tailored to an organization and aligned with its context. Researchers such as Ahmadabadi & Heravi (2019) propose ten critical success factors for Public-Private Partnership (PPP) projects, including favorable legal and political support, stable macroeconomics, available finance market, favorable social support, economic viability, reliable contractual arrangements, equipment/labor procurement, government guarantee and experience, strong and good partnering, and reliable private consortium.

On the other hand, according to Iriarte & Bayona (2021), critical success factors for IT projects (adaptive projects with agile methodologies) include senior management's leadership and commitment, clear project objectives, effective communication, risk management, user and project team participation, and project monitoring and evaluation. These factors largely align with the main or strategic elements of the 10 elements proposed for the success of organizational transformations in this research study, such as committed leadership (senior management) and change vision. Both approaches emphasize the importance of direction and leadership in ensuring project and organizational transformation success.

Regarding tactical elements, Iriarte & Bayona (2021) emphasize the significance of a trained and motivated project team, which relates to the Project Team element. Additionally, the authors mention the need for effective change management, which aligns with the Change Management element in this research. Iriarte & Bayona (2021) also acknowledge the importance of project management methodology, which corresponds to the methodology element in the 10 elements proposal.

While governance and the culture of change (understanding) are not explicitly mentioned by Iriarte & Bayona (2021), these factors can be considered implicit in the need for committed leadership and effective communication, which are mentioned by both authors.

These findings lend support to the hypothesis formulated by Carvajal (2020) in his "10 Elements for Successful Organizational Transformations," considering it as a proposal for managing organizational transformation projects. However, this hypothesis needs to be validated and substantiated through applied research.

While the 10 Elements are crucial for successful transformation processes and projects, they should be appropriately balanced throughout the entire transformation process until the defined success indicators for the project are achieved. Previous change experiences and the current state of affairs within an organization will determine the appropriate dosage and combination (Carvajal, 2020, p. 11).

The 10 Elements are defined as follows: four principal Elements that emphasize strategic aspects and require concentrated efforts from top management to ensure higher success rates. These Elements are Governance, Change Vision, Committed Leadership, and Change Culture. Additionally, Carvajal proposes six basic Elements that complement the principal ones. These include Methodology, Project Team, Change Management, Change Management Budget, Performance and Incentives, and Communication & Awareness (Carvajal, 2020).

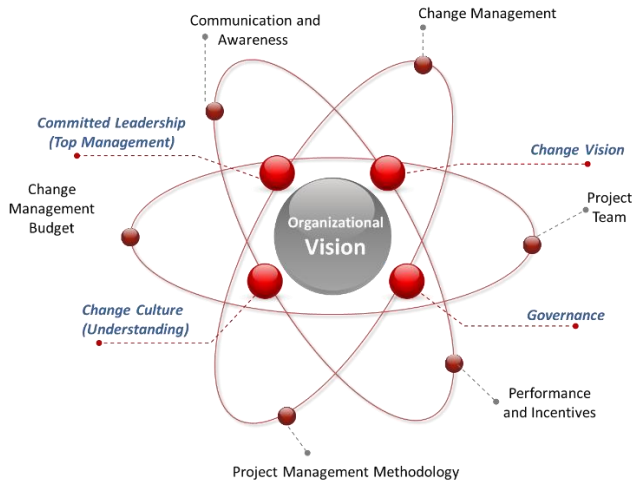

Figure 1. 10 Elements for the success of Organizational Transformations

Principal elements of the 10 elements model

Governance: The concepts of project government, project governance, and governability are intertwined when understanding and realizing the value of project management (Müller et al., 2014). Williams et al. (2010) define project governance as the selection, coordination, and control of projects, programs, and portfolio management. ul Musawir et al. (2020) propose a typology-based approach for project governance that accounts for the collaboration of multiple organizations (Type I - projects led by a single organization, Type II - projects led by a dyad or triad of organizations, and Type III - projects led by a network of organizations). This addresses the complexity of project management. Carvajal (2020)

simplifies the concept by defining governability as the institutional stability and strength that creates favorable conditions for effective decision-making and management. The more streamlined, functional, and effective the project's governance structure, the easier it will be to progress and achieve the intended objectives.

Committed Leadership: Transformational leadership is characterized by a leader's ability to inspire a shared vision and foster strong identification among team members. It goes beyond merely rewarding project activities upon completion (Keegan & Den Hartog, 2004). Top management must exercise committed leadership in strategic projects by being directly involved, hands-on, and providing consistent follow-up (Carvajal, 2020). It is important to note that leadership literature recognizes two basic dimensions: task-oriented and people-oriented. Task-oriented leadership focuses on job design, organization, structure, and control, while people-oriented leadership emphasizes interpersonal elements such as concern for employees, building relationships, trust, recognition, and personal skill development (Weber et al., 2022, p. 226).

Change Vision: As described by Carvajal (2020), represents the “why” and “what for” of a project. It requires a clear, precise, concise, challenging, and motivating vision that is communicated and embraced by all stakeholders involved in a transformation project. Sithambaram et al. (2021) suggest that in agile approaches, having a clear business vision that promotes empowerment and a willingness to embrace change is essential.

Change Culture: Pinto & Slevin (1987) highlight the importance of client acceptance as the final stage of the implementation process, which determines the effectiveness of the project. Therefore, stakeholder participation in the early stages is crucial to improve the likelihood of acceptance later on. This represents a cultural shift. Understanding the organizational response to previous changes and analyzing the effects of the upcoming change are vital to initiate a successful change process (Carvajal, 2020). Change culture is directly related to the organizational context in terms of learning processes and individual and group behavior. Individual behavior within the organization and the adoption of transformations are influenced by stimuli and dynamics of change (Madero & Barboza, 2015). In the context of agile methods, aligning organizational culture is fundamental to support the implementation of transformation initiatives (Sithambaram et al., 2021).

Basic elements of the 10 elements model

Change Management: This refers to a set of methodological practices during a project aimed at supporting the human factor during the transition. Change management includes a series of methodological practices and tools that are important in ensuring successful projects. It is good practice to include change

management from the very beginning when contemplating the possibility of a strategic change and in the development of a business case. The change management team is responsible for determining the potential impact of the transformation on individuals and defining appropriate mitigating actions (Carvajal, 2020). This aligns with the concept presented by Metre (2009), who emphasizes that organizational change management relies on leadership or change agents, organizational culture, and stakeholder commitment, regardless of the nature of the mitigating activities. Change is an integral component of innovation processes, where changes are expected to be generated through the development and implementation of something new. However, resistance to change often limits the implementation of innovation (Kashan et al., 2022).

Performance and Incentives: Measuring performance in line with project implementation is essential, especially at the management level and for the team directly involved in the project. This should be accompanied by a motivational reward and recognition plan to foster commitment (Carvajal, 2020). Authors such as Díez et al. (2012) propose a performance evaluation and its influence on project success. They categorize project management performance evaluation using twenty-two variables, assigning values to performance metrics and establishing indicators that provide necessary information for project management evaluation.

Project Team: The project team is a fundamental element in a transformation project due to its relevance in conceptualizing the project's deliverables and its energy to carry out activities. The project team is typically understood as the basic organizational unit with a significant operational role. Forming and developing project teams aim to generate value collectively that surpasses the sum of the individual contributions. In other words, a project team can achieve results that would be unattainable if each individual worked alone (Kähkönen et al., 2013, p. 372). The project team should consist of highly skilled individuals with excellent technical and personal attributes. Furthermore, their achievements throughout the project should be recognized through a comprehensive incentives program, both motivational and financial (Carvajal, 2020).

Communication and Awareness: Communication and awareness play a key role from a tactical and operational perspective, ensuring stakeholders are synchronized and aligned with the transformation project. When working with human beings, effective communication accompanied by a motivational approach is essential for successful transformations. To have an impact on individuals involved in an organizational change, communication and awareness strategies should be preceded by concrete actions from top management, demonstrating unwavering commitment to the transformation process (Carvajal, 2020, p. 85). Velasco & Lozano (2016) state that different stakeholder groups prefer a formal, interactive communication channel that ensures better understanding of information and clear and effective message transfer with the project team.

Change Management Budget: Adequate funds for change management should be allocated as a formal budget in transformation projects. It is crucial to have financial resources for change management activities allocated from the feasibility study phase of the project and covering activities required after the go-live phase until the success indicators of the transformation process are achieved. Unfortunately, few projects include a detailed cost analysis of change management activities in their pre-feasibility studies. In general, project managers must convince top management of the investment required in change management when taking over a project (Carvajal, 2020, p. 87).

Project Management Methodology: This entails rigorous and disciplined supervision and follow-up of the project plan by top management and governance entities. Each organization must determine the project management methodology that best aligns with its needs and complies with its implementation requirements (Carvajal, 2020, p. 81). Golini et al. (2015) suggest that various researchers consider project management practices as a potential remedy for low performance. In their research, they focus on identifying and evaluating the extent to which management methodologies and tools are adopted.

Research methodology

In general, scientific research often involves the measurement of concepts and variables. However, when these concepts or variables are intangible or complex, measuring them can present significant challenges. Measuring subjective concepts such as perspectives, preferences, or points of view requires defining relevant dimensions and constructing appropriate scales for research.

To ensure the reliability and validity of the measurement instrument, it must meet two fundamental requirements: reliability and validity. Validity refers to the instrument's ability to accurately measure the intended construct (Morgan et al., 2001), while reliability ensures consistent and error-free results across repeated measurements (Kaplan & Saccuzzo, 2006). In this study, the reliability analysis was performed using EQS 6.3 software. The instrument was assessed using three different statistical measures: Cronbach's Alpha, Average Variance Extracted (AVE), and Composite Reliability Index (CRI).

Measurement instruments

The measurement instruments, such as scales, are utilized to quantify attributes, qualities, or properties of completely theoretical constructs or concepts that are otherwise impossible to measure or quantify through alternative means (Bland & Altman, 2002). To assess the perception of the application of the 10 Elements proposed for successful strategic organizational transformation projects, a survey comprising 40 items, four for each dimension or element, was designed and administered among executives from organizations

in the Cauca Valley region in Colombia. The research applied a descriptive approach using a rating scale based on the construction of a five-point Likert scale, where 1 is "never" and 5 is "always" through a characterization of the application of the 10 Elements.

Rating scale

The rating scale used in this study consisted of 40 items/statements corresponding to the 10 dimensions/factors representing each of the proposed Elements. According to Preston & Colman (2000), Likert-type scales with five or more response options exhibit significantly high reliability. Hence, this research adopted a five-point Likert scale, with the following response options: 1 (never), 2 (almost never), 3 (sometimes), 4 (almost always), and 5 (always). Please refer to Annex 1 for the complete scale.

In our context, a five-option scale is more suitable. Likert scales, also known as psychometric instruments, require respondents to indicate their level of agreement or disagreement with a statement or item using an ordered and one-dimensional scale (Bertram, 2007).

Data and sample collection

The target audience was carefully analyzed and identified based on the nature of the study, focusing on individuals with strategic knowledge of their organizations and project management. The following profiles were included in the survey: directors, vice-presidents, senior and middle managers, project coordinators and managers, PMO directors, and consultants from various business units across multiple economic sectors in the Cauca Valley region of Colombia. Before administering the survey, a pretest was conducted involving experts in project management and change management. Based on the feedback received during the pretest, certain adjustments were made to the wording of the items to ensure they were unbiased and aligned with the participants' experience.

Following that, personalized letters were sent to participating organizations, including confidentiality clauses regarding data handling. These letters were addressed to key contacts within the organizations, inviting them or other qualified individuals to participate. The survey could be completed either face-to-face or online, depending on the agreement with each organization. A total of 109 surveys were completed, with 30 being conducted face-to-face at company premises and 79 completed online. The sample of 109 responses was deemed sufficient for the purposes of this study. The survey participants were professionals typically involved in the strategic management of projects within their organizations.

The surveyed organizations represented various economic sectors, with the manufacturing sector being predominant. Please refer to Table 1 for the breakdown of the surveyed economic sectors.

Table 1
Economic Sectors Surveyed

Sector	Number	Percentage
Manufacturing	26	23.90%
Cement	20	18.30%
Holding	17	15.60%
Iron and Steel	13	11.90%
Higher Education	11	10.10%
Construction	8	7.30%
Consulting	7	6.40%
Technology	5	4.60%
Others	2	1.80%

Source: proper elaboration

Results and discussion

This study employed various statistical analyses to validate the scale proposed in the rating model. Specifically, the principal Elements (Governance, Committed Leadership, Change Vision, and Change Culture) and the basic Elements (Methodology, Project Team, Change Management, Change Management Budget, Performance and Incentives, and Communication and Awareness) were subjected to two types of analysis: reliability analysis and validity analysis with discriminant and convergent statistics, utilizing EQS 6.3 software.

Measurement model analysis

The reliability analysis of the scale for both the principal and basic Elements yielded the following results based on the three statistical analyses conducted:

1. Factor analysis: According to the absolute value of factor loadings mean (see Table 2), it can be argued that all elements (principals and basics) are significant, because these values are >= 0.3 (Hair et al., 2010). Governance obtained a mean of the factor loadings at (0.579), Committed Leadership (0.607), Change Vision (0.810) and Change Culture (0.841) for the principal Elements and as for the basic Elements, Methodology (0.663), Project Team (0.629), Change Management (0.754), Change Management Budget (0.694), Performance and Incentives (0.684) and Communication and Awareness (0.692). Additionally, the proportion of variance explained by each element concludes that Change

Culture (12.1%), Change Vision (11.6%) and Change Management (10.8%) are the elements that best explain the phenomenon and they correspond to the topic change.

2. Cronbach's Alpha: The results indicate that Governance has a value of 0.667, Committed Leadership 0.689, Change Vision 0.887, and Change Culture 0.905 as principal Elements. According to Nunnally & Bernstein (1994), the scale is considered reliable with values ≥ 0.70. It is considered validated when the results are ≥ 0.80, and a decision-making recommendation is made when the results are ≥ 0.90. Although Governance and Committed Leadership are slightly below 0.70, they are very close. To determine the reliability of the scale, further statistical analysis is necessary. For the basic Elements, Methodology has a value of 0.754, Project Team 0.734, Change Management 0.839, Change Management Budget 0.786, Performance and Incentives 0.750, and Communication and Awareness 0.784. The results indicate that the scale is reliable.

3. AVE, CRI, and other associated coefficients: The average variance extracted (AVE) suggests that a scale is reliable when the results are ≥ 0.50, as proposed by Fornell & Larcker (1981). The study of the principal Elements achieved an AVE of 0.587 for Governance, 0.629 for Committed Leadership, 0.814 for Change Vision, and 0.844 for Change Culture. These last two values indicate a high level of reliability. As for the basic Elements, Methodology has a result of 0.667, Project Team 0.663, Change Management 0.770, Change Management Budget 0.729, Performance and Incentives 0.717, and Communication and Awareness 0.695. Since the results are greater than 0.50, it indicates that the scale is valid according to the statistical analysis.

Additionally, the composite reliability index (CRI) according to Fornell & Larcker (1981) represents a reliable scale with values ≥ 0.70. The results for the principal Elements are: Governance 0.849, Committed Leadership 0.867, Change Vision 0.946, and Change Culture 0.927. For the basic Elements, Methodology has a result of 0.889, Project Team 0.882, Change Management 0.929, Change Management Budget 0.881, Performance and Incentives 0.906, and Communication and Awareness 0.868. As these values are above 0.70, it demonstrates the validity of the scale based on statistical means. The summary of the measurement model results can be seen in Table 2 of the Measurement Model.

Table 2
Measurement Model

Dimension	Item	R2	Standardized Coefficient	Factor Loadings Mean(*)	Cronbach's Alpha	AVE	CRI
Governance	Gob1	0.318	0.564	0.579 (8.3%)	0.667	0.587	0.849
	Gob2	0.242	0.492				
	Gob3	0.330	0.575				
	Gob4	0.469	0.685				

Dimension	Item	R2	Standardized Coefficient	Factor Loadings Mean(*)	Cronbach's Alpha	AVE	CRI
Committed leadership	Lid1	0.308	0.555	0.607 (8.7%)	0.689	0.629	0.867
	Lid2	0.220	0.469				
	Lid3	0.388	0.623				
	Lid4	0.610	0.781				
Change vision	Vis1	0.519	0.720	0.810 (11.6%)	0.887	0.814	0.946
	Vis2	0.640	0.800				
	Vis3	0.783	0.885				
	Vis4	0.695	0.834				
Change culture	Cult4	0.588	0.767	0.841 (12.1%)	0.905	0.844	0.927
	Cult2	0.770	0.877				
	Cult3	0.724	0.851				
	Cult4	0.756	0.870				
Methodology	Met1	0.437	0.661	0.664 (9.5%)	0.754	0.667	0.889
	Met2	0.461	0.679				
	Met3	0.527	0.726				
	Met4	0.347	0.589				
Project team	Equ1	0.204	0.452	0.630 (9.1%)	0.734	0.663	0.882
	Equ2	0.587	0.766				
	Equ3	0.604	0.777				
	Equ4	0.274	0.523				
Change management	Ges1	0.602	0.776	0.755 (10.8%)	0.839	0.770	0.929
	Ges2	0.325	0.57				
	Ges3	0.686	0.829				
	Ges4	0.711	0.843				
Change management budget	Pres1	0.239	0.489	0.694 (10.0%)	0.786	0.729	0.881
	Pres2	0.715	0.846				
	Pres3	0.708	0.842				
	Pres4	0.359	0.599				
Performance and incentives	Des1	0.671	0.819	0.684 (9.8%)	0.750	0.717	0.906
	Des2	0.340	0.583				
	Des3	0.709	0.842				
	Des4	0.243	0.493				
Communication and awareness	Com1	0.536	0.732	0.692 (9.9%)	0.784	0.695	0.868
	Com2	0.551	0.742				
	Com3	0.403	0.634				
	Com4	0.436	0.66				

Source: proper elaboration
(*) the proportion of variance explained (divide each eigenvalue by the sum of all the eigenvalues)

The analysis of the scale's validity for the principal and basic Elements yields the following results for the analyzed statistics (discriminant and convergent). According to Gefen & Straub (2005), for the scale to demonstrate discriminant validity through this method, the number one should not be present within the resulting interval. This method allows for an examination of whether the scale of a construct is suitable for measuring the relationship with another construct. Two extreme ranges are calculated (upper and lower) based on the correlation coefficients between pairs of Elements used to measure the construct, considering approximately double the standard deviation of the analyzed ratio between the Elements. Please refer to Table 3 for the Test of Reliability Interval.

Table 3
Test of Reliability Interval

Elements	Covariance Correlation Coefficient	&	Lower Limit	Upper Limit
		Principal elements		
GOB, LID	0.239	0.069	0.101	0.377
GOB, VIS	0.248	0.068	0.112	0.384
GOB, CULT	0.239	0.072	0.095	0.383
LID, VIS	0.192	0.054	0.084	0.300
LID, CULT	0.146	0.053	0.040	0.252
VIS, CULT	0.313	0.071	0.171	0.455
		Basic elements		
MET, EQU	0.184	0.052	0.080	0.288
MET, GES	0.281	0.077	0.127	0.435
MET, PRES	0.145	0.045	0.055	0.235
MET, DES	0.372	0.081	0.210	0.534
MET, COM	0.225	0.056	0.113	0.337
EQU, GES	0.183	0.059	0.065	0.301
EQU, PRES	0.101	0.035	0.031	0.171
EQU, DES	0.263	0.071	0.121	0.405
EQU, COM	0.174	0.049	0.076	0.272
GES, PRES	0.354	0.089	0.176	0.532
GES, DES	0.396	0.101	0.194	0.598
GES, COM	0.289	0.076	0.137	0.441
PRES, DES	0.238	0.066	0.106	0.370
PRES, COM	0.133	0.042	0.049	0.217
DES, COM	0.315	0.073	0.169	0.461

Source: proper elaboration

In the test of average variance extracted, the convergent validity of the measurement scale for the construct (principal and basic Elements) can be determined by ensuring that the AVE value of each factor is greater than the squared correlation coefficients of the corresponding Elements. Please refer to Table 4 for the Test of Average Variance Extracted.

Table 4
Test of Average Variance Extracted

Correlation	Correlation Coefficients	Correlation Coefficients Squared	Factor	AVE by factor
		Principal elements		
GOB, LID	0.239	0.057	GOB	0.587
GOB, VIS	0.248	0.062	LID	0.629
GOB, CULT	0.239	0.057	CULT	0.814
LID, VIS	0.192	0.037	VIS	0.844
LID, CULT	0.146	0.021		
VIS, CULT	0.313	0.098		
		Basic elements		
MET, EQU	0.184	0.034	MET	0.667
MET, GES	0.281	0.079	EQU	0.663
MET, PRES	0.145	0.021	GES	0.770
MET, DES	0.372	0.138	PRES	0.729
MET, COM	0.225	0.051	DES	0.717
EQU, GES	0.183	0.033	COM	0.695
EQU, PRES	0.101	0.010		
EQU, DES	0.263	0.069		
EQU, COM	0.174	0.030		
GES, PRES	0.354	0.125		
GES, DES	0.396	0.157		
GES, COM	0.289	0.084		
PRES, DES	0.238	0.057		
PRES, COM	0.133	0.018		
DES, COM	0.315	0.099		

Source: proper elaboration

Convergent validity confirms that the measure used is strongly correlated with other measurements of the same construct (Churchill, 1979). This type of validity can be established by examining the factor loadings of all the indicators within each construct. The principal Elements showed mean factor loadings of 0.579 for Governance, 0.607 for Committed Leadership, 0.810 for Change Vision, and 0.841 for Change Culture. As for the basic Elements, Methodology had a factor loading of 0.663, Project Team 0.629, Change Management 0.754, Change Management Budget 0.694, Performance and Incentives 0.684, and Communication and Awareness 0.692. These results indicate a strong correlation between the indicators and their corresponding constructs. According to Hair et al. (2010), convergent validity is achieved when the dimensions have a value greater than 0.7.

Similarly, the measurement model exhibits the following goodness-of-fit indicators: for the principal Elements, the Root Mean Square Error of Approximation (RMSEA) = 0.079; the Bentler-Bonett Non-Normed Fit Index (BBNNFI) = 0.872; the Comparative Fit Index (CFI) = 0.895; and the Incremental Fit Index (IFI) = 0.899. According to Ullman (2001), the model is deemed adequate with results above 0.9. The aforementioned values are very close to this benchmark, and a RMSEA value between 0.05 and

0.08 indicates an acceptable model (Browne & Cudeck, 1993). As for the basic Elements, the results are as follows: RMSEA = 0.067; BBNNFI = 0.865; CFI = 0.884; IFI = 0.889. Lastly, in the scale obtained from this model, all standardized coefficients are significant with p-values < 0.001, and a majority of the indicators show a substantial percentage of explained variance (R2).

Findings

Based on the results for the principal Elements, it can be observed that the variable that most strongly influences Governance is: Every member of the project's governance structure knows of his responsibility with respect to the success indicators, while the variable that least influences it is: The maximum authority in the organization or a member of the team of that directly reports to him (someone with the most knowledge and experience relative to the project scope) is who defines the governance model and the levels of responsibility on the projects.

For Committed Leadership, the variable that most strongly influences this Element is: The Organization's maximum authority and the members of his team of direct reports reflect their commitment through their actions on the projects, while the variable that least influences it is: The main Sponsor and Project Manager have direct access to the Organization's maximum authority and to its most important governing body (Board of Directors, Presidential Committee, or other)

In the case of Change Vision, the variable that most strongly influences it is: The commitment required of the key stakeholders with respect to the change vision is monitored, while the variable that least influences it is: Before implementing a transformation project, the "why" and "what for" of the new strategy as drivers of the vision are clear to everyone.

Regarding Change Culture, the variable that most strongly influences it is: The assessment is taken into account to adjust the work plans of the projects, while the variable that least influences it is: The impact on people in the organization of previously implemented projects has been assessed.

For the basic Elements, in the case of Project Management Methodology, the variable that most strongly influences it is: Project plans are complied with, while the variable that least influences it is: The Project Executive Committee meeting dates and agenda are adhered to.

As for Project Team, the variable that most strongly influences it is: Systems for recognizing and rewarding project team members are in place, while the variable that least influences it is: When the team to be assigned to a project is formed, the project's importance is clearly explained to the bosses.

In terms of Change Management, the variable that most strongly influences it is: Change management is an integral part of the project implementation methodology, while the variable that least

influences it is: The highest authority of the Human Resources department leads change management on the projects.

For Change Management Budget, the variable that most strongly influences it is: The projects' business cases include a detailed change management budget, while the variable that least influences it is: The organization rigorously monitors compliance with the budgets defined for project implementation.

Regarding Performance and Incentives, the variable that most strongly influences it is: There are policies in place for recognizing and incentivizing individuals who participate in the projects, while the variable that least influences it is: There are consequences for members of the Executive Committee when projects are unsuccessful.

For Communication and Awareness, the variable that most strongly influences it is: The impact of the communication and awareness strategy on stakeholders is assessed throughout project implementation, while the variable that least influences it is: The highest authority in the organization or a member of their direct reporting team (someone with the most knowledge and experience regarding the project scope) leads the communication and awareness activities.

Discussion

Based on the results and findings of the research, it can be concluded that the scale used in the study is reliable, as indicated by the analysis of three statistical measures: Cronbach's Alpha, the average variance extracted (AVE), and the composite reliability index (CRI). Additionally, the scale demonstrates both discriminant and convergent validity, further validating its effectiveness.

The 10 Elements, comprising the four principal and six basic elements, are directly linked to the measurement instrument, with a minimum of four scale items corresponding to each element. It is noteworthy that the evaluation of scale items across different sectors exhibits similar patterns, suggesting that the instrument can be reliably used regardless of the type of transformational project or the application sector.

However, it is crucial to emphasize that the respondents to the instrument should primarily consist of individuals in senior management roles (such as presidents, general managers, sponsors, steering committee members), leaders from functional or operational areas, project managers within the organization, and consultants who have actively participated in organizational transformation projects. These individuals possess the necessary insights and experiences to provide meaningful responses to the instrument.

Conclusions

The validation of this measurement instrument required the guidance of statistical methods, as various descriptive statistics procedures and techniques were employed. The results obtained from these analyses were crucial in determining the validation of the instrument. Notably, indicators such as Cronbach's Alpha, AVE, CRI, RMSEA, among others, played a significant role in supporting the conclusive findings of this study.

The primary conclusion drawn from this research is that the instrument used to measure the application of the proposed 10 Elements for successful organizational transformations in companies across different economic sectors, specifically in the Cauca Valley region of Colombia, is valid and reliable. These conclusions are based on the results of the study and suggest that the instrument can serve as a foundation for academic and professional studies in other regions of Colombia or within the Latin-American context. Among the three statistical measures used to assess reliability, two yielded conclusive results, as evidenced by the average variance extracted (AVE) and the composite reliability index (CRI). While the results of Cronbach's Alpha for two Elements, Governance and Leadership, were very close to 0.7, the remaining eight Elements exceeded this threshold. Notably, the Culture Change Element exhibited a highly favorable value exceeding 0.9. Regarding validity, the confidence interval test results fell within the upper and lower limits for all Elements analyzed. Although some Elements had AVE values slightly below the threshold, they were still considered acceptable as they approached the 0.7 limit.

Limitations and recommendations

During the course of the study, certain difficulties were encountered. Notably, scheduling interviews with the target audience, comprised of upper management personnel, posed challenges due to their limited availability. However, conducting the survey online helped alleviate the impact of this factor. It should be noted that while several organizations were invited to participate, not all provided prompt responses, limiting their involvement in the study.

The structure, types of statements, and wording of the instrument were subjects of continuous discussion within the research team, aiming to reach a consensus and ensure the use of terms suitable for the survey's target audience while minimizing bias.

Based on the presented results, future research can explore sector-specific analyses concerning the application of governance, change management, or any other Elements, generating further avenues of research.

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Annex

Rating instrument

In line with your experience with the success in strategic transformation projects in your organization, grade the following statements on a scale of 1 to 5 where 1 is never, 2 is almost never, 3 is sometimes, 4 is almost always, and 5 is always.

1- Governance: refers to the institutional stability and strength (power) that creates favorable conditions for project management and for effective decision making on their part	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
The governance structures and levels of responsibility (for example: Main Sponsor, Executive Committee, Change Management Committee, Operating Committee, or other decision making instances) of the projects are defined and communicated	1	2	3	4	5
The maximum authority in the organization or a member of the team of that directly reports to him (someone with the most knowledge and experience relative to the project scope) is who defines the governance model and the levels of responsibility on the projects.	1	2	3	4	5
When the Executive Committee of the projects meets, the organization's maximum authority or a member of his team of direct reports is present.	1	2	3	4	5
Every member of the project's governance structure knows of his responsibility with respect to the success indicators.	1	2	3	4	5

2- Committed Leadership (Top Management): Top management should take the lead on strategic projects with direct, in-person, permanent participation and with a good dose of monitoring.	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
The Organization's maximum authority or a member of his team of direct reports (someone with the most knowledge and experience relative to the project scope) is who leads the projects.	1	2	3	4	5
The Main Sponsor and Project Manager have direct access to the Organization's maximum authority and to its most important governing body (Board of Directors, Presidential Committee, or other).	1	2	3	4	5
The Organization's maximum authority or a member of his team of direct reports is responsible for following-up on the projects.	1	2	3	4	5
The Organization's maximum authority and the members of his team of direct reports reflect their commitment through their actions on the projects.	1	2	3	4	5

3- Project Management Methodology: the organizational practices, applied on project implementations, which meet and satisfy their needs. It requires rigorous and disciplined monitoring of the work plan, including change management, by top management and the corresponding governance bodies	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
Monitoring strategic plans is an Organizational practice	1	2	3	4	5
The organization applies the same project management methodology to implement its projects.	1	2	3	4	5
Project plans are complied with.	1	2	3	4	5
The Project Executive Committee meeting dates and agenda are adhered to.	1	2	3	4	5

4- Project Team: The project team should consist of the best human resources, with excellent technical and personal qualifications. Furthermore, they should be rewarded for their accomplishments in carrying out the project with a sound incentives program, both motivational and economic.	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
When project teams are being enlisted, the bosses allow the best resources from their areas or departments to participate.	1	2	3	4	5
Performance measurement systems to evaluate the project team members are in place	1	2	3	4	5
Systems for recognizing and rewarding project team members are in place.	1	2	3	4	5
When the team to be assigned to a project is formed, the project's importance is clearly explained to the bosses.	1	2	3	4	5

5- Change Management: refers to a set of practices applied on the projects to support the people during the transition. It includes the Change Management Team, defined as a group of people dedicated to conceptualizing, implementing, and ensuring the results on the people side of change, beginning with the business case, continuing on during the whole project and into the stabilization process post-project.	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
Change management is included on projects with an organization-wide scope starting from the definition of the business case.	1	2	3	4	5
The highest authority of the Human Resources department leads change management on the projects.	1	2	3	4	5
There is a team that is specialized in change management practices assigned to the project team.	1	2	3	4	5
Change management is an integral part of the project implementation methodology.	1	2	3	4	5

6- Change Management Budget: It is key to have financial resources allocated for change management activities starting with the feasibility study all the way through to those activities required after the go-live and maintained until the transformation's success indicators are achieved.	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
The organization rigorously monitors compliance with the budgets defined for project implementation.	1	2	3	4	5
The projects' business cases include a detailed change management budget.	1	2	3	4	5
The Change Management budget includes the stabilization process after going live.	1	2	3	4	5
Once the change management budget has been approved, the project leadership has full autonomy over its execution.	1	2	3	4	5

7- Performance and Incentives: It is necessary to measure performance during the project, in particular at the management levels and of the team resources directly involved on the project. All of this should be complemented by a recognition plan that motivates and strengthens commitment	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
The executive team's performance measurement and incentive systems are aligned with project objectives.	1	2	3	4	5
Quick wins are celebrated especially on projects that have long implementation processes.	1	2	3	4	5
There are policies in place for recognizing and incentivizing individuals who participate in the projects.	1	2	3	4	5
There are consequences for members of the Executive Committee when projects are unsuccessful.	1	2	3	4	5

8- Change Vision: expresses why the Project exists. There should be a clear, precise, concise, challenging, and motivating vision. It should be communicated and "lived" by all the groups impacted by a transformation project. The vision is an excellent guide for all.	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
Before implementing a transformation project, the why and what for of the new strategy as drivers of the vision are clear to everyone.	1	2	3	4	5
There is a detailed analysis of the impact of this new strategy on other on-going change processes.	1	2	3	4	5
The commitment required of the key stakeholders with respect to the change vision is monitored.	1	2	3	4	5
The change vision is communicated to all the audiences (stakeholders) impacted by the project.	1	2	3	4	5

9- Change Culture (Understanding): To start a change process it is important to know the terrain you will be working on. This means knowing how the organization has confronted previous changes and having a detailed analysis of the impact the coming change will have.	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
The impact on people in the organization of previously implemented projects has been assessed.	1	2	3	4	5
The assessment is taken into account to adjust the work plans of the projects	1	2	3	4	5
There is a detailed assessment of the impact caused by the changes on the work processes as a result of the new strategy.	1	2	3	4	5
The results of the detailed assessment of all the impacts is used to adjust the projects´ work plans.	1	2	3	4	5

10- Communication and Awareness: Considering that we are working with human beings, communication along with motivational work is essential for the success of transformation processes.	Please mark the option that best applies to your organization with an "X"				
	Never	Almost Never	Sometimes	Almost Always	Always
There is a communication and awareness strategy directed at the projects´ stakeholders	1	2	3	4	5
The impact of the communication and awareness strategy on stakeholders is assessed throughout project implementation.	1	2	3	4	5
The highest authority in the organization or a member of their direct reporting team (someone with the most knowledge and experience regarding the project scope) leads the communication and awareness activities	1	2	3	4	5
Top management behavior as relates to the projects is consistent with what is communicated and with the awareness activities that are implemented.	1	2	3	4	5

Name: _____

Position: _____

Date: _____

Thank you for your answers!