

Comparative Comparison of the Elena Project and Value Engineering

Faezeh Omrani and S. H. Yakhchali

Abstract—Today, in a situation in which the world is facing various changes at any moment, organizations have to adapt themselves to these unpredictable changes for Survival in the world village. For this purpose, a significant number of organizations, moved their activities from the traditional way of managing affairs to the management of the organization as project-oriented approaches. The Elena project guide uses a five-dimensional system for project management and leadership that anyway from a perspective, study the project management and leadership. These five dimensions are: Principles, concepts, processes, tools and Fitting. Value engineering is one of the solutions that with using a systematic program and relying on team creativity, while reviewing the project, it identifies saving opportunities and gives it to project managers. At present, the engineering value management technique are used to reduce costs and time while maintaining quality in the most of projects. As we know, given the long history of this management technique, and given the results of the use of this technique in the projects, we find that using the engineering value management technique to achieve these factors which is the same as the demands of the project stakeholders, are considered. In this research is discussed, the problem of integrating value management and the leadership of the Elena project.

Keywords— Value Engineering, Elena Project leadership, Processes, Concepts.

I. INTRODUCTION

Now, to reduce the costs and time while maintaining quality, most of the projects are used the engineering value management technique. As we know, given the long history of this management technique and the results of the use of this technique that used in the projects, we find that using the engineering value management technique is in order to achieve these factors, which is the same as the demands of the project stakeholders. But the question is here: that many projects are engineering valued, but not used an appropriate management tool to implement the engineering workshop and its results.

Today, in a situation where the world is facing various changes at any moment, organizations have to adapt themselves to these unpredictable changes for Survival in the world village. For this purpose, a significant number of organizations, moved their activities from the traditional way of managing affairs to the management of the organization as project-oriented approaches. On the other hand, since one of the most important goals of organizations is survival in the commercial and competitive markets, implementing affairs and goals in

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organizations is realized in the form of various projects. Therefore, it is very important to note that despite the fact that project management is a powerful tool for engaging in the business market, but it does not guarantee that organization achievement to all its purposes.

Every year, a large part of the country's national revenues is spent on investment in development projects and infrastructure projects. Today, executives and designers of construction projects in the country face a lot of problems on their way to achieving their goals due to inappropriate design, complexity of technology, variety of expertise required, the enormous amount of activities, as well as the large number of organizations and individuals involved in the project. Therefore, these projects not done within the framework of the initial cost and timing. Therefore, optimization methods that lead to the implementation of the project within the framework of time and cost, effective help to eliminate the negative effects of the above factors. To do this, different methods and techniques of project management have been developed. One of these methods that comprehensively looks at the above objectives is value engineering. In the life cycle of the project, very important the design and construction phases of a suitable base for valuable engineering studies. Value engineering is one of the solutions that with used by a systematic program and relying on group creativity, while reviewing the project, it identifies saving opportunities and gives it to project managers.

In this research, it is considered a comparative comparison of value engineering with the concepts of the Elena project leadership as a standard in project management. In fact, the study of value engineering consider the planning, quality, risk, progress, event, communication and project procurement and discussed how to change these concepts in the Elena project leadership. In other words, it can be said that value engineering is used to improve project management.

The article is organized as follows: the second part deals with the literature review. The third section describes the research methodology in detail, which includes two sections of the Elena project and value engineering. The fourth part deals with comparative comparisons of the Elena project and value engineering as well as their integration. Section five also concludes with regard to the results.

II. LITERATURE REVIEW

El-Nashar & Elyamany, 2017, considered the application of value engineering to tackle the problem of irrigation canals. In this research, the value engineering method was used to find a substitute for water scarcity which maintains and / or increases

the performance of the water system with minimal cost. Also in another research, Heralova, 2016, study on feasibility the use of value engineering in highway projects. Amirkhani, 2015, study value engineering in the construction and project management. In other research in 2016 by Rachwan, Abotaleb, & Elgazouli, examined the impact of value engineering and sustainability on the value of the project. Abdelghany, Rachwan, Abotaleb, & Albughdadi, 2015, studied the impact of value engineering to improve the value of residential projects. Cheah & Ting, 2005, assessed the value engineering in construction in Southeast Asia. This paper showed a number of principles and methods of value engineering in Southeast Asia. Mahadik, 2015, evaluated the value engineering to reduce costs and sustainability in construction projects. Sharma & Belokar, 2012, studied to achieving succeeded through value engineering. Chen, Chang, & Huang, 2010, evaluated the overall performance of value engineering workshops for construction projects. In this research, hierarchical analysis method has been used to evaluate the value engineering of construction projects. Tohidi, 2011, examined the benefits of using value engineering for IT projects. In this research, the role of value engineering in the process of project implementation is described step by step and the importance of starting the definition of engineering value and its position among different countries was discussed. Youssef, Mohammed, Ibraheem, & Hussein, 2012, analyzed the value engineering in educational buildings in the Egypt.

III. RESEARCH METHODOLOGY

A. Introducing the Elena Project Leadership

Considering that a project can be examined from different dimensions, the Elena project leadership uses a five-dimensional system for project management. These five aspects are: Principles, Concepts, Processes, Tools, and Fitting (Haji Yekhchaly, 1393).

First dimension: Principles

Principles and Foundations, related to the overall project. Basic Principles, are the principles that project management based on them. In fact, the principles are the best solutions related to the project which determines whether the project is originally based on the Elena project leadership or not.

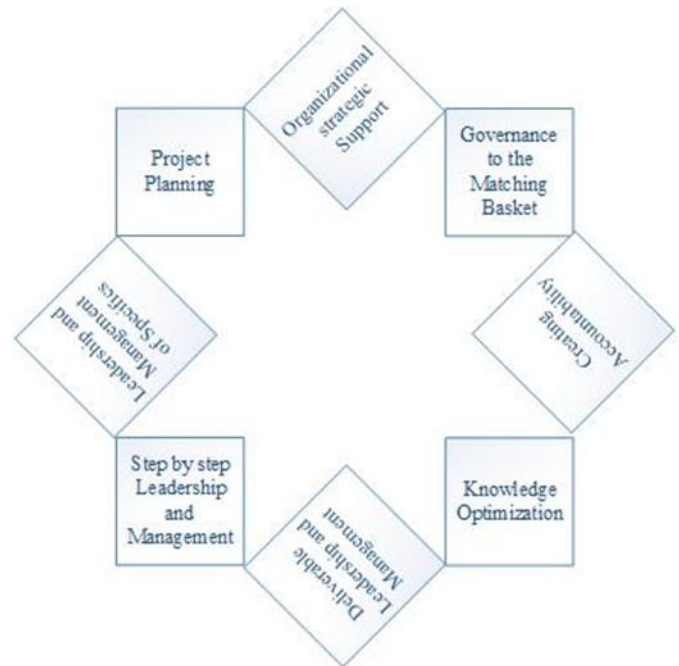


Fig. 1: Eighth Principles of the Elena Project leadership (Haji Yekhchaly, 1393)

* Second dimension: Concepts

Concepts of the Elena project leadership, description the perspective of project management will be applied by processes in the different stages throughout the life of the project. All eight-concepts of the Elena project leadership, in all projects, regardless of size, should be applied in the scope of application and maturity of the organization, but the emphasis and extent of their use varies from project to project.

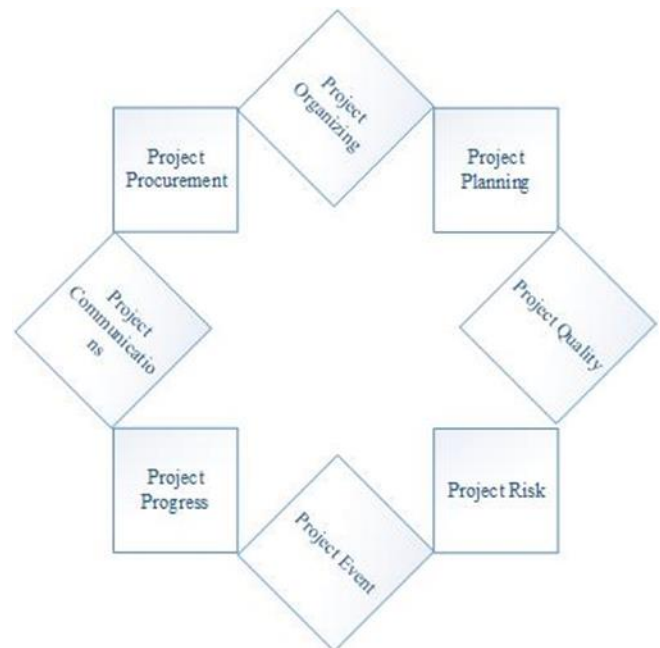


Fig. 2: Concepts of the Elena Project (Haji Yekhchaly, 1393)

TABLE I: THE PURPOSE OF EACH EIGHT-CONCEPTS OF THE ELENA PROJECT LEADERSHIP (SOURCE: WRITER)

Concepts	Purpose
Project Procurement	The purpose of project procurement is planning, providing and controlling the delivery of project-eligible items to the project team outside the project team.
Project Communications	The purpose of project communications is identifying the communication needs of the project stakeholders and planning to meet these communication needs and, finally, implementing the programs developed.
Project Organizing	The purpose of project organizing is define and establish the organizational structure of the project to clarify roles, tasks, and responses.
Project Quality	The purpose of project quality is quality assurance the delivery of the project to enable the project to deliver its delivered items.
Project Planning	The purpose of project planning is the decision in the present time for the future status of all components of the project.
Project Event	The purpose of project event is identify, evaluate and control the project events.
Project Progress	The purpose of project progress is controlling and reporting the actual performance and defined in relation to the performance objectives and also predicts the status of the project's operational goals in the future.
Project Risk	The purpose of project risk is analyzing, scheduling and controlling uncertain events that have a positive or negative effect on project performance goals.

***Third dimension: Processes**

Processes, describe the project step-by-step progress over the lifetime of the before the start, until after the end. Each process consists of a set of sub processes that they are following a specific purpose during the lifetime of the project. Processes are one of the five aspects for the Elena project leadership (Haji Yekhchaly, 1393).

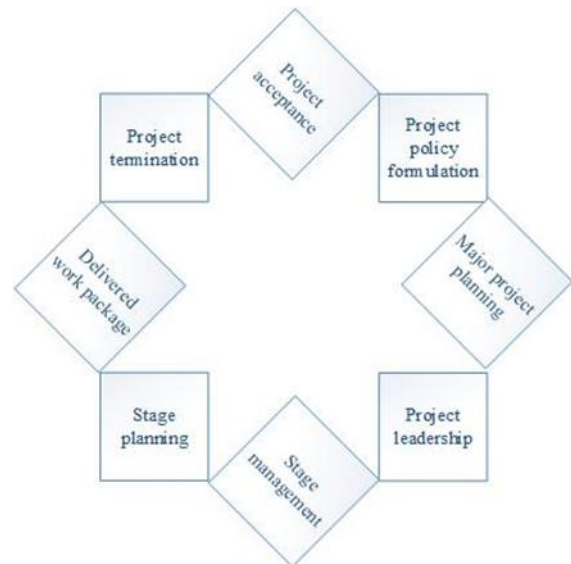


Fig. 3: Processes of the Elena Project (Haji Yekhchaly, 1393)

***Fourth dimension: Tools**

Tools as one of the five aspects for the Elena project leadership, to create the results and implement the actions required for project management. The tools can include software tools or technical tools, such as the critical path method. Given the wide range of tools used in the project, Elena's project toolkit is suggested. This toolkit is used to fit the project's content properties (Haji Yekhchaly, 1393).

***Fifth dimension: Fitting**

The fifth aspect of the Elena project is fitting that makes it possible the Elena project leadership applied for all projects of any size, application area, executive maturity, complexity, geography, and other distinctive features of projects. Fitting in the Elena project leadership is based on a specific framework. In Figure 2-4, the Elena Framework's is presented (Haji Yekhchaly, 1393).

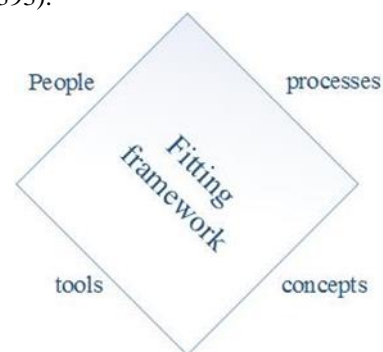


Fig. 4: The fitting framework of the Elena Project (Haji Yekhchaly, 1393)

One of the benefits of the Elena leadership, provide a specific framework to fit this guide for all projects. In other word, Elena project leadership, suggested a distinct method based on the conceptualization, process, tools and people so project managers can easily apply the Elena project leadership for their project with unique features.

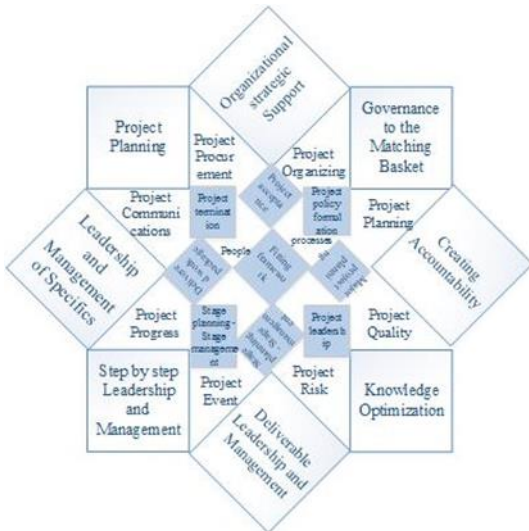


Fig. 5: Elena leadership (Haji Yekchaly, 1393)

B. Value Engineering

A systematic approach to identified techniques that identify product and service functions and for that function, it creates worth value, so that the level of reliability and quality does not go down and the costs are minimized. This is a definition that has been expressed for value engineering by this association. (International Standard for Value Engineering, 1998).

The following results are obtained from the implementation of value engineering as a management tool (International Standard for Value Engineering, 1998):

- Reduce production costs
- Maximize production simplicity
- Reduce production time
- The use of modern and creative thoughts
- Complete customer satisfaction and increase their satisfaction
- To increase the colleagues' satisfaction and motivation by increasing their level of performance
- Optimization of work processes
- Reduce investment costs
- Increase or stabilize the quality
- To ensure the necessary profitability and increase market share
- Increased competition in the market.

IV. INTEGRATION OF VALUE ENGINEERING AND ELENA PROJECT LEADERSHIP

Value engineering in the framework of project management, Meanwhile, it looks at all the components of the design, but does not definite know No part of the job. Value engineering goal is less time to reach the exploitation stage without adding costs or reducing the quality of work.

In this research, study the integrating value engineering with the concepts of the Elena project leadership as a standard in project management that these concepts include:

- Project Procurement
- Project Planning
- Project quality
- Risk of project

- Project event
- Project communication
- Project progress
- Organize the project

In other words, the study of value engineering is addressed in planning, quality, risk, progress, event, communication, organization and procurement of the project and how to change these concepts are discussed in the Elena project leadership.

A. Comparative Comparison of the Elena Project leadership and Value Engineering

In this section, we will look at and compare these two concepts on the subject of project management as well as on project selection. Because the use of the concepts of the ELENA project guidelines and engineering value is very important. In the previous sections, we studied the task of each of the two concepts of the project leadership and value engineering in selecting the project, and in the end, they came up with a summary of them. For this reason, in Table 3-2, the comparative comparison of these two points is mentioned, which is further discussed in Chapter 4.

TABLE II: COMPARATIVE COMPARISON OF THE ELENA PROJECT LEADERSHIP AND VALUE ENGINEERING (SOURCE: WRITER)

From the point of view the Elena project leadership	From the point of view the value engineering
Project definition	
Unique process, includes a set of coordinated and controlled activities with specified start and finish, to achieve a goal in accordance with defined needs and within the limits of time, cost and resources	Temporarily try to build a product or provide exclusive services - Interpreting and simplifying the definition of the project and recognizing the requirements of the applicant in terms of performance and cost.
Features of a project	
<ul style="list-style-type: none"> • Unique, unremitting phases consisting of processes and activities • Having a degree of uncertainty and risk taking • Provides measurable results within the framework of predetermined parameters • Planned start and finish dates with specified cost and resource constraints • It may be long term and subject to internal and external changes over time. 	<ul style="list-style-type: none"> • Performance evaluation relative to any of the financial constraints, manpower, time, and so on • Draw Performance-Value Chart • Draw Performance-Cost Chart
Principles of Quality Management in Strategic Processes	
Is a document that identifies the processes and resources associated with what power and at what time are allocated to a defined project, product, or contract.	Determines which procedures are related to the project components and controls how they are being met. Determines how the project team will implement the quality policy.

Responsibilities and management responsibilities		<ul style="list-style-type: none"> • supply Management: Includes processes for obtaining services from outside the organization. •Final phase of implementation: Approve and record results and reports on project implementation <p>Also, the process of receiving and transmitting information is systematic.</p>	Documenting and recording reports and comparisons
Direct commitment and direct involvement of senior management and project management to create and maintain an effective and efficient quality management system. For example, resolve disputes, visit progress reports, approve planning, and so on.	No mention has been made.		
Focusing on stakeholders		Reviews the Management / Communications	
Projects depend on their stakeholders, and thus they must understand their current and future needs, satisfies the needs of the stakeholders and maximizes their efforts to achieve goals beyond their demands.	Project stakeholders must be identified, their needs identified and managed to ensure project success. During the implementation of the project, changes in the needs of the stakeholders should be observed.	<ul style="list-style-type: none"> • The need for communication • Communication planning • Distribution of communications • Controlling and reviewing logistics •Risk control • Organize fitting <p>Progress reviews should cover all project processes, coverage and opportunity to assess the achievement of project goals. This provides a great deal of information about how the project works.</p>	<ul style="list-style-type: none"> • Compare the ability to build ideas • Matching and comparing executive costs • Investigate the possibility of modifying and combining ideas • Employing group thoughts • Criticize others' suggestions
Leadership and public management		Resource management	
General management skills are the basis for building project management skills and often are essential for a project manager. In each project, skills may be required in each of the public areas of management, such as organization, communication, negotiation, problem solving, and project impact.	No mention has been made.	Includes processes for planning and controlling resources that help identify potential problems. Equipment, facilities, financial facilities, information, materials, personnel, services, etc. are defined as resources.	Value engineering works only with available sources of information.
People's participation		Process related personnel	
Project organization personnel should have job descriptions and responsibilities defined to be active in the project. Authority been entrusted each project person must be fitted with the responsibilities assigned to them.	Contributions of type of ideas-driven and innovative partnerships to improve the process	<ul style="list-style-type: none"> • Includes executive structures and projects • Attracting needed human resources, allocating them and working on the project • Improving the team's ability to function, which ensures the success of the project. 	<ul style="list-style-type: none"> • Establishment of project organizational structure • Identify specialists • Allocate specialist personnel according to the type of processes
Process and system approach to management		Understanding the nature of the product	
<ul style="list-style-type: none"> • Organizational Structure: Organization structure often limits access to resources. In a matrix organizational structure, the project manager has close cooperation with the executive director to determine the priorities and orientate the work of the people assigned to the project. • Public Management Skills: Includes cases in which project management has the necessary skill to control and solve the problem. 	<ul style="list-style-type: none"> • supply Management: Value engineering focuses solely on outcomes and outcomes of processes, so it does not require procurement and resource provision for activities. • General Management Skills Phase: In engineering, the value of identifying and controlling processes is performed to improve processes. • Implementation Final Phase in Value Engineering: 	<ul style="list-style-type: none"> • Processes related to interdependence • Range-related processes • Time related processes • Cost-related processes • Communications-related processes • Risk-related processes • Procurement related processes 	<ul style="list-style-type: none"> •Evaluation and control the processes • Required corrective measures
Measure, analysis and progress		Measure, analysis and progress	
		<ul style="list-style-type: none"> • Receive the progress data • Value analysis of progress • Weighting analyze of progress • Forecast of progress 	<ul style="list-style-type: none"> • Succeeding in documenting •Evaluation of progress reports

<ul style="list-style-type: none"> • progress report 	<ul style="list-style-type: none"> • Performing benefit analysis • Identify the strengths and weaknesses of the implementation
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B. Integrating the Elena Project Leadership with Value Engineering

The necessity of integrating the value engineering process into a comprehensive project management system is a matter of obvious concern. Elena's project leadership include concepts of organization, quality, risk, planning, event, communication, progress, logistics that the need for using value engineering or value analysis in its concepts is necessary. With further reflection, it is important to integrate value engineering in the concepts of the Elena project leadership. The use of value engineering in the concepts of this native standard can take advantage of the benefits of using value engineering in the concepts in question. In the following, in Table 3-3, we discuss how to integrate the engineering value and the concepts of this guide.

TABLE III: HOW TO INTEGRATE VALUE ENGINEERING AND CONCEPTS OF THE ELENA PROJECT LEADERSHIP (SOURCE: WRITER)

Concepts of the Elena project Leadership	Integration with Value Engineering
The concept of organizing	Defining and creating the organizational structure of the project to clarify tasks, roles and responsibilities is the goal of the project's concept of organization. One fundamental to the success of any project is clarifying roles, duties and responsibilities, because the projects are run in a variety of ways. The solidarity of project stakeholders, as well as effective and efficient decision making for the project, has the benefits of clarifying roles and responsibilities. Creating an appropriate organizational structure for each project is a prerequisite for this transparency, so the organizational structure of the project is one of the principles of each project. It is recommended to have a multi-degree team in value engineering. The ability and skills are appropriate to the value of the engineering team members. The assignment of the authority and the responsible duties must be properly determined.
The concept of quality	The quality assurance of project delivery items for delivering delivery items made by the project is a goal of the concept of project quality. Project quality measurement tool are the general features and inherent

	<p>characteristics of the project's deliverable items that determined by the deliverer of the project (user, customer, consumer, etc.). Quality is relevant to the specifications of the delivered items, therefore, in the Elena leadership, quality is considered as a concept.</p> <p>For the integration of value engineering with the concept of the quality of Elena, the issues that are more important and important from the point of view of value engineering are more focused on Elena's concept of quality. The acquisition of valuable information that can be made available to the Value Engineering team and lead to the quality improvement of projects by using quality management and using the concept of quality Elena and collecting data and documentation related to them.</p>
The concept of planning	Deciding now for all future components of the project is the goals of project planning. It is essential to apply processes related to this concept in value engineering. Because the engineering of value in the project features changes, it requires a change in this concept.
The concept of event	Identifying, evaluating and controlling project events is the goal of the project's concept. The failure of the project and the likelihood of occurrence of events during the life of the project are due to losses caused by mismanagement and management of project events. Therefore, the management of events is a permanent activity throughout the life of the project. Having a systematic way of identifying, evaluating and controlling events that are likely to change the project is a must have for each project. Assessing and controlling events that are implemented in projects is one of the requirements of engineering value that should be considered.
The concept of risk	Identifying, analyzing, scheduling, and controlling uncertain events that have a result or disadvantage in project performance goals are the objectives of project risk. Addressing a set of preventive tasks is a project risk task that is expected to modify and achieve project performance goals. Identifying uncertain events

	that may affect project performance objectives (range, time, cost, quality, risk) from project risk tasks. It can have a positive or negative effect. The selection of less risky and often less valued choices, and the rejection of creative choices and delays in decision making, and the existence of risk mismatch in decisions and projects, are necessary to integrate value engineering with the concept of risk.
The concept of procurement	The goal of project procurement is planning, preparing, and monitoring the delivery of essential project supplies from outside the project team. The steps required to purchase or prepare necessary items from outside the project team are the concept of project logistics. The project will be divided into a number of deliverable items if used as a breakthrough structure for deliverable items. It is possible to outsource any of these items outside of the project site. Selection of contractors is the subject of the concept of logistics in the Elena leadership, that is, the contractor is beneficiary, when signing contracts, a material for value engineering is added. Also, the necessary measures are taken to consider and review the proposed modifications proposed by the contractor to suggest a change based on engineering value.
The concept of progress	The goal of the progress concept is Monitoring, controlling and reporting the actual performance, compared with the specified performance objectives as well as the prospect of meeting the objectives of the project's performance. Ensuring that the project, the stage and the work packages are controlled is achieved with the concept of progress. The goals of the progress concept are creating the necessary processes for monitoring and collecting actual data for operational purposes, and then controlling and analyzing this data to identify the deviations. Reports shows the results of these actions. Improvement of control and supervision occurs in the concept of progress that is worthy of value based engineering. The criteria for evaluating performance should be verified by the approved engineering

	standards.
The concept of communication	The purpose of the project communication is identify the communication requirements of the project stakeholders and planning to prepare these communication needs and, at the end of the implementation of the codified programs. The guarantor of the development of functional goals and, ultimately, the success of the project is the perfect and complete communication in the project. Identifying all effective people and all those affected by the project should be the subject of this matter. Then, the correct planning takes into account the results of analyzing their needs in order to meet their needs. It is essential to utilize planned communications in accordance with the approved program and to ensure their efficiency. Also, in this concept, communication measures and, ultimately, implementation of programs should be made according to the rankings that value engineering specifies.

V. CONCLUSION

Value engineering is management approach and creative vision that utilizes the value engineering to be a system approach which seeks to find the best balance between cost, credibility and reliability in products or projects. Applying this approach to the life cycle of the project and its position in the concepts of the project management process can play an effective role in developing its application in the designs. In fact, value engineering should be considered as a kind of management tool for solving a problem in a wide range of uses by anyone.

These concepts are discussed by applying the contents and concepts of the standard of the Elena project leadership in the project management topics, comparative comparisons and the effectiveness of value engineering. In addition to familiarizing with the Elena project leadership and its implications and applying value engineering in these discussions, it helps to understand this issue further. The results indicate that value engineering measures play an important role in determining the efficiency of decision-making units, so combining engineering value criteria along with the criteria of the ELENA project leadership can play a decisive role in the correct selection of projects.

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