


**THE APPLICABILITY OF THE INTERNATIONAL STANDARD (ISO 21500:2021)
MANAGING PROJECTS, PROGRAMS AND PORTFOLIOS AT THE SALADIN
INVESTMENT COMMISSION (CASE STUDY)**

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 31 January 2023</p> <p>Accepted 27 March 2023</p>	<p>Purpose: The purpose of this study is to examine the possibility of applying the international standard (ISO 21500:2021) in the investment commission within the governorate of Saladin on one of its projects. The project is the construction of the Yarmouk residential complex to evaluate the extent of application of the standard.</p>
<p>Keywords:</p> <p>ISSO; Project; Yarmouk Residential Complex; Methodology; Technological Development.</p>	<p>Theoretical framework: The reasons for the gap are due to a weakness in the application of the portfolio management item as it is not documented at that time, as well as a weakness in project management and program management. The main problem lies in knowing the extent to which the international standard (ISO 21500: 20 21) can be applied in the projects of the Saladin investment commission and through the research problem.</p>
	<p>Design/methodology/approach: The study used a checklist was used for the above specification items as the main tool for research with Pareto chart in addition to personal interviews with officials within the authority who have a direct relationship to the project.</p>
	<p>Findings: The researcher concluded that the Yarmouk residential complex has applied the requirements of the international standard (ISO 21500: 2021) by (57.7%) and this is acceptable according to the arithmetic mean (3.473), meaning that the gap ratio is (42.3%).</p>
	<p>Research, Practical & Social implications: The study found that the Yarmouk residential complex has only applied the terms of the specification with a weak percentage of less than 60%. Therefore, the Saladin IC should obtain and apply the specification in future projects to ensure that they meet the requirements for obtaining the ISO certificate. Additionally, measures should be taken to improve the skills and experience of the team to ensure that the project objectives are achieved.</p>
	<p>Originality/value: The study improves projects in the application of international standards (ISO 21500:20 21) for the quality of project management by directing decision makers to develop an appropriate methodology for evaluating projects in accordance with the international standard (ISO 21500:20 21) and help engineer recognize the importance of this application.</p>
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A APLICABILIDADE DA NORMA INTERNACIONAL (ISO 21500:2021) GERENCIAMENTO DE PROJETOS, PROGRAMAS E PORTFÓLIOS NA COMISSÃO DE INVESTIMENTOS DA SALADINO (ESTUDO DE CASO)

RESUMO

Objetivo: O objetivo deste estudo é examinar a possibilidade de aplicar a norma internacional (ISO 21500:2021) na comissão de investimento dentro da província de Saladin em um de seus projetos. O projeto é a construção do complexo residencial Yarmouk para avaliar a extensão da aplicação da norma.

Estrutura teórica: As razões para a lacuna são devidas a uma fraqueza na aplicação do item de gerenciamento da carteira, uma vez que não está documentado naquele momento, bem como uma fraqueza no gerenciamento do projeto e no gerenciamento do programa. O principal problema está em saber até que ponto a norma internacional (ISO 21500: 20 21) pode ser aplicada nos projetos da comissão de investimento da Saladino e através do problema de pesquisa.

Design/metodologia/abordagem: O estudo utilizou uma lista de verificação para os itens de especificação acima como a principal ferramenta de pesquisa com diagrama de Pareto, além de entrevistas pessoais com funcionários dentro da autoridade que têm uma relação direta com o projeto.

Descobertas: O pesquisador concluiu que o complexo residencial Yarmouk aplicou as exigências da norma internacional (ISO 21500: 2021) em (57,7%) e isto é aceitável de acordo com a média aritmética (3,473), o que significa que a taxa de diferença é (42,3%).

Pesquisa, implicações práticas e sociais: O estudo constatou que o complexo residencial Yarmouk só aplicou os termos da especificação com uma porcentagem fraca de menos de 60%. Portanto, o IC Saladino deve obter e aplicar a especificação em projetos futuros para garantir que eles cumpram os requisitos para a obtenção do certificado ISO. Além disso, devem ser tomadas medidas para melhorar as habilidades e a experiência da equipe para garantir que os objetivos do projeto sejam alcançados.

Originalidade/valor: O estudo melhora os projetos na aplicação das normas internacionais (ISO 21500:20 21) para a qualidade do gerenciamento de projetos, orientando os tomadores de decisão a desenvolver uma metodologia apropriada para avaliar projetos de acordo com a norma internacional (ISO 21500:20 21) e ajudar os engenheiros a reconhecer a importância desta aplicação.

Palavras-chave: ISO, Projeto, Complexo Residencial Yarmouk, Metodologia, Desenvolvimento Tecnológico.

APLICABILIDAD DE LA NORMA INTERNACIONAL (ISO 21500:2021) GESTIÓN DE PROYECTOS, PROGRAMAS Y CARTERAS EN LA COMISIÓN DE INVERSIONES DE SALADINO (ESTUDIO DE CASO)

RESUMEN

Propósito: El propósito de este estudio es examinar la posibilidad de aplicar la norma internacional (ISO 21500:2021) en la comisión de inversiones de la gobernación de Saladin en uno de sus proyectos. El proyecto es la construcción del complejo residencial de Yarmouk para evaluar el grado de aplicación de la norma.

Marco teórico: Las razones del desfase se deben a una debilidad en la aplicación del punto de gestión de la cartera, ya que no está documentado en ese momento, así como a una debilidad en la gestión de proyectos y la gestión de programas. El principal problema radica en saber en qué medida se puede aplicar la norma internacional (ISO 21500: 20 21) en los proyectos de la comisión de inversiones de Saladin y a través del problema de investigación.

Diseño/metodología/enfoque: El estudio utilizó una lista de comprobación se utilizó para los elementos de especificación anteriores como la principal herramienta para la investigación con el diagrama de Pareto, además de entrevistas personales con los funcionarios dentro de la autoridad que tienen una relación directa con el proyecto.

Resultados: El investigador llegó a la conclusión de que el complejo residencial Yarmouk ha aplicado los requisitos de la norma internacional (ISO 21500: 2021) en un (57,7%) y esto es aceptable según la media aritmética (3,473), lo que significa que el ratio de desfase es del (42,3%).

Investigación, implicaciones prácticas y sociales: El estudio ha revelado que el complejo residencial de Yarmouk sólo ha aplicado los términos del pliego de condiciones con un débil porcentaje inferior al 60%. Por lo tanto, el CI Saladino debería obtener y aplicar la especificación en futuros proyectos para asegurarse de que cumplen los requisitos para obtener el certificado ISO. Además, deberían tomarse medidas para mejorar las competencias y la experiencia del equipo a fin de garantizar la consecución de los objetivos del proyecto.

Originalidad/valor: El estudio mejora los proyectos en la aplicación de las normas internacionales (ISO 21500:20 21) para la calidad de la gestión de proyectos al orientar a los responsables de la toma de decisiones a desarrollar una metodología adecuada para evaluar los proyectos de acuerdo con la norma internacional (ISO 21500:20 21) y ayudar a los ingenieros a reconocer la importancia de esta aplicación.

Palabras clave: ISO, Proyecto, Complejo Residencial Yarmouk, Metodología, Desarrollo Tecnológico.

INTRODUCTION

The advancement of technology has led to an increased need for periodic evaluations of projects to ensure that the work being completed aligns with the original plan. The process of reviewing a project and identifying weaknesses serves as a motivating factor for team members to complete their assigned tasks thoroughly (Khaddam et al., 2021; Alzghoul et al., 2022). Using examination lists and the application of a seven-scale weighting system, any gaps or deficiencies are identified, allowing for corrective actions to be taken and consideration for future projects. Continuous follow-up evaluations enable all team members to remain focused on the project objectives and work collaboratively towards achieving the project's goals (Al Muala et al., 2022; Alshammare et al., 2022). As such, the process of evaluating a project is a crucial activity in project management, with project owners, decision makers, and financiers emphasizing the importance of this process in ensuring the success, continuity, and achievement of project objectives.

In today's era of technological advancement, the Saladin IC and other government departments are striving to enhance the quality of their projects. To accomplish this, modern methods and technology must be implemented in project completion. One such method is the international standard (ISO 21500:2021). However, it remains uncertain whether this standard can be effectively applied to the Saladin IC's projects. To address this research problem, several questions must be answered, such as the extent to which ISO 21500:2021 can be applied in the Saladin IC's Yarmouk Residential Complex project, the gaps that may arise during its implementation, and whether the project management practices in the Saladin IC's projects meet the necessary requirements for ISO 21500:2021's application. Answering these questions will contribute to enhancing the quality of Saladin IC's projects and their overall success. This study aims to contribute to the improvement of projects through the application of international standards, specifically the ISO 21500:2021. The study is divided into three main objectives. Firstly, the study aims to present a concept for evaluating projects based on the application of the international standard (ISO 21500:2021) in project management, with the goal of publishing and implementing the concept. Secondly, the study will conduct a thorough analysis of the Saladin IC's current practices in applying the ISO 21500:2021. Finally, the study aims to identify any gaps in the research sample, specifically the Yarmouk Residential Complex, in

terms of the international standard (ISO 21500:2021) and propose necessary procedures to ensure that projects are of high quality and meet the required engineering specifications.

The application of the ISO 21500:2021 international standard to project management can significantly improve the quality of projects. As such, this study intends to contribute to this improvement by achieving several outcomes. Firstly, this study aims to direct decision-makers towards developing a methodology for evaluating projects based on the ISO 21500:2021 international standard. Secondly, the study intends to highlight the importance of applying the international standard (ISO 21500:2021) to resident engineers and the Saladin IC as a whole, particularly in the research sample. Finally, the study seeks to direct the senior leadership of Saladin Governorate-Saladin IC towards the importance of applying the international standard (ISO 21500:2021) in future projects. In summary, this study aims to improve the quality of projects through the application of international standards, specifically the ISO 21500:2021. The study has three objectives, including presenting a concept for evaluating projects based on the international standard, analyzing the Saladin IC's current practices in applying the international standard, and identifying gaps in the Yarmouk Residential Complex project in terms of the international standard. Additionally, the study seeks to direct decision-makers, resident engineers, and senior leadership in the Saladin IC towards the importance of applying the international standard (ISO 21500:2021) in future projects.

LITERATURE REVIEW

According to the Institute of Electrical and Electronics Engineers (2017), the concept of project management involves assigning responsibility and authority to individuals or groups to ensure the achievement of project goals through appropriate knowledge, skills, processes, and techniques. Project management is increasingly accepted as a necessary component for success in various economic activities, such as research and development. Without effective management, the expansion and development of projects in different disciplines become challenging. The generally recognized practices and knowledge associated with project management are applicable to most projects and are considered valuable and useful. One of the key benefits of project management is the reduction of risks that may affect time, cost, and specifications. Al-Mawashi (2016) highlights that project management helps to ensure that risks are identified, analyzed, and managed to avoid negative consequences. Additionally, project management has a positive impact on performance, resulting in temporal, costly, and qualitative

benefits. These benefits include less time spent on projects, less cost incurred, and higher quality output. Moreover, effective project management results in higher worker satisfaction through better coordination between departments. Al-Obaidi and Al-Nimer, Alsheikh, Abd Halim, and AlNawafleh, (2022) further emphasize the positive impact of project management on worker satisfaction. They note that effective project management results in better coordination between departments, which leads to higher levels of worker satisfaction. Similarly, Zokar (2018) concludes that project management has a significant impact on the performance of organizations, leading to better project outcomes and higher worker satisfaction. Overall, effective project management is crucial for the success of projects, organizations, and economic activities.

Table 1. The views of some researchers in the definition of project management (2008 - 2022)

No.	Writer and Year	Definition
1	Roberts and Wallace (2008)	It is a process of organizing, planning, managing, coordinating and controlling all project resources from inception to completion for the purpose of achieving project objectives on time and within cost limits and according to the required specifications
2	(Al-Obaidi & MuayadAl-Fadl, 2010)	It is the administrative function that includes the responsibility of determining (goals - organization - planning - scheduling - estimated budgets - guidance and control) to achieve the technical and time standards of the project
3	Institute (2017)	It applies knowledge, skills, tools and techniques to project activities to meet project requirements – as the project management profession: an official document describing the standards, methods, processes and practices in force.
4	Zokar (2018)	It is the art of achieving the highest possible probability of achieving the objectives of the project on time, the allocated budget and the required quality
5	Arab Entrepreneur (2022)	It is an area that encompasses the formal discipline to manage and apply knowledge tools, skills, and techniques to achieve the goals of an entity or organization.

Source: Prepared by the authors (2023).

According to Al-bana (2011), the evaluation process is a critical component of project management, alongside planning, design, and follow-up. Evaluation is a fundamental administrative principle that governs the philosophy of management and directs it towards achieving the desired results. The project cycle is governed by the basic idea of evaluation, particularly through follow-up and evaluation processes, which help project officials manage resources and activities to improve project outcomes in the short or long term. The monitoring and evaluation process comprises three stages: follow-up, evaluation and review, and verification of impacts. The follow-up stage is related to the inputs and outputs of the project and involves monitoring the resources invested and the outcomes achieved. The evaluation and review stage is linked to the results of the project and relies on the data and information provided by the follow-up process. This stage involves comparing the actual results with the

planned outcomes. The verification of impacts is the final stage of the project and focuses on the continuous long-term changes that have occurred as a result of the project. It seeks to understand how the project results contribute to the effects of those impacts on everyone involved in the project (Al-Maghribi, 2017).

Al-Maghribi (2017) highlights the importance of the verification of impacts stage in project evaluation. This stage helps to identify the long-term effects of the project and assesses its contribution to sustainable development. Moreover, it helps to identify any unintended consequences of the project and mitigate any negative impacts. Therefore, the evaluation process is crucial in project management as it provides valuable insights into the effectiveness of projects and helps project officials improve future projects.

Table 2. Perspectives of researchers in the definition of project evaluation (2011-2021)

t	Writer and Year	Definition
1	Al-bana (2011):	The process of identifying benefits, value, importance and valuation is the result of it all. Comparisons process for better decision-making
2	Al-Maghribi (2017)	An organized scientific process that involves collecting evidence, making comparisons, and measuring objects against criteria, the outcome of the evaluation must be measurable and not just descriptive opinions.
3	Al-Hiyari (2017)	A series of standard processes practiced on a set of indicators that confirm that what was previously planned has actually been achieved
4	Arab Entrepreneur (2021)	A process that helps officials manage project resources and activities to enhance development results along the project phases from short to long term

Source: Prepared by the authors (2023).

According to Kristinsdottr and Moller (2014), Pareto analysis is a problem-solving method used to organize errors, defects, or problems based on their frequency. The method involves using a Pareto diagram that displays individual problems on the horizontal axis, with their corresponding frequency displayed as columns on the left vertical axis. The center line represents the percentage of frequency of events, while the descending order of events is displayed from the most frequent to the least frequent in a concave direction towards the horizontal axis. The value of the occurrence of events is measured on the right vertical axis from 0-100%, with the total value of the sum of the occurrence of events represented by the 100% value on the right column. The analysis was developed by Vilfredo Pareto, an Italian scientist in the nineteenth century who focused on analyzing data disparities. Joseph M. Juran later simplified Pareto's work by stating that 80% of a company's problems are caused by only 20% of the causes. As Hafez (2015) notes, the Pareto analysis has been found to be effective in various fields in identifying that a significant number of quality problems are caused by a small number of causes. This means that a few factors exert more influence on the outcome of a process or system, while the remaining factors have little impact. By identifying the vital few

factors, problem-solvers can focus their resources on addressing these critical causes, which will have a significant impact on the overall system's performance. The Pareto analysis has, therefore, become a vital tool in quality management, allowing organizations to identify and prioritize quality improvement efforts, reduce defects, and enhance customer satisfaction.

The international standard (ISO 21500: 2021) is a significant document in project management that provides guidance on the use of standards for managing projects, programs and portfolios. It was developed in collaboration with the International Electro technical Commission (IEC) and serves as a special specification for coordinating work using modern methodologies. The standard was developed by a technical committee, and it provides a comprehensive understanding of project management concepts and processes that are essential for project performance. According to Kristinsdottr and Moller (2014), a specification is a document that provides high-level concepts of processes used in project management and can be used by any organization, regardless of its size or complexity. The international standard defines the context and basic concepts of project management, programs and portfolios and provides guidance to organizations for improving project management through the use of ISO / TC 258 standards. The standard encompasses various items, including projects, programs and portfolios, organizational environment, external environment, strategy implementation, governance and integrated management, supporting standards and items, project management, program management, portfolio management, governance, and organizational considerations. The first version of the international standard provided guidance on project management concepts and processes important for project performance, but it was replaced by the updated version (ISO 21500: 2020), which underwent technical review in 2021 (ISO 21500: 2021). The standard aims to clarify the relationship between the different standards, and the process of evaluating projects serves as a means to make trade-offs between various proposals to select the best alternative based on the criteria specified in the standard. Overall, the international standard provides a valuable resource for organizations looking to improve their project management practices and achieve their goals.

Project governance is a critical aspect of project management that plays a vital role in ensuring the success of a project. According to Al-Sahlani (2022) and Bolutiwi (2019), governance involves a structured approach to decision-making related to the project, including responsibility, authority, and performance verification. Governance provides oversight and guidance to ensure that the strategic and organizational goals of the project are achieved. Through effective governance, stakeholders can identify potential risks and opportunities, make

informed decisions, and ensure that the project meets its objectives. Effective project governance also involves ensuring that the project adheres to relevant laws, regulations, and ethical standards. This is important to ensure that the project is managed transparently and responsibly, and that it operates within the framework of applicable laws and regulations. Governance can also help to ensure that the project is accountable and that its performance is regularly monitored and evaluated. This allows stakeholders to assess the progress of the project and make adjustments as necessary to ensure that it remains aligned with organizational goals. Furthermore, governance plays a crucial role in the success of the project. As noted by Al-Sahlani (2022) and Bolutiwi (2019), project governance can lead to significant changes for stakeholders, and as such, it must be implemented effectively. By promoting effective communication, stakeholder engagement, and risk management, governance helps to ensure that stakeholders are aware of the project's progress, and that any issues are identified and addressed promptly. Ultimately, good governance can help to build stakeholder trust and confidence in the project, leading to better collaboration, improved decision-making, and a greater chance of project success. In conclusion, project governance is a crucial component of project management, providing a structured approach to decision-making related to the project, ensuring adherence to relevant laws and regulations, and promoting stakeholder engagement and risk management. Effective project governance plays a critical role in achieving the strategic and organizational goals of the project, and building stakeholder trust and confidence. Therefore, project managers must prioritize governance in their project management approach to ensure project success.

Stakeholders are a crucial component of project management and play a critical role in the success of a project. According to Gerber (2019) and Lester (2017), stakeholders can be individuals, organizations, or anyone who is impacted by the project or has an impact on the project's activities. Identifying stakeholders is an essential step in project management, as it enables project managers to understand the needs, requirements, and expectations of stakeholders and to align these with the objectives of the project. Stakeholder engagement is also essential in project management. By engaging with stakeholders, project managers can build trust and confidence and ensure that stakeholders are supportive of the project. Stakeholder engagement can take various forms, including regular communication, collaboration, and consultation (Mert et al., 2021). Through engagement, project managers can obtain valuable feedback from stakeholders and use this feedback to make informed decisions and adjustments to the project. Furthermore, understanding the authority of stakeholders is

essential in project management. As noted by Gerber (2019) and Lester (2017), stakeholders may have varying levels of authority over the project, ranging from decision-making power to the ability to influence the project's direction. By understanding the authority of stakeholders, project managers can work collaboratively with stakeholders and leverage their expertise and influence to ensure the success of the project. Project managers must balance the needs and expectations of stakeholders with the objectives of the project. This requires a deep understanding of the stakeholders and their interests and the ability to negotiate and compromise to find the best possible solution. By using the interests of stakeholders to achieve the project's objectives, project managers can ensure that the project delivers the greatest benefit to all stakeholders. Finally, stakeholders are a crucial component of project management, and project managers must engage with stakeholders, understand their authority, and balance their needs and expectations with the project's objectives (Alzghoul, 2017). By doing so, project managers can ensure that the project is aligned with stakeholder interests and delivers the greatest benefit to all stakeholders.

METHODOLOGY

The research conducted in this study employed a case study approach to examine the reality of the Saladin Investment Commission regarding the establishment of the Yarmouk residential complex. The purpose of the research was to achieve the desired goals and results by utilizing various mechanisms and methods. The study utilized a combination of methods, including checklists and direct interviews with officials within the authority, to analyze the data and scientifically discuss the results. The research sample was selected from the Saladin Investment Commission in the Saladin Governorate-Tikrit District. The Yarmouk Residential Complex project in Tikrit district was chosen as the research sample for this study. By selecting this specific project, the study was able to focus on a specific case and gain a comprehensive understanding of the project's characteristics, including its goals, objectives, and outcomes.

Case studies are an effective method for research, particularly in the field of project management, as they allow researchers to examine specific cases in detail, gain insights into the project's characteristics, and identify factors that may have contributed to the project's success or failure. Additionally, the combination of methods utilized in this study, including checklists and direct interviews, allowed for a comprehensive and detailed analysis of the data. In conclusion, this study employed a case study approach to examine the reality of the Saladin Investment Commission regarding the establishment of the Yarmouk residential complex. The

research sample was selected from the Saladin Investment Commission in the Saladin Governorate-Tikrit District, and the Yarmouk Residential Complex project in Tikrit district was chosen as the research sample. The combination of methods utilized in this study allowed for a comprehensive and detailed analysis of the data, providing insights into the project's characteristics and factors that contributed to its success or failure.

The measuring tool used in this study is a checklist designed to record data in accordance with the requirements of the International Standard (ISO 21500:2021). The checklist is used to examine the conformity between the actual reality of the project and the requirements of the specification, and to determine any gaps between the two. The checklist consists of several items related to projects, programs, and portfolios, as well as the organizational and external environment, strategy implementation, governance and integrated management approach, supporting standards and items, project management, program management, portfolio management, governance, and organizational considerations. To determine the gap for each item on the checklist, the Likert heptagonal scale is utilized. The scale consists of six levels of applicability, ranging from "fully applicable and fully documented" to "not applied and not documented." Each level of the scale is assigned a weight, with the highest weight (6) assigned to the most applicable and fully documented level and the lowest weight (0) assigned to the least applicable and not documented level.

The gap for each item on the checklist is determined by multiplying the weight of the level by the repetition of the item. The results are then summed up, and the mean is calculated by dividing the sum of results by the sum of repetitions. The percentage of compliance is calculated by dividing the mean by six, the highest possible value on the Likert scale. Finally, the gap size is calculated by subtracting the percentage of compliance from one. Using this measuring tool allows for a comprehensive analysis of the project's characteristics and identification of any areas where there is a gap between the actual reality of the project and the requirements of the specification. By identifying these gaps, project managers can make informed decisions and adjustments to the project to ensure that it is aligned with organizational goals and objectives. Overall, the measuring tool is a valuable resource for project managers looking to improve project management practices and achieve successful project outcomes.

RESULTS AND DISCUSSION

The results of the examination list for the items of the specification are measured and analyzed. The evaluation of the examination list is summarized, focusing on the results of the

requirements of the standard and the Pareto diagram. The examination list was designed to record data in accordance with the requirements of the International Standard (ISO 21500:2021). The checklist consisted of several items related to projects, programs, and portfolios, as well as the organizational and external environment, strategy implementation, governance and integrated management approach, supporting standards and items, project management, program management, portfolio management, governance, and organizational considerations. To evaluate the examination list, the Likert heptagonal scale was utilized, as described in the previous section. The results of the examination list were analyzed, and the compliance rate for each item was calculated.

Table 3. Measuring the results of projects, programs and portfolios in the Yarmouk Residential Complex project

No.	Projects, programs and portfolios item	Fully Applicable Fully Documented	Fully Applied Partially Documented	Fully Applied Not Documented	Partially Applied Fully Documented	Partially Applied Partially Documented	Partially applied undocumented	Not applied Not documented
		6	5	4	3	2	1	0
1	The operations are carried out by a relatively stable team with the aim of sustaining the residential complex.	*						
2	There is an ability among the work teams that work temporarily in the implementation of the residential complex project to deliver the project according to the required results		*					
3	The project management makes an effort to make the residential complex part of its program			*				
4	Achieving strategic and operational objectives that bring benefits to the residential complex	*						
5	The strengths and weaknesses of the residential complex are identified through the program management in the project		*					
6	Programs and portfolios contribute to achieving the strategic and operational objectives of the residential complex			*				
Weights	6	5	4	3	2	1	0	

Iteration	2	2	2				
Total	12	10	8				
Weighted mean	5.333						
Percentage of conformity	0.888						
Gap size = 1- Percentage of matching extent	0.112						

Source: Prepared by the authors (2023).

Measuring and analyzing the results of the Yarmouk residential complex for the items of the international standard (ISO 21500:2021) for the management of projects, programs and portfolios.

First Requirement: Concepts of Project Management, Programs and Portfolios

First: Projects, Programs and Portfolios

The results indicate that the item (projects, programs and portfolios) has reported an arithmetic mean (5.3) approximately, which is close to (fully applied partially documented) with a matching rate of 0.89 and that the size of the gap (0.11). This indicates that the research sample recorded (12) points through items (conducting operations by a relatively stable team aimed at sustaining the Yarmouk residential complex and achieving benefits by achieving strategic and operational goals). It scored (10) points through items (the ability of the work team that works temporarily to deliver the project according to the required results and identify strengths and weaknesses through the management of programs in the Yarmouk residential complex). It also got (8) points through items (the effort made by the project management and make the residential complex within its program and the contribution of programs and portfolios in achieving the strategic and operational goals in the Yarmouk residential complex)

Accordingly, the advantages, the disadvantages and areas for improvement include:

1. The advantage: - The Yarmouk residential complex has been fully applied to conduct operations by a relatively stable team with the aim of sustaining the residential complex and achieving strategic and operational goals, through which the benefits are achieved. Also, the work teams to deliver work according to the required specifications by identifying strengths and weaknesses, and the programs contributed through the effort exerted by the project management to make the residential complex part of its program in achieving those goals.
2. The disadvantage: - Although all items have been applied, part of them is not documented.

Opportunities for improvement are documenting the effort exerted by the project management in making the residential complex part of its program, as well as the contribution of programs and portfolios in achieving the strategic and operational objectives in the residential complex)

Second: Regulatory Environment

The results indicate that the item (regulatory environment) has gained an arithmetic mean (4.86) approximately, which is close to (fully applied partially documented) with a matching ratio of (0.8) and that the size of the gap (0. 2). This indicates that the research sample reported (24) points through items (the role of managers in the project as owners of resources, managers implement other operational roles in the residential complex. Also, there are employees affected and influential in the residential complex, and continuous review by specialists in the residential complex of the completed works contribute to the completion of the Yarmouk residential complex perfectly) and got (8) points for (the number of those responsible for the project Yarmouk residential complex which is sufficient to accomplish it. This is with adherence to the roles by officials that affect the development of capacity and places in the Yarmouk residential complex) and (2) points for (the project manager has high skill in managing the Yarmouk residential complex)

This means the advantages, the disadvantages and opportunities for improvement could be:

1. Positive situation: - The Yarmouk residential complex has been fully applied to the role of managers in the project as owners of resources, which made them to implement other operational and functional roles because there are employees affected and influential in the project and through continuous review by specialists, the project work was completed perfectly, and the number of officials is sufficient to complete the project, which increased adherence to the distinguished roles and thus the development of capabilities in the project
2. The disadvantage: - The skills of the project manager are poor.
3. Opportunities for improvement: Training for project managers can raise their skill level and increase their experience.

Table 4. Measuring the results of the organizational environment in the Yarmouk Residential Complex Project

No	Regulatory Environment Item	Fully Applicable Fully Documented	Fully Applied Partially Documented	Fully Applied Not Documented	Partially Applied Fully Documented	Partially Applied Partially Documented	Partially Applied undocumented	Not applied Not documented
		6	5	4	3	2	1	0
1	The number of people responsible for the residential complex project is sufficient to complete it			*				
2	The role of managers in the project as resource owners in the project	*						
3	Managers perform other operational and functional roles in the residential complex project	*						
4	The project manager is highly skilled in managing the residential complex project					*		
5	There are employees who are affected and influential in the residential complex project	*						
6	Continuous review by specialists in the residential complex project of the completed works contributes to the completion of the project perfectly	*						
7	Adhering to the distinguished roles of officials affects the development of capabilities and capabilities in the residential complex project			*				
Weights		6	5	4	3	2	1	0
Iteration		4		2		1		
Total		24		8		2		
Weighted mean		4.857						
Percentage of conformity		0.80						
Gap size = 1- Percentage of matching extent		0.20						

Source: Prepared by the authors (2023).

Third: Implementation of the strategy

The results indicate that the item (implementation of the strategy) has obtained an arithmetic mean (4), which is (fully applied undocumented) with a matching rate of (0.67). In addition, the size of the gap (0.33) is approximately 33%. Thus, the research sample had (18) points for (calculating costs versus benefits by project management). It implements the strategy in the residential complex achieves benefits. When implementing the strategy, the project is exposed to an acceptable level of risk and has earned 15 points through items (the strategy helps in calculating the costs of the project and achieving the benefits from it). and the implementation of the strategy depends on the timing of the implementation of the project work, and the implementation of the strategy helps the organization make decisions about when to start, implement, and close the project. and got three points through items (the implementation process of the residential complex project is consistent with the strategic objectives, the

provision of resources in the project is sufficient to complete it, and the strategy works to mitigate the risks to which the project is exposed), as well as one point through item (the strategy helps in developing a plan for the allocation of resources in the residential complex).

Thus, we show the advantages, the disadvantages and improvement areas as follows:

1. Positive situation: - The Yarmouk residential complex has fully applied all the procedures for calculating costs against benefits by the project management, which achieve benefits through the implementation of the strategy. It exposes the project to an acceptable level of risk, calculating the costs of the project and achieving the benefit from it, and determining the time of implementation of the project work by making decisions to start, implement and close the project.
2. Negative situation: - The decrease in the number of resources that are sufficient to complete the residential complex. This leads to incompatibility with the implementation of the works with the strategic objectives of the project, which exposes the project to risks and the inability to develop a plan to allocate those resources
3. Opportunities for improvement: It provides sufficient resources to complete the project work and that are in line with the strategic objectives and that reduce risks and take the necessary measures to make the resource allocation plan within the strategy that is implemented for the purpose of achieving the greatest benefit.

Table 5. Measuring the results of strategy implementation in Yarmouk residential complex

No.	Strategy Implementation	Fully Applicable Fully Documented	Fully Applied Partially Documented	Fully Applied Not Documented	Partially Applied Fully Documented	Partially Applied Partially Documented	Partially applied undocume nted	Not applied Not docume nted
		6	5	4	3	2	1	0
1	Cost-benefit calculation by project management in the residential complex project	*						
2	Implementing the strategy for the residential complex project achieves benefits	*						
3	When implementing the strategy for the residential complex project, is it exposed to an	*						

	acceptable level of risk?							
4	The implementation process of the residential complex project is in line with the strategic objectives					*		
5	Availability of resources in the residential complex project that are sufficient to complete it					*		
6	The strategy helps in calculating the costs of the project and realizing the benefits from it		*					
7	The strategy helps in developing a plan for the allocation of resources in the residential complex project						*	
8	The strategy mitigates the risks to the residential complex project					*		
9	Strategy implementation works on the timing of the implementation of the residential complex project		*					
10	Strategy implementation helps the organization in making decisions to start, implement and close the residential complex project		*					
Weights	6	5	4	3	2	1	0	
Iteration	3	3			3	1		
Total	18	15			6	1		
Weighted mean	4							
Percentage of conformity	0.666							

Gap size = 1- Percentage of matching extent	0.334	
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Source: Prepared by the authors (2023).

Fourth: Integrated Governance and Management Approach

The results indicate that the item (governance approach and integrated management) has obtained an arithmetic mean of 3.375, which is close to (partially applied and fully documented) with a matching percentage of approximately 0.56 and that the size of the gap is approximately 0.44. This indicates that the research sample obtained six points for "help in achieving benefits and risk management through continuous development in the project" and got fifteen points for "strategic alignment of projects, programs, and portfolios with the organizational objectives in the residential complex project" and the frameworks of governance and integrated management are suitable for the work that is implemented in the residential complex" (the presence of an integrated approach to governance and integrated management in the residential complex). It got (4) points through items (clear roles and responsibilities at all administrative levels in the residential complex, and governance and integrated management help in the continuous improvement of the portfolio within the residential complex project), as well as (2) points for (clarifying the process of progress in work by informing the decision maker within the residential complex project, and the governance and integrated management of internal and external communication in the residential complex project). Through the above, we show the advantages, the disadvantages and opportunities for improvement as follows:

1. The advantages : - Achieving benefits and risk management through continuous development of the project and aligning the strategy followed in the project with organizational objectives, as well as the existence of an integrated approach to governance and integrated management through the appropriateness of governance and integrated management frameworks with the work that is performed, as well as continuous improvement of the portfolio through clarity of roles and responsibilities at all administrative levels
2. The disadvantage: - The decision maker in the project does not inform about the progress of work due to poor internal and external communication.

3. Opportunities for improvement: Work on the application of internal and external communication within the project to facilitate the process of informing the decision maker in the project of the progress of work.

Table 6. Measuring the Results of Integrated Governance and Management Approach in Yarmouk Residential Complex

No.	Integrated governance and management approach	Fully Applicable Fully Documented	Fully Applied Partially Documented	Fully Applied Not Documented	Partially Applied Fully Documented	Partially Applied Partially Documented	Partially applied undocume nted	Not applied Not docume nted
		6	5	4	3	2	1	0
1	Aligning the strategy of projects, programs and portfolios with the organizational objectives of the residential complex project		*					
2	Helps in realizing benefits and managing risk through continuous development in the project	*						
3	Integrated governance and management frameworks are suitable for the work carried out in the residential complex		*					
4	Clear roles and responsibilities at all administrative levels in the residential complex					*		
5	Integrated governance and management help in the continuous improvement of the portfolio within the					*		

	residential complex project							
6	The existence of an integrated approach to governance and integrated management in the residential complex		*					
7	Clarifying the progress process by informing the decision maker within the residential complex project						*	
8	Integrated governance and management facilitate internal and external communication in the residential complex project						*	
Weights	6	5	4	3	2	1	0	
Iteration	1	3			2	2		
Total	6	15			4	2		
Weighted mean	3.375							
Percentage of conformity	0.562							
Gap size = 1- Percentage of matching extent	0.438							

Source: Prepared by the authors (2023).

Fifth: Governance

The results indicate that the item (governance) has obtained an arithmetic mean (3.714), which is close to (fully applied undocumented) with a matching rate of (0.62) approximately, and the size of the gap (0.38) approximately. So the research sample had (6) points in (the application of governance in the residential complex project faces difficulties) and got (5) points through the item (governance contributes to clarifying the operations of the project) and got (12)) point through items (governance provides transparency requirements for its projects. Also, governance contributes to facing regulatory risks in the residential complex project, and

governance clarifies the values and ethics within the project) as well as got (2) one point through the item (governance contributes to providing all procedures of the issue within the project) and one point through the item (improving the participation of stakeholders in the project)

Thus, the advantages, the disadvantages and opportunities for improvement can be:

1. Positive situation: - There are difficulties when applying governance, through the contribution of governance in clarifying the operations of the project, and governance provides all procedures of the issue due to the provision of transparency requirements by clarifying values and ethics within the complex project. This enables facing risks within the Yarmouk residential complex project.
2. The disadvantage: - Yarmouk complex is partially applied and not documented for the participation of stakeholders in the Yarmouk residential complex project.
3. Opportunities for improvement: It takes the necessary measures to increase administrative application and increase legal documentation in terms of applying and documenting the participation of internal and external stakeholders for the purpose of achieving the desired results and benefits.

Table 7. Measuring Governance Results in Yarmouk Residential Complex Project

No.	Governance	Fully Applicable Fully Documented	Fully Applied Partially Documented	Fully Applied Not Documented	Partially Applied Fully Documented	Partially Applied Partially Documented	Partially applied undocummented	Not applied Not documented
		6	5	4	3	2	1	0
1	Governance contributes to the availability of all procedures for the residential complex project					*		
2	Governance provides transparency requirements for its projects			*				
3	Improve the participation of stakeholders (internal and external) in the project						*	
4	Governance contributes to addressing regulatory risks in the residential complex project			*				
5	Governance clarifies the values and ethics within the residential complex project			*				

6	Governance contributes to the clarification of project operations		*					
7	Implementing Governance in a Residential Complex Project Faces Difficulties	*						
Weights		6	5	4	3	2	1	0
Iteration		1	1	3		1	1	
Total		6	5	12		2	1	
Weighted mean		3.714						
Percentage of conformity		0.619						
Gap size = 1- Percentage of matching extent		0.381						

Source: Prepared by the authors (2023).

CONCLUSION

The research has provided valuable insights into the effectiveness of project management in the Yarmouk residential complex. The study has highlighted the importance of achieving strategic and operational objectives through effective project management, which in turn leads to the delivery of work according to the required specifications. The research has also emphasized the role of managers in the project as resource owners and the importance of their involvement in other operational and functional roles to achieve project objectives. The study has shown that the Yarmouk residential complex has applied all procedures for calculating costs against benefits by project management, which helps to achieve benefits through the implementation of the strategy. The research has also identified the existence of an integrated approach to governance and integrated management in the complex, although there is a weakness in internal and external communication. Moreover, the research has highlighted the difficulties faced when applying governance and its contribution in clarifying the operations of the project due to the lack of participation of stakeholders entering and leaving the project. Overall, the research has provided useful information for improving project management in the Yarmouk residential complex and other similar projects. The findings of the study can help project managers to identify areas that need improvement and take appropriate action to enhance project outcomes.

Based on the results of the research, several recommendations have been made to enhance project management in the Yarmouk residential complex and similar projects. The first recommendation is to strengthen and enhance the contribution of programs and portfolios in achieving the strategic and operational objectives of the project. This can be achieved by identifying areas where programs and portfolios can be improved and taking action to enhance their effectiveness. The second recommendation is to provide training to project managers to

increase their skills and experience and enable them to achieve project objectives. This can be achieved by offering training programs and mentoring opportunities to project managers. By investing in the development of project managers, the Yarmouk residential complex can improve project outcomes and enhance stakeholder satisfaction. The third recommendation is to provide sufficient resources to complete the project, which helps in aligning the strategy and objectives with the development of a plan to allocate those resources to avoid risks. This can be achieved by conducting a thorough assessment of project requirements and allocating resources accordingly. By ensuring that the project has sufficient resources, the Yarmouk residential complex can avoid delays and cost overruns. The fourth recommendation is to enhance internal and external communication for the purpose of informing the decision maker in the project about the progress of the project work. This can be achieved by establishing clear communication channels and regularly updating stakeholders on project progress. By improving communication, the Yarmouk residential complex can ensure that all stakeholders are informed and engaged throughout the project. Finally, the researcher recommends participating in the internal and external stakeholders in the project. This can be achieved by involving stakeholders in decision-making processes and engaging them in project planning and implementation. By involving stakeholders, the Yarmouk residential complex can ensure that their needs and expectations are taken into account, leading to greater stakeholder satisfaction and project success.

There are several limitations to the research that should be acknowledged. Firstly, the study was conducted within spatial and time boundaries. The study focused on the Yarmouk Residential Complex in the Tikrit District of Saladin Governorate, limiting the generalizability of the findings to other projects in different locations. Additionally, the study was conducted between July 2022 and April 2023, which may limit the relevance of the findings to current project management practices. Another limitation of the research is the human limits. The study relied on the input and feedback of officials in the Saladin IC who have a direct relationship with the project. Other stakeholders who may have valuable insights into the project, such as local community members or contractors, were not included in the study. This may limit the comprehensiveness of the findings and the applicability of the recommendations. Finally, the study was limited by its focus on the provisions of the international standard (ISO 21500:2021) for the management of projects, programs, and portfolios. While this standard is widely recognized and used in project management, it may not capture all aspects of project management in practice. Therefore, the findings and recommendations of the study may not

fully reflect the complexities of project management in real-world contexts. For future studies, it would be valuable to expand the spatial and temporal scope of the research to include a broader range of projects and contexts. Additionally, future studies could involve a wider range of stakeholders to gain a more comprehensive understanding of project management practices and their impact on project outcomes. Finally, future studies could explore the limitations of current project management standards and identify opportunities to improve project management practices.

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