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The impact of Project integration management to improve the projects quality: applied to the technology sector, Qatar.

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1. Research introduction

Our lives are always constantly shaped by projects, from minor details like cooking a meal, all the way to building bridges and developing software to organizing events and launching campaigns. These aims and efforts, ranging in complexity and size, have one common thread: **Project management**. Project management is a series of structured tasks, activities and deliverables that are carefully executed to achieve a desired outcome. They are temporary efforts to create value through unique products, services and processes (Project Management Institute, 2021. *Guide to the Project Management Body of Knowledge PMBOK guide – seventh Edition*). A **Project** has a distinct, clear start to finish points, defined objectives, and it makes use of numerous resources to achieve them. Whether it is the construction of a building or organizing a gathering, projects are a part of every aspect of our lives.

Nowadays, projects are complex and demand seamless synergy and coordination across the various elements of it, to reach the ideal quality for them. This is where integration management comes in; **integration management** the coordinated process and activities that unify the various elements of a project to achieve defined objective (Project Management Institute, 2021). It unifies the projects components and stakeholders, and adds to their significance. Projects can decrease errors, navigate challenges and provide high quality results. The full scope of how integration management impacts the projects quality is still a subject of constant, ongoing and continuous exploration, despite its recognized importance. Seamlessness in integration management is better for projects, as it delivers better and higher quality. There is a set of processes and activities that ensure the following:

- **Unified goals and objectives:** all project components contribute towards a single, shared vision (Project Management Institute. 2021).
- **Smooth information flow:** timely and accurate information exchange across teams and stakeholders (Baccarini, D. 2004).
- **Coordinated activities:** interdependencies between tasks are managed effectively, avoiding conflicts and delays (demirkesen, S., Ozorhon, B. 2017).

- **Effective change management:** adjustments are incorporated smoothly without derailing the project (PMI institute. 2021).
- **Resource optimization:** people, equipment, and materials are employed strategically for maximum impact (Project Management Institute. 2021).

As for **Project quality**, with the competitive markets and industries in the recent years, simply finishing projects on time and within budget is no longer enough. **Project quality** has become a great importance differentiator, determining not only the success of individual projects but also the reputation and competitiveness of organizations. Project quality surpasses simple product or service quality. It encompasses a broader spectrum of meeting and exceeding the expectations of stakeholders involved in a project. It translates into various dimensions, including:

- **Performance:** does the project deliver its intended functionality, features, and benefits as planned?
- **Conformance:** does it adhere to agreed-upon specifications, standards, and requirements?
- **Reliability:** does it operate consistently and avoid unexpected failures or errors?
- **Durability:** can it withstand anticipated use and remain effective over time?
- **Usability:** is it easy to use, understand, and maintain for its intended users?
- **Safety:** does it minimize risks and hazards to people and the environment?
- **Customer satisfaction:** does it meet the needs and expectations of clients or end-users?

(Project Management Institute, 2021. Guide to the Project Management Body of Knowledge PMBOK Guide – Seventh Edition).

while there is literature that provides beneficial observations and understanding of integration management and its practices, there are some deficiencies that need to be pointed out, which are the following points:

- Limited understanding of casual mechanisms.
- Lack of comprehensive models.
- Boundary conditions and contingency factors.

(Demirkesen, S., & Ozorhon, B. 2017). (Baccarini, D. 2004). (Cleland, D. I. 2007).

There are also some practical limitations that can be found, which are:

- Measurement challenges.
- Implementation challenges.
- Tailoring integration practices.
- Tailoring integration practices.
- Skills and training gaps.

(Project Management Institute 2022). (Morris, P. W. G., & Hough, G. H. 2007). (International Institute of Project Management. 2017).

With that being said, integration management can be used to elevate and enhance Project quality, ensuring that it smoothly gets developed into the best quality possible within the given conditions, resources, time, and budget.

Qatar's technology sector is rapidly growing and becoming increasingly important to the country's economy. The government has made significant investments in technology infrastructure and has launched multiple initiatives to promote innovation and entrepreneurship. As a result, Qatar now is a home to a thriving tech scene with a number of startups and established companies developing cutting-edge solutions. It's also experiencing a dynamic transformation, putting itself as a leader in innovation and digitalization. Qatar has been impressive in the recent years with their technology development. (Qatar Development Bank QDB). (Eltahir, N. B., & Mohamed, Z. 2020). (Al-mulla, S., & kathawala, J. 2019). (Sabagh, Z., & El-masri, R. 2022).

In this work, the main objective is to show the importance of integration management and its effects on the projects quality, specifically in the technology sector. There will be examples and statistics on the technology sector in Qatar, in particular. The researcher here will delve into the details and information regarding all aspects mentioned above, projects, projects management, integration management, projects quality, and the technology sector in Qatar. This will also include quantitative information. This research is also aimed at project managers and whomever requires the given information within it.

2. Research Problem

While there are researches that acknowledge the link and connection between integration management and the project's success, a deeper and greater understanding of its specific impact on quality is required. This research aims and seeks to address the following question:

- How do the different components and parts of integration management (e.g., scope integration, change management..etc) individually and collectively effect the projects quality?

Imagine a building project where blueprints haven't been shared with construction crews, materials haven't been ordered on time, and budget changes haven't been communicated. That leads to chaos, delays, and cost overruns to overflow. Effective integration management prevents such scenarios by doing the following:

- **Improving project performance:** delivering projects on time, within budget, and to spend quality standards. (Project Management Institute, 2021. Guide to the Project Management Body of Knowledge PMBOK Guide) (Demirkesen, S., &Ozrorhon, B. 2017. Impact of integration management on construction project management performance).
- **Enhancing communication and collaboration:** fostering seamless teamwork and reducing silos. (Baccarini, D. 2004. The integration of design, procurement and construction: a study of leading UK contractors). (Morris, P . W. G., &Hough, G. H. 2007. The management of projects).
- **Minimizing risks and surprises:** proactively identifying and addressing potential issues early on. (Project Management Institute, 2022. Practice standard for risk Management – third edition). (Kerzner, H. B. 2017. Project management: a system approach to planning, scheduling, and controlling).
- **Increasing stakeholder satisfaction:** delivering results that meet expectations and build trust. (Cleland, D. I. 2007. Project management: strategic dimensions). (PMI institute.

2020. Guide to the Project Management Institute Body of Knowledge PMBOK guide – sixth edition).

2.1.Theoretical gaps:

- **Limited understanding of causal mechanisms:** While research shows a correlation, we don't fully understand **how** different integration practices (e.g., scope management, risk management) directly impact specific quality dimensions (e.g., performance, conformance). More research is needed to delve deeper into the specific mechanisms at play.
- **Lack of comprehensive models:** Existing models of integration management and project quality may not capture the **complexity** of real-world projects. New models are needed that account for dynamic and multifaceted environments, project lifecycle stages, and the interplay between different quality dimensions.
- **Boundary conditions and contingency factors:** The effectiveness of integration management for quality improvement may vary depending on project type, size, industry, and other factors. More research is needed to identify these **boundary conditions** and **contingency factors** that moderate the relationship between integration practices and quality outcomes.

2.2. Practical gaps:

- **Measurement challenges:** Measuring project quality remains a subjective and multifaceted endeavor. More robust and objective **quality measurement tools** are needed, incorporating both qualitative and quantitative dimensions aligned with project goals and stakeholder expectations.
- **Implementation challenges:** Implementing effective integration management often requires overcoming **organizational silos** and communication barriers. Further research is needed on practical strategies for breaking down these silos, fostering

collaboration, and ensuring seamless information flow across project teams and departments.

- **Tailoring integration practices:** One-size-fits-all approaches may not be optimal. Research is needed on how to **tailor and adapt integration practices** based on specific project characteristics, resource constraints, and organizational cultures.
- **Skills and training gaps:** Many project professionals lack the necessary skills and knowledge to effectively implement integration management practices. Research is needed to identify these **skill gaps** and develop targeted training programs to equip professionals with the skills needed to improve project quality through integration.

3. Research significance

As mentioned above, integration management plays a crucial role in achieving high-quality projects. In this research area, significant theoretical and practical importance's are held, impacting multiple stake holders and contributing to various fields of study.

3.1. Theoretical Significance:

- **Understanding the mechanisms:** research helps delve into the specific mechanisms through which integration management practices influence project quality. This enhances our theoretical understanding of projects success factors and provides a foundation for further improvement. (Project Management Institute, 2021. Guide to the Project Management Body of Knowledge PMBOK guide – Seventh edition).
- **Developing new models and frameworks:** studies can evaluate existing models and propose new frameworks that include various integration management elements and their impact on quality dimensions. This leads to more comprehensive, understandable, and tailored approaches for different project types and contexts. (Morris, P . W . G., & Hough, G. H. 2007. The management of projects).
- **Examining boundary conditions:** research can test the effectiveness of integration management in diverse and various project settings, identifying potential limitations or boundary conditions where its impact may vary. This refines our understanding of where and how to best utilize these practices. (Cleland, D. I. 2007. Project management: strategic dimensions).

3.2. Practical significance:

- **Improving project outcomes:** by understanding the link between integration management and quality, organizations can implement targeted practices to deliver projects that meet the desired criteria, leading to increased success and cost savings. (Demirkesen, S., & Ozorhon, B. 2017. Impact of integration management on construction project management).

- **Enhancing decision-making:** research findings can confirm evidence-based decisions during project planning and execution, enabling organizations to prioritize and allocate resources effectively for quality achievement. (Baccarini, D. 2004. The integration of design, procurement and construction: a study of leading UK contractors).
- **Advancing professional practice:** sharing research and best practices through publications, conferences, and training programs improves the competence and knowledge of project management professionals, leading to higher quality outcomes across industries. (Project Management Institute, 2022. Practice standard for Risk Management – Third edition.)

3.3. Impact on stakeholders:

- **Project sponsors and clients:** research helps them understand the value proposition of effective integration management, encouraging investment in relevant practices and contributing to improved project value realization. (Cleland, D. I. 2007. Project management: strategic dimensions).
- **Project managers and teams:** studies provide them with practical tools and techniques to integrate processes effectively, fostering collaboration and enabling them to deliver high-quality results. (PMI Institute, 2020. Guide to the Project Management Institute Body of Knowledge PMBOK Guide – sixth edition).
- **Society at large:** improved project quality translates to benefits like better infrastructure, safer products, and more efficient services, enhancing societal well-being and economic growth. (International Institute of Project Management, 2017. Benefits Management Guide – Second edition).

4. Research Sub-questions

- ✓ How does scope integration affect the projects quality?
- ✓ How does the change management affect the quality of the project?
- ✓ What type of integration management strategies can we use to have better project quality?
- ✓ What are the limitations of traditional integration management approaches in achieving high quality in projects?
- ✓ Are there specific project characteristics or industry context where the impact of integration management on quality is more notable and prominent?
- ✓ Can we pinpoint the best practices and strategies for implementing integration management to guarantee consistent quality improvement across diverse and different projects?

5. Research objectives

5.1. The main objective

- Investigate the relationship between effective integration management practices and project quality outcomes.

5.2. The sub-objectives

1. Identify the specific mechanisms by which integration management contributes to improved quality.
2. Develop a framework or model that explains how integration management practices influence different quality dimensions.
3. Analyze the impact of various integration management practices (e.g., scope management, risk management, communication management) on project quality metrics.
4. Compare and contrast the effectiveness of integration management practices for quality improvement across different industries and project types.

6. Research hypotheses

6.1. The main hypotheses H1:

- There is a positive correlation between the effectiveness of integration management and overall project quality.

The first sub-hypotheses Ha:

- Projects with higher levels of integration management practices will experience fewer defects and rework compared to projects with lower levels of integration.

The second sub-hypotheses Hb:

- Effective integration management will lead to increased stakeholder satisfaction with project quality.

The third sub-hypotheses Hc:

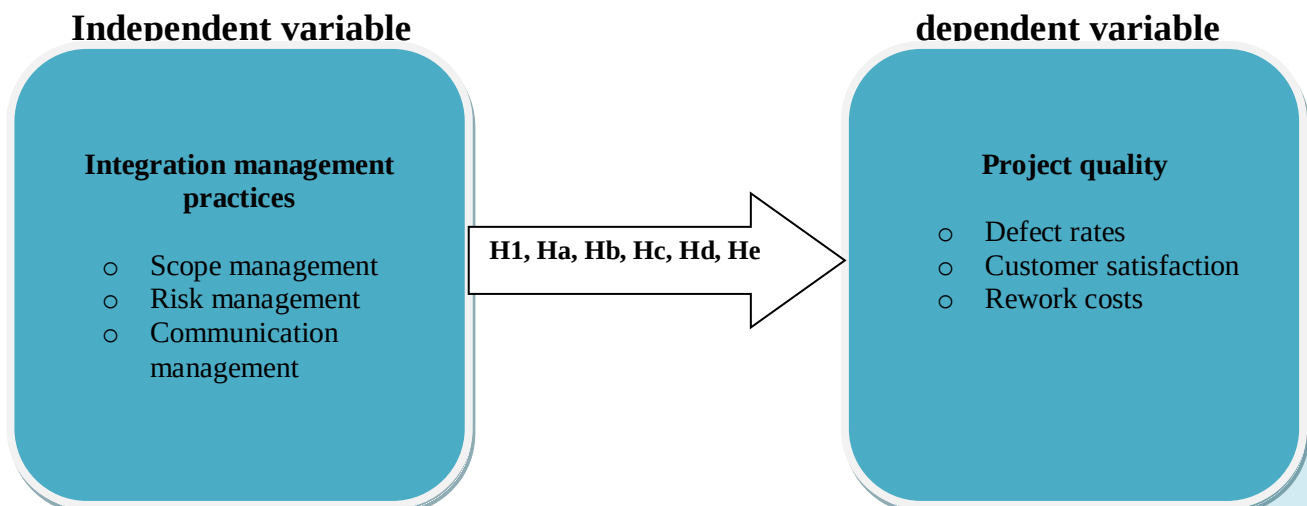
- Implementing a centralized communication platform will improve collaboration and information flow, leading to enhanced quality outcomes.

The fourth sub-hypotheses Hd:

- Proactive risk management practices integrated throughout the project lifecycle will result in a reduction of quality-related risks and improved defect prevention.

The fifth sub-hypotheses He:

- Early and continuous stakeholder engagement through integration management will contribute to a better understanding of quality expectations and improve the likelihood of achieving them.



Empirical study

Qatar is experiencing a dynamic transformation in the Technology sector, placing itself as a leader in innovation and digitalization. It's actively working towards developing and promoting technology in various sectors as part of Qatar National Vision 2030 (Qatar Development Bank QDB). Technology plays a key role in Qatar's new economic ambitions. The country is increasingly seeking to develop a knowledge-based economy, with new technologies at its core. It has set specific targets when it comes to training Qatari nationals and equipping its workforce to prepare for both the challenges and opportunities of the future. Similar to many fast-growing economies across the world, a complete comprehensive digital transformation will be primary to Qatar's future development (World Finance website).

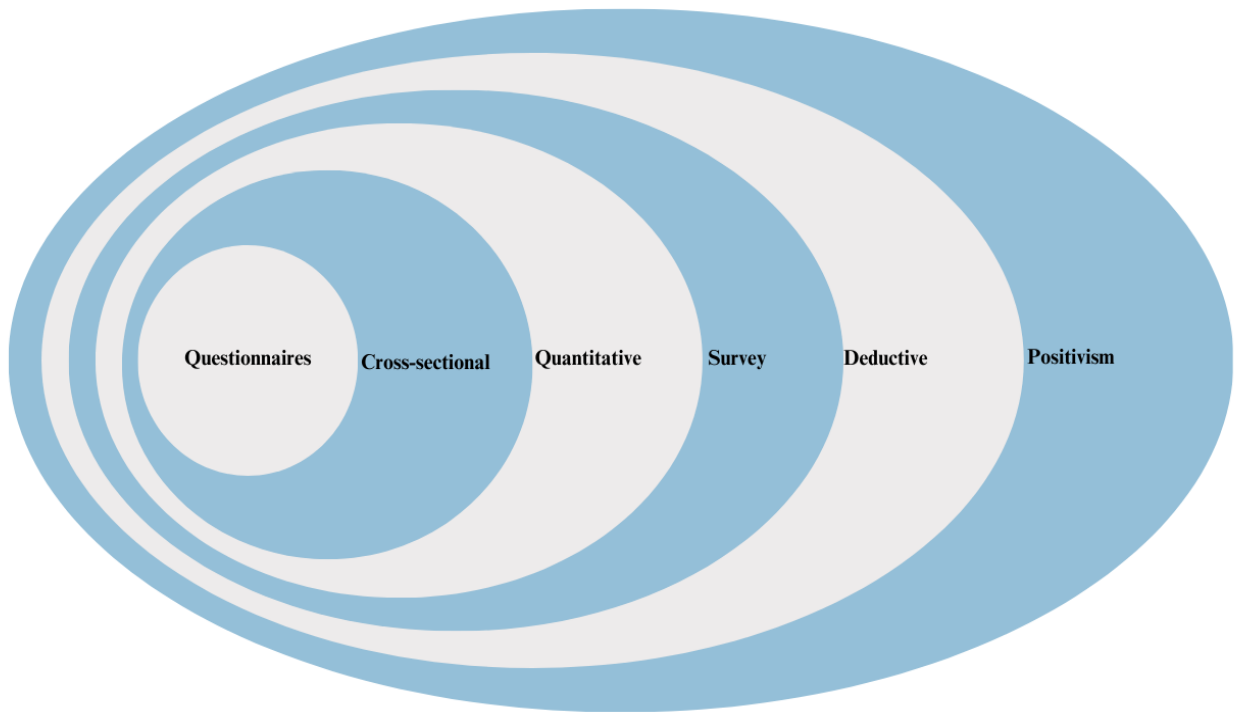
Qatar's technology transformation is well ongoing, and businesses need to make sure that they don't get left behind as the nation chases a digitally driven future. By embracing a number of emerging technologies such as Artificial Intelligence, data analytics and robotics, companies can enjoy enhanced efficiency and productivity, which leads to reducing costs and improving communication services, among other benefits (World Finance website).

A few examples for some of the technology companies and firms: Vodafone Qatar, Ooredoo Qatar, MEEZA, Qatar National Bank, Mannai Corporation.

With the growing number of projects within the technology sector in Qatar, the researcher is hoping to highlight the importance of using integration management to improve the quality of projects, by applying the right methods and steps with this research.

Research methodology

This research aims to investigate the **impact of integration management practices** on **project quality** in the context of the **technology sector in Qatar** through a **survey-based research methodology** approach.



Project structure

The research will be conducted in distinct phases, encompassing literature review, data collection, data analysis, and interpretation of findings. The projects overall structure is like the following:

Chapter 1: Introduction

Chapter 2: Literature Review

Chapter 3: Research Methodology

Chapter 4: Statistical Analysis

**Chapter 5: Findings' Discussion and
Conclusion**

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