

The role of strategic planning in improving the performance of water production projects: A case study of the Ministry of Environment, Water and Agriculture's initiatives in Jeddah

إعداد الطالب/سلطان عصام المدني

الرقم الجامعي/ ٢٥١٠٠٢١٧٨

إشراف/

أد. الفيصّل عبد الحميد محمد

أد. فايز علي جرّاد

العام الدراسي

٢٠٢٥م/١٤٤٧هـ

حقوق الطباعة

حقوق الطباعة تملكها جامعة ميدأوشن، حيث إن جميع المواد والمحتويات الواردة في هذا البحث هي ملك للجامعة، ولا يجوز استخدامها أو إعادة نشرها أو توزيعها بدون إذن مسبق من جامعة ميدأوشن.

الباحث

الشكر والتقدير

بسم الله الرحمن الرحيم

All praise is due to God, Lord of all things, the One by whose grace every good effort reaches its end. And peace and blessings be upon our Prophet Muhammad, his family, and his companions.

So, before diving into the heart of this research, I honestly feel the need to pause for a moment. To breathe. And to acknowledge, with a grateful heart, the support I received along the way.

First, my sincere thanks go to MidOcean University and to the College of Management. They provided a steady academic environment resources, guidance, and the kind of quiet structure that helps a person actually finish what they started.

And I really cannot continue without expressing deep appreciation to my supervisors:

Prof. Al-Faisal Abdulhamid Mohammed and Prof. Faiz Ali Jarad.

Their constant encouragement, their sharp advice, and sometimes their gentle nudges those things shaped this work more than any page of references did. It's fair to say their guidance sits behind every part of this study, even the parts that look simple at first glance. May God reward them generously.

I also want to thank the Ministry of Environment, Water, and Agriculture, along with the directors, engineers, and technicians working on the water-production projects in Jeddah. They opened doors, shared data, and didn't hesitate to answer long survey questions even when their schedules were already tight. Without their cooperation, the field component of this research wouldn't have stood on its feet.

And of course my colleagues, and my family. They were the unseen support beam during this whole journey. A quick word of encouragement here, a small push when I slowed down, the kind of warm presence that reminds you you're not doing this alone. Those things matter more than people think.

In the end, and after all these steps, I offer this modest work hoping it adds something meaningful however small to the larger path of knowledge. And I truly wish it becomes, in one way or another, a helpful contribution to the efforts aimed at strengthening water security in our beloved country.

Praise be to God, always.

Student / Sultan Essam Al-Madani

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Saudi Arabia has always dealt with tricky water conditions, but lately the situation feels like it's tightening. Water resources were never plentiful to begin with, and as the population keeps rising and cities stretch outward, the pressure gets heavier. Then there's climate change, which throws in surprises some subtle, some not so subtle and suddenly what used to be manageable becomes something that needs careful planning every single day.

Jeddah is a good example. A huge coastal city, full of activity and movement, but almost completely dependent on desalinated seawater to stay running. That alone tells you how important water-production projects are here. Their efficiency, their stability, their ability to survive unexpected issues... all of that defines how secure the nation's water future is. And this ties directly into Vision 2030 and the national water strategy both of which treat water security as something you don't gamble with.

This study tries to dig into the deeper layer of that topic. It's not just looking at the projects themselves, but rather at how strategic planning real planning, not paperwork shapes the performance of these water-production projects.

The focus is specifically on the projects overseen by the Ministry of Environment, Water, and Agriculture in Jeddah.

And the guiding question is something like:

When you take the whole strategic-planning process building a vision and mission, understanding the environment around the project, setting the right objectives, distributing resources wisely, and keeping track of everything through monitoring and evaluation what kind of effect does all this have on the actual performance on the ground? Does it improve efficiency? Does it help teams stick to schedules and budgets? Does it raise product quality? And just as importantly, does it strengthen environmental sustainability?

These are simple questions on paper, but in practice, they open up a whole field of thought.

To make the study concrete instead of theoretical, the descriptive-analytical method was used. A questionnaire became the main tool for gathering data, because sometimes the best insights don't come from models they come from people living the work every day.

Engineers, project managers, planners, and executive officers from the ministry and related agencies in Jeddah participated. Each one sees the system from a different angle. One person talks about technical constraints, another thinks in terms of long-term budgeting, while someone else focuses on environmental standards.

Later, all of this was analyzed using SPSS to test the relationships between the elements of strategic planning and the performance indicators.

The early results were interesting stronger and clearer than expected, honestly. They showed a solid, positive correlation between proper

strategic planning and better project performance.

For example, when strategic goals are clearly aligned with operational plans, projects tend to run smoother. Costs go down. Efficiency rises. There's less confusion.

And from what becomes obvious through the analysis, monitoring and evaluation aren't just administrative steps they're a backbone. They keep projects on track and force early responses when things start drifting off schedule or when budgets face strain. They also help teams adapt faster when something unexpected happens, which is almost guaranteed in long-term water infrastructure.

The study recommends several important steps. One of them is building stronger institutional capabilities in strategic planning, particularly inside the ministry and among the bodies that supervise water projects. Another suggestion is to develop planning models that aren't rigid ones that can stretch, adjust, and evolve, because water projects operate in environments that change over time.

It also pushes for integrating environmental sustainability KPIs more deeply into strategic plans. Not as decorative metrics, but as central components especially now that national directions are moving toward greener development and cleaner resource management.

In the end, the study hopes to offer something valuable not just academically, but practically. Useful insights that help decision-makers get the most out of the massive investments being poured into the water sector. If these insights help secure water for future generations and strengthen the country's long-term sustainability, then the effort is more than worth it.

Summary

Saudi Arabia has been moving through a tricky water situation for quite some time, and it keeps getting a bit more complicated as the years go by. Natural water sources are already scarce, and when you mix that with a growing population and cities expanding in every direction, the demand rises in a way that feels constant. Then there's the climate changing quietly in the background, sometimes gently, sometimes sharply and all of this puts extra weight on the country's water system.

And in cities like Jeddah, which basically depend on desalinated seawater just to keep daily life running, water-production projects become essential. Not optional. When they run efficiently and stay stable, water security feels solid. When they slip, the effects show fast. You could say their performance is tied directly to the goals of Vision 2030 and the national water strategy (Hegazy, 2024).

This study tries to understand how strategic planning actually shapes the performance of these projects not just on paper, but in practice. It focuses specifically on what the Ministry of Environment, Water, and Agriculture is doing in Jeddah. And the main question is simple to read but wide in meaning:

How does strategic planning with its vision and mission building, environmental analysis, setting strategic objectives, allocating resources, and monitoring and evaluation affect the performance of Jeddah's water-production projects?

Does it help them work more efficiently? Stay on schedule? Keep budgets under control? Improve product quality? Support environmental sustainability? The question stretches into all of these areas at once.

To make sense of this, the study used the descriptive-analytical approach, with a questionnaire as the core tool for gathering real input. Engineers, project managers, strategic planners, and executive staff took part people who actually work within these projects every

day. Their insights grounded the study in reality rather than in assumptions.

Afterward, the collected data was analyzed using SPSS to test the study's hypotheses and see how strategic-planning elements connect with project-performance indicators.

The early findings pointed toward something quite noticeable: there's a strong and positive statistical relationship between effective strategic planning and improved project performance.

For example, when strategic goals are clear and flow naturally into operational plans, efficiency tends to rise and costs settle. You can almost feel the system becoming smoother.

And from observation, it becomes clear that ongoing monitoring and evaluation play a major role in keeping projects aligned with their schedules and budgets. They also help teams adapt when unexpected challenges show up which they always do in long-term infrastructure work (Yusuf, 2025).

The study ends with a set of recommendations. One is to strengthen institutional capabilities in strategic planning within the Ministry and the agencies overseeing water projects. Another is to adopt planning models that are flexible enough to keep up with the shifting, long-term nature of these essential projects (Abdella, 2024).

There is also a call to weave environmental-sustainability KPIs more deeply into strategic plans, especially now that the Kingdom is moving further toward green development.

In the broader sense, the study hopes to offer both scientific insight and practical ideas things decision-makers can actually use to improve the return on major investments in the water sector and to ensure this vital resource stays protected for future generations.

1-Introduction

Water it's really the thing everything leans on. Life runs through it, and so does the growth of any country economically, socially, all of it. And lately, with the way the environment keeps shifting and the climate acting unpredictably, the whole idea of "water security" has turned into something bigger, almost urgent. Especially in places where natural water is already scarce, like Saudi Arabia.

A desert landscape doesn't make the situation easy, and the country keeps feeling the pressure of trying to secure enough water for a population that grows quickly, cities that stretch outward, and an economy that keeps getting busier.

So naturally, the country started depending more on water sources that aren't the traditional kind. Desalinating seawater, for example, slowly became less of a side solution and more of a strategic lifeline something they simply can't do without if they want water supplies to stay stable.

And if we look at Jeddah for a second it almost tells the story by itself. The city sits on the Red Sea, it's the Kingdom's second largest, and its commercial activity never really stops. People keep coming in, new neighborhoods appear, and the whole place expands. That kind of growth puts a lot of pressure on its water system. It complicates everything: production, distribution, and how the entire network is supposed to keep up.

Because of that, the Ministry of Environment, Water and Agriculture started pushing a group of major projects bigger desalination capacity, better distribution networks, and long-term sustainability efforts.

But here's something that becomes clearer the more one thinks about it: huge projects don't work just because you have advanced technology or smart engineers on board. Those matter, sure, but the real anchor is whether there's a strong strategic vision behind them a method, a way of planning that isn't rushed, one that sees farther than the daily tasks.

Strategic planning, in this sense, feels less like a formal exercise and more like a mindset. It helps an organization ask the right questions: What do we actually want to achieve years from now? What strengths do we already have? What weak points might slow us down? What outside factors could change everything suddenly? And how do we use our resources without wasting them? Then, slowly, it builds a system for monitoring progress and adjusting when needed. It's meant to create alignment between the vision, the abilities, and the surrounding opportunities or threats. When this alignment happens, everything else tends to run more smoothly: adaptation, performance, growth.

This study comes in to look closely at how that kind of strategic thinking affects the performance of water-production projects using the Ministry's initiatives in Jeddah as the case to examine. It tries to understand how strategic planning tools are actually used in these projects, not only in theory. And it explores how this influences practical things: operational efficiency, service quality, sustainability, and whether projects really stick to their timelines and budgets.

By going into all of this, the study hopes to offer insights both academic and practical that can actually help improve the way water projects are managed across the Kingdom. And ultimately, these insights aim to support the broader national effort to strengthen long-term water security, especially within the larger vision set for 2030.

1.1 Background of the Study

The water sector in Saudi Arabia... it's one of those things you only understand when you look at the details slowly. It's busy, complicated, and honestly, a bit fragile. The country deals with two big pressures at the same time: not enough naturally renewed water, and a demand that keeps rising without taking a break.

People drink more, cities expand, farms grow and the land doesn't magically create more water.

Saudi Arabia leans on three water sources. Groundwater, which includes old fossil water that doesn't really refill. Desalinated seawater. And then just small amounts of surface water and treated wastewater. Over the past decades, especially in agriculture, groundwater got pumped far more than it could handle. At some point, the levels fell enough for experts to start saying, "Hold on... this is dangerous." It became a warning sign about whether this resource can even last (Suhail, 2024).

That situation pushed the country strongly toward desalination. Not slowly, but as a deliberate path – a strategic move. Until the Kingdom eventually became the world's biggest producer of desalinated water.

And if you look at Jeddah for a moment – the city by the Red Sea, crowded, constantly expanding – you'll see how heavily it depends on desalinated water. Almost entirely, really. In the last few years, Jeddah saw several huge projects being launched: boosting desalination capacity, renewing transmission networks, improving distribution efficiency. These projects fall under the Ministry of Environment, Water and Agriculture, and each project brings along complicated engineering challenges... but also big administrative and organizational ones.

Managing projects like these isn't something you do with simple operational routines. They involve massive budgets, long-term social impact, big technical decisions, and a lot of coordination. It needs a different way of thinking – something that stretches into the future rather than reacting day by day.

The government understood that. Vision 2030 and the national water strategy clearly push for sustainable water management, higher production and distribution efficiency, and a full restructuring of the sector so that services reach a higher quality level. They want to shift from emergency-style management to a proactive approach. That change naturally places strategic planning right at the heart of how the water sector operates (Alotaibi, 2023).

And strategic planning, when you think about it quietly, gives shape to all these broad ideas. It turns long-term visions into specific goals. Breaks goals into actual plans. Helps assign resources the right way. Creates systems for monitoring whether things are working or not. Without long-term planning, water projects could easily lose their direction, especially when facing future risks like unpredictable climate patterns or rapid population growth (Abdella, 2024).

Importance of the Study

The importance of this study comes from different angles – academic ones, and very practical ones.

1. Scientific Importance

- Filling a gap:

There are plenty of studies about strategic planning or public-sector projects in general, but very few dig into how strategic planning actually affects water-production projects, especially in the Saudi setting. This study tries to fill that empty space by offering a deeper look at how planning connects to performance in real water projects.

- Adding to academic literature:

By focusing on a real case in Jeddah, the study adds new observations to topics like water resource management, big project management, and strategic planning in government. These insights might help future researchers build stronger models.

- Developing an applied model:

The study explores how different parts of strategic planning – vision-building, environmental scanning, setting objectives, evaluating performance – affect project results such as efficiency, quality, timeliness, budgeting, and sustainability. Understanding these links can help build clearer theoretical and practical models.

2. Practical Importance

- Supporting decision-makers:

The study may give ministry officials tools and insights to strengthen their strategic planning methods, improve performance-monitoring systems, and get better value from the huge investments placed in water projects.

- Improving project management practices:

By examining what's currently happening in Jeddah's water projects, the study highlights strengths and challenges. Managers and technical teams could use these findings to sharpen their methods and bring more strategic thinking into their day-to-day work.

- Helping national goals:

Everything ties back to Vision 2030 and the national water strategy.

Showing how strategic planning improves water-project performance supports the bigger goals: water security, environmental sustainability, spending efficiency, and a better quality of life for everyone.

Managing water well in a city like Jeddah is more than a local achievement—it's part of reaching national ambitions (Alhubashi, 2024).

Problem Statement

The main issue this study tries to understand is the gap—the actual gap between what the water sector aims for through Vision 2030 and the national water strategy, and what some water-production projects are actually delivering.

Even with big budgets and strong effort, several projects still struggle. Costs sometimes exceed expectations. Timelines get stretched. Efficiency and long-term sustainability don't always reach their targets.

Water-production projects sit in the middle of many overlapping factors: technical, financial, environmental, social. They require teams to coordinate closely, use advanced technologies, and adapt to shifting conditions like unexpected population growth or changes in energy prices or even long-term climate effects (Alodah, 2023).

Traditional management methods the ones focused mainly on operations and technical tasks aren't enough in this environment.

So the real question appears:

How well is strategic planning actually being practiced across the lifecycle of water-production projects in Jeddah? And how much does the presence or absence of proper strategic planning shape their performance?

Even though strategic planning is widely acknowledged as important, the real world often shows a disconnect between high-level strategies and actual project implementation. This gap may come from several sources, such as:

Weak alignment between strategic goals and operational indicators:

A broad national aim like “sustainable water management” doesn't always translate into clear KPIs for each project.

Shallow or inconsistent environmental analysis:

Projects may not fully examine external risks or internal capabilities, limiting proactive decisions.

Resource allocation challenges:

Projects might struggle to secure the required financial, technical, or human resources or sometimes they receive resources that don't match strategic priorities.

Lack of strategic monitoring culture:

Project performance may be judged mainly on time, cost, and scope rather than on how well the project contributes to larger sector goals.

So the problem can be captured through this guiding question:

“What role do the different dimensions of strategic planning its formulation, its implementation, and its evaluation play in improving the performance of water-production projects in Jeddah, especially in terms of efficiency, quality, sustainability, and meeting timelines and budgets?”

The study tries to examine this issue carefully by measuring how strategic-planning elements influence project-performance indicators. And based on that, it aims to offer practical recommendations that could help narrow the gap between planning and execution strengthening the impact of these essential projects on long-term water security.

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Managing projects like these isn't something you do with simple operational routines. They involve massive budgets, long-term social impact, big technical decisions, and a lot of coordination. It needs a different way of thinking something that stretches into the future rather than reacting day by day.

The government understood that. Vision 2030 and the national water strategy clearly push for sustainable water management, higher production and distribution efficiency, and a full restructuring of the sector so that services reach a higher quality level. They want to shift from emergency-style management to a proactive approach. That change naturally places strategic planning right at the heart of how the water sector operates (Alotaibi, 2023).

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The study tries to examine this issue carefully by measuring how strategic-planning elements influence project-performance indicators. And based on that, it aims to offer practical recommendations that could help narrow the gap between planning and execution strengthening the impact of these essential projects on long-term water security.

1.3 Study Questions

When you look at the problem and the goals of this study, a main question naturally forms kind of like when you stare at something long enough and the central point starts to float to the surface.

What role does strategic planning actually play in improving the performance of water-production projects in Jeddah?

That's the big one.

And from it, several smaller questions unfold each one trying to uncover a different angle of the same picture.

What does the actual application of strategic-planning practices look like things like strategy formulation, executing the strategy, and evaluating it inside the water-production projects overseen by the Ministry of Environment, Water and Agriculture in Jeddah, at least from the workers' point of view?

This one is meant to capture the “right now,” the real situation, and how far these planning principles are being used in everyday project work.

How well are water-production projects performing in Jeddah, considering their operational efficiency, product quality, sustainability, and whether they stick to timelines and budgets? And again, this is from the perspective of the people involved.

This question tries to evaluate the projects as a whole, across all the important performance areas.

Is there a statistically meaningful relationship between how strategic planning is applied its different dimensions and how well these water projects perform?

This is the core test of the study, the one that connects the independent variable (strategic planning) to the dependent one (project performance).

Does the “strategy formulation” dimension meaning clarity of vision, environmental analysis, and setting objectives have a positive and statistically significant impact on project performance?

This one looks closely at the very first stage of strategic planning.

Does the “strategy implementation” dimension resource allocation, organizational structure, and organizational culture also influence project performance in a positive and statistically significant way?

Here the focus shifts to turning plans into real actions.

Does the “strategic evaluation” dimension performance indicators, monitoring, control, and feedback contribute positively and significantly to the performance of water-production projects?

This examines how much follow-up and evaluation matter for reaching the goals.

Do demographic characteristics like academic qualification, years of experience, or job title shape how respondents perceive strategic planning and project performance?

This asks whether personal and professional backgrounds influence how people see the whole subject.

1.4 Study Objectives

The objectives mirror the questions but give them direction like drawing a map after deciding where you want to go.

The main objective is simple, though not simple at all:

To identify and analyze the role of strategic planning in improving the performance of water-production projects supervised by the Ministry of Environment, Water and Agriculture in Jeddah, and to offer recommendations that can strengthen this role.

And to reach that main goal, the study follows a set of smaller, more focused objectives:

Diagnose how strategic-planning practices are being applied in their three dimensions formulation, implementation, and evaluation within Jeddah's water-production projects.

Assess the current performance level of these projects, using different indicators: efficiency, quality, sustainability, and compliance with time and budget.

Identify the type and strength of the relationship between overall strategic-planning practices and project performance.

Analyze the effect of each strategic-planning dimension formulation, implementation, and evaluation on improving project performance.

Determine whether statistically significant differences exist in participants' responses about the study variables based on demographic or job-related factors.

Provide practical, scientifically grounded recommendations for decision-makers and officials in the Ministry and related entities, so they can strengthen strategic-planning processes and improve future performance of water-production projects in line with national strategic directions and Vision 2030.

1. 1.5 Study Hypotheses

When you sit with the objectives of this research long enough, the hypotheses begin to form almost naturally one idea leading to another, the way thoughts do when you're trying to make sense of a complex topic. So the study sets out its expectations in the form of a few hypotheses that will be tested later using the right statistical tools.

Main Hypothesis (H1)

There is a positive, statistically significant relationship at the confidence level of ($\alpha \leq 0.05$) between strategic planning as a whole (with all its dimensions combined together) and the combined performance of water-production projects in Jeddah.

In simple terms: the better the planning, the better the project outcomes that's the idea being tested.

Main Hypothesis (H2)

Strategic planning, with all three of its parts the formulation, the implementation, and the evaluation is expected to have a positive, statistically meaningful effect ($\alpha \leq 0.05$) on how well water-production projects perform.

And this broader idea branches out into more specific hypotheses, each one zooming into a different stage of planning:

H2a

The dimension of strategy formulation – clarifying the project’s vision, analyzing internal and external factors, and setting its objectives – has a significant and positive impact on the performance of water-production projects.

H2b

The strategy implementation dimension – how resources are allocated, how the organizational structure supports the work, and how the culture inside the organization behaves – should also show a positive and statistically significant influence on performance.

H2c

The strategic evaluation dimension – which includes performance indicators, monitoring, oversight, and feedback cycles – is expected to have a meaningful positive impact on project performance as well.

Main Hypothesis (H3)

There are no statistically significant differences ($\alpha \leq 0.05$) in how respondents view the role of strategic planning in improving water-project performance that can be explained by their demographic traits – whether it’s their level of education, years of experience, or job title.

And when the data comes in, these hypotheses will be examined using correlation tests, regression models, and difference tests – whichever statistical tools best fit the part of the analysis.

1.6 Study Limitations

Every study needs a boundary – not to limit the value, but to make the findings clearer and more reliable. These limits help the research stay focused on what it can truly measure.

1. Subject Boundaries (Scope)

The study focuses solely on the role of strategic planning as the independent variable, using its three dimensions:

- strategy formulation
- strategy implementation
- strategic evaluation

And connects these to the dependent variable: project performance, measured through operational efficiency, product quality, sustainability, and how well projects stick to budgets and timelines.

The study doesn't dive deeply into technical engineering issues, financial models, or political elements unless a small mention helps in understanding the strategic context.

2. Human Boundaries (Population)

The participants are the employees directly involved in water-production projects supervised by the Ministry in Jeddah.

They occupy roles that matter to planning, execution, and monitoring such as project managers, engineers, planners, supervisors, heads of departments, and strategic analysts.

People who live the process, not just observe it.

3. Geographical Boundaries (Location)

The research is carried out within the city of Jeddah, focusing on major water-production projects like desalination plants and strategic transmission initiatives all under the ministry's umbrella.

4. Time Boundaries

The data will be collected during the 2025 academic year, and the analysis will reflect the situation as it stands in that specific period.

Setting these boundaries keeps the research grounded, sharp, and meaningful, helping ensure that the results make sense within their intended frame.

1.7 Study Terminology

To avoid any confusion later on and so the reader doesn't wonder what exactly each idea means the study lays out a simple, practical set of definitions. Just the terms the research keeps leaning on.

1. Strategic Planning

Strategic planning, as used here, is basically the organization's way of thinking ahead. Not in a rushed or improvised manner, but through a structured, somewhat deliberate process.

It's when the agency in this case, the bodies supervising water-production projects tries to picture its future, state its mission clearly, and then take a careful look around and inside itself.

Strengths, weaknesses, opportunities, threats... all of that.

From there, long-term goals begin to take shape. Plans are drafted.

Resources are allocated. And eventually, the process circles back through monitoring, checking, and adjusting to keep things aligned.

And in this study, strategic planning is evaluated through three dimensions:

Strategy formulation:

This means clarity of the vision and mission, environmental analysis, and setting strategic goals with intention.

Strategy implementation:

This includes the way resources are assigned, how the organizational structure fits the plan, and whether the internal culture actually supports what the strategy needs.

Strategic evaluation:

Here we're talking about performance indicators, oversight, monitoring, feedback, and the corrections that keep the strategy alive rather than frozen on paper.

2. Project Performance

Project performance captures how well the project manages to do what it said it would do.

And in this research, it's not just about the traditional trio of time–cost–scope; the view is wider, more holistic.

The performance is examined through four main angles:

Operational efficiency:

How effectively the project uses its resources – manpower, raw materials, energy – to produce the maximum output at the lowest practical cost.

Product quality:

Whether the water produced meets the national and international standards, both health-wise and environmentally.

Sustainability:

The project's ability to keep running well in the long term, while minimizing environmental harm and maintaining economic and resource sustainability.

Commitment to schedule and budget:

How well the project sticks to the planned timeline and the approved financial limits.

3. Water Production Projects

These are the major engineering and construction projects intended to increase the supply of potable water.

In this study's context, we're mainly referring to seawater desalination plants and the connected systems that move and store water strategically across Jeddah.

4. Ministry of Environment, Water and Agriculture

This is the Saudi government entity responsible for policies, strategies, and supervision in the fields of environment, water, and agriculture. It is the authority overseeing the projects being studied.

2. Theoretical Framework and Previous Studies

The theoretical framework works like the intellectual foundation holding the study together.

It's where the main ideas and theories behind the research variables are laid out – strategic planning, project-performance management, and the broader situation of the water sector in Saudi Arabia.

The point of this chapter is to create a coherent background. Something that shows how all the variables connect, what the literature has already discussed, and where the gap lies – the gap that this study intends to fill.

2.1 Section One: Strategic Planning

Strategic planning is often described as the anchor of success in modern organizations, especially those operating in fast-changing, complicated environments.

And when the organization deals with large-scale projects – the kind that shape essential services like water – the significance becomes even stronger.

It works like a guide.

A direction.

A way of ensuring that all efforts, all decisions, all movements are aligned with long-term goals rather than short-term reactions.

This section goes through the meaning of strategic planning, why it matters, the stages and core components that form it, and then takes a look at the prominent modern models and the real-world challenges that come with applying these models to complex projects.

2.1.1 The Concept and Importance of Strategic Planning

What Strategic Planning Really Means

Strategic planning well, it's basically a steady, organized way for an organization to figure out where it wants to head. Not in a rushed tone. More like taking a breath, looking around, and saying: "Okay, what's our vision? What are we trying to do here?"

Then it starts unfolding slowly sometimes. The organization studies what's going on inside it, what's happening outside, what it's good at, where it struggles, and what chances or risks might show up along the way. After that, it shapes long-term goals and builds the strategies that might actually make those goals realistic.

And of course, it decides how to use its resources without burning out along the road, and how it'll check progress every now and then.

The funny thing is, it's not just "planning the future." It's closer to shaping it. The decisions made today especially the thoughtful ones end up carving a new path for years ahead. Strategic planning zooms out. It tries to answer those big questions that don't go away easily:

Where are we now? Where do we want to be? And how do we take the path that leads there?

At its core, it's like a bridge connecting the current state of the organization with the future it hopes to reach (Abdella, 2024).

Strategic planning stands apart from tactical and operational planning in a few ways:

It looks far ahead years, not just seasons.

It wraps around the whole organization, not just a slice of it.

It listens carefully to the world outside: politics, the economy, society, technology... all the shifting parts.

And it tries to build a competitive advantage that lasts, not one that melts at the first change.

In the water sector, this whole idea becomes even more essential. It's not about beating competitors. It's about keeping a resource alive literally (Alotaibi, 2023). Any strategic plan here has to keep in mind things like water scarcity, climate impact, population growth, and the huge cost of infrastructure (Alodah, 2023).

Why Strategic Planning Matters

The importance of strategic planning shows itself when life gets uncertain which, to be fair, is most of the time. It helps organizations act early instead of waiting until problems explode.

Here's where its strength usually shows:

A Clear Direction for Everyone

A strategy gives the organization a vision and a mission that feel like a shared compass. People stop working in scattered circles and start walking the same road.

Smarter Decisions

When leaders rely on analysis instead of a quick guess, their decisions naturally become calmer, more grounded. Strategy gives them a frame to lean on.

Better Use of Resources

With clear priorities, the organization places its money, energy, and people where they actually matter. Less waste. More impact.

Flexibility When Things Change

Strategy helps the organization handle surprises without panicking. And sometimes even catch opportunities that come out of nowhere.

Improved Performance

When daily tasks connect to long-term goals, performance becomes easier to measure and to fix when needed (Yusuf, 2025).

Sustainability

In areas like water, planning isn't an option it's survival. Good strategy

protects resources not only for now but also for whoever comes next (Hegazy, 2024).

Without it, the system may seem fine today but slowly fall apart tomorrow (Almulhim, 2023).

2.1.2 Stages and Elements of the Strategic Planning Process

Strategic planning... it's not a single moment or a one-time meeting it behaves more like a cycle that keeps looping, shifting, picking up new pieces along the way.

Most models differ in tiny details, but honestly, they still walk through the same set of major steps.

Stage One: Getting Set Up (Strategic Preparation)

This stage feels a bit like clearing your desk before starting something important.

Nothing dramatic. Just necessary.

Choosing the planning team. A mix of people different levels, different roles. Variety helps because everyone sees things differently.

Setting the timeline and resources. A rough map of what's going to happen, how long it might take, and what tools or budget the process will need.

Bringing stakeholders in early. Internal people, external ones... whoever plays a role. Getting them involved early usually makes the future strategy easier to commit to.

It's the quiet start. But without it, the rest feels shaky.

Stage Two: Strategic Analysis (Understanding What's Really Going On)

This part is like taking the organization to a checkup.

You can't plan seriously without knowing the real situation.

PESTEL analysis. Looking at political factors, economic shifts, social habits, technological trends, environmental pressures, and the legal environment.

Porter's Five Forces. Studying the competition suppliers, customers, new entrants, substitutes, and the rivalry level.

Internal analysis. Checking resources, structure, workforce capability, financial strength... the things inside that either help or slow the organization.

SWOT. Pulling it all together into strengths, weaknesses, opportunities, and threats.

Sometimes this stage surprises people things look different when laid out clearly.

Stage Three: Strategy Formulation (Figuring Out Where to Go Next)

Once the analysis settles, the organization starts shaping its direction.

Vision. A picture of the future where the organization wants to end up.

Mission. A short, grounded statement describing what the organization is and what it does.

Core values. The guiding ideas or behaviors that reflect the organization's identity.

Strategic goals. Goals that stretch across time. Not vague ones SMART ones: specific, measurable, achievable, relevant, and time-bound.

It's the moment where ideas begin turning into direction.

Stage Four: Implementing the Strategy

This is where things get tested.

Everything before this can look perfect on paper, but implementation is where the truth appears.

Action plans. Breaking broad strategies into doable tasks who does what, by when, with what resources.

Resource allocation. Putting money, people, equipment where they're actually needed.

Organizational structure adjustments. Making sure the structure supports the plan. Sometimes roles need shifting... sometimes the structure itself needs a tweak.

Communication and motivation. People need to understand the plan clearly. And they need to feel part of it.

Plans become real only here.

Stage Five: Monitoring, Evaluating, and Keeping the Strategy on Track

This stage is like glancing at the map while driving not constantly, but regularly enough so you don't drift.

KPIs. Picking indicators numbers or qualitative signals that show progress.

Continuous monitoring. Gathering performance data and comparing it with what was expected.

Periodic evaluation. Sitting down once or twice a year to see if the strategy still fits the real world.

Corrective steps. Adjusting what needs adjusting... not because the plan failed, but because environments change.

This step keeps the strategy alive instead of letting it gather dust.

2.1. 3. Modern Strategic Planning Models

Strategic planning models didn't stay the same as the years passed; they kept bending and stretching to match the changing needs of organizations and the shifting environments they operate in.

The old linear model still has weight nobody denies that but other models stepped forward, ones that pay more attention to flexibility, adaptability, and involving more voices than just top management.

Here are some of the main ones, in a calm, steady walk-through.

1. The Balanced Scorecard (BSC)

Kaplan and Norton designed this model after noticing something obvious once you think about it: financial metrics alone can't describe how an organization is really doing.

So the Balanced Scorecard turns the lens into four angles, each showing a different side of performance:

Financial view. How do we show up to the people who fund us?
Things like profit levels or return on investment.

Customer view. How do customers honestly perceive us?
Measures such as customer satisfaction or market share fall here.

Internal processes view. Which internal processes must work well really well for success to happen?
Maybe production efficiency, maybe quality control, maybe innovation output.

Learning and growth view. How do we maintain our ability to grow, adapt, and learn when things shift?
Staffing skills, tech readiness, organizational culture... the "future capacity" side of performance.

The model helps turn a strategy into daily signals you can actually track. It bridges the gap between long-term talk and everyday action.

2. Scenario Planning

Some environments... are just unpredictable. Too uncertain, too fast-changing.

Planning for only one future in those conditions becomes almost risky.

Scenario Planning was built exactly for that. It helps organizations imagine a few different futures and prepare for all of them rather than betting on one.

The process usually involves:

noticing the main forces shaping the outside environment,

spotting the most uncertain or blurry variables,

building several sharply different but still realistic future scenarios,

and crafting strategies resilient enough to handle those different possible paths.

It's especially useful in the water sector, where climate change, regional policies, and shifting rainfall patterns can change everything suddenly (Suhail, 2024).

3. Blue Ocean Strategy

Kim and Mauborgne looked at competition and said, basically: "Why fight in a crowded market when you can create a new one?"

Instead of competing in the packed "red oceans," they pushed organizations to look for "blue oceans" spaces with little to no competition.

The idea is built on value innovation: raising value for customers while lowering costs at the same time.

Counterintuitive, but powerful when it works.

Even though this model began in the private sector, its logic fits public infrastructure too.

Think about water: finding new desalination technologies, reimagining how treated water gets reused, building approaches not tried before they fit the idea.

4. The VRIO Model

VRIO is a slower, inward-looking model. It asks organizations to examine their own resources and ask whether these resources can create a competitive advantage that actually lasts.

Each resource is tested using four questions:

Value: Does it help the organization seize an opportunity or block a threat?

Rarity: Do competitors have it, or is it uncommon?

Imitability: Is it difficult or expensive for others to copy?

Organization: Is the organization structured in a way that allows it to fully use this resource?

If a resource checks all four boxes, it becomes a foundation for a long-term advantage.

VRIO is often a reality-check: “What do we really have that matters?”

2.1.4 Challenges in Applying Strategic Planning

Strategic planning always looks neat on paper. Clean lines. Clear goals. Reality, though? It's a bit more tangled.

Here are the challenges that show up most often:

1. The Gap Between Writing the Strategy and Actually Doing It

This one... honestly, it happens a lot.

You see a strategic plan that looks polished almost too perfect.

But once people try to implement it... things just don't move.

Sometimes no one really knows who should take the first step.

Sometimes the message never makes it from the senior offices down to the people doing the work.

And sometimes the plan is simply underfunded. Not enough staff. Not enough tools.

So the whole thing sits there, looking great, but going nowhere.

2. Resistance to Change

Strategic planning usually brings some kind of shift new processes, new structures, even new "tone" inside the organization.

But people are people.

They get used to a certain rhythm.

So when something big changes, you see hesitation... maybe fear... maybe simple reluctance because the current way feels safer.

And that resistance slows everything down.

3. Missing Resources

A plan can be brilliant on paper but still impossible if the organization doesn't have the budget, the training programs, the tech, or the people to carry it out.

Without resources, a strategy becomes a statement, not a transformation.

4. A World That Changes Too Fast

Everything shifts technology, markets, regulations, even politics.

A long-term strategy might look outdated halfway through.

That's why the planning process needs to stay flexible, always ready to adjust the direction instead of sticking rigidly to something that no longer fits reality.

5. Leadership That Isn't Fully On Board

If leaders don't show commitment visible, consistent commitment others in the organization won't commit either.

People look upward.

If leadership treats the strategy as optional, the rest of the team will too.

6. Goals That Are Hard to Measure

Some goals sound clear but don't translate into numbers:

improving reputation... strengthening morale... building trust.

These matter, but measuring them is tricky, and that makes evaluating progress harder.

7. Daily Work Pushing Strategy Aside

Teams get busy.

Emails, deadlines, emergencies.

Long-term plans slowly slip to the background because the everyday work feels louder and more urgent even when the strategy is what shapes the future.

To handle all of this, organizations need awareness right from the start.

They need wide participation, honest communication, enough resources, supportive leadership, and a mindset that allows adjusting the plan whenever the environment shifts.

And in massive water projects especially the ones tied to Vision 2030 the ability to navigate these challenges is what turns strategic documents into real, lasting progress.

2.2 Project Performance Management

Project performance management is basically the way you make sure a strategy doesn't stay theoretical.

It's what helps projects produce something real results that matter.

In big infrastructure projects, especially water production, performance isn't just finishing on time.

It's the quality of the water, the efficiency of the system, how sustainable the operations are, and whether the whole thing holds up years from now.

This part explains what performance management actually means, the indicators that measure it, and the factors that influence how well production-focused projects succeed.

2.2.1 What Project Performance Management Really Means

Project Performance Management (PPM) is a continuous, structured way of checking how a project is doing measuring, comparing, adjusting.

It goes beyond checking costs or timelines.

It connects the everyday work of a project to the strategic goals of the whole organization (Yusuf, 2025).

It gives managers and stakeholders a clearer sense of momentum where things are fine, where things might spill over, where decisions need to be made early instead of late.

The cycle stays active from the planning stage until the project closes and everyone sits down to evaluate the final outcome.

The main steps usually look like this:

1. Setting Performance Objectives

General goals become specific and measurable SMART goals.

They cover operational efficiency, water quality, environmental safety, and how satisfied the stakeholders are.

2. Choosing KPIs

A set of indicators some numeric, some descriptive is selected.
They act like a dashboard you can glance at anytime to see where the project stands.

3. Collecting the Data

Regular, repeated collection.

Reliable sources.

Accurate measurements.

Because without good data, everything that follows becomes shaky.

4. Analyzing the Performance

Here, the data is compared with what was planned.

Where are we aligned? Where did we fall short?

Tools like Earned Value Analysis help figure out what's happening behind the scenes not just that there's a problem, but why it happened.

5. Reporting

Findings turn into simple, clear reports for leadership and stakeholders.

They show progress, risks, issues without sugarcoating.

6. Taking Action

If something's off, a corrective plan is created reassigning resources, adjusting timelines, improving processes.

If something's working especially well, that strength gets reinforced.

The real value of PPM is that it allows the team to act early instead of reacting late.

It builds responsibility across the team everyone knows exactly what they're accountable for.

And it makes decisions more grounded, because they're driven by data rather than intuition or guesswork.

For the water sector where every project affects national water security performance management isn't optional.

It's what protects massive investments and ensures the project actually supports long-term strategic goals (Abdella, 2024).

2.2.2 Key Performance Indicators (KPIs) in Projects Calm Human Tone

When you look at how people manage projects, you'll notice they almost always fall back on KPIs. It just happens naturally they're the numbers and signals that tell you if things are actually moving the way you hoped. Some KPIs are purely numerical, some feel more like quality checks, but together they help organizations see whether their strategic plans are getting anywhere. And to choose KPIs that won't mislead you later, they need to be clear, measurable, achievable, tied to what matters, and set within a specific timeframe. The usual SMART checklist, even though in real life it's less about the acronym and more about picking indicators you can genuinely depend on.

Now, once we shift to water-production projects, the story becomes a bit richer. Time and cost the classic "iron triangle" aren't enough on their own. There's more going on: operational efficiency, product quality, environmental duties, even customer satisfaction. So the indicators naturally fall into several groups.

1. Financial and Schedule Indicators

These are the old, familiar ones. Budget. Time. Whether the project is staying on track or drifting.

Cost Performance Index (CPI):

Think of it as a quick pulse check on how money is being handled. You divide earned value by actual cost. If the result goes above 1, you're spending better than expected. If not... well, something's off.

Schedule Performance Index (SPI):

Same idea, but for time. Earned value over planned value. When it's above

1, you're ahead of schedule, which always feels good.

Budget Variance:

A simple difference between what you planned to spend and what you really spent.

On-Time Completion Rate:

The percentage of tasks that finished on or before their deadlines. Pretty straightforward.

2. Operational Efficiency and Productivity

Here we look at how well the plant is actually running day to day. The energy it uses. The resources it consumes. How much water is wasted or saved.

Cost per Cubic Meter:

A central metric in water-production. It shows how much it truly costs to produce one cubic meter of water energy, chemicals, maintenance, everything wrapped together.

Specific Energy Consumption:

Measured in kWh per cubic meter. Especially in desalination, lowering this number is a big deal. Each drop in energy use means a cleaner, more efficient process.

Plant Availability Factor:

Basically: "How often can the plant run when we need it?" High availability means the equipment is reliable and maintenance programs are doing their job.

Non-Revenue Water (NRW):

Water that gets produced but never billed maybe because of leaks, maybe because of administrative issues. Cutting this number is a long-term goal in most water sectors.

3. Quality and Compliance

This group is all about making sure the water meets health, safety, and environmental standards.

Water Quality Index (WQI):

A composite score combining several tests turbidity, pH, dissolved salts, and anything else relevant. The final value gives a general sense of how “clean” or “safe” the water is.

Environmental Compliance Rate:

A measure of how well the project is following environmental rules whether that’s handling brine correctly or keeping emissions under limits.

Customer Complaints Related to Quality:

A real-world signal about how people feel about the water reaching them.

4. Sustainability and Environmental Impact

These indicators focus on the long-term picture how the project fits within environmental goals and national visions like 2030.

Carbon Footprint:

The total emissions released from the project’s operations, mostly coming from heavy energy use.

Wastewater Reuse Rate:

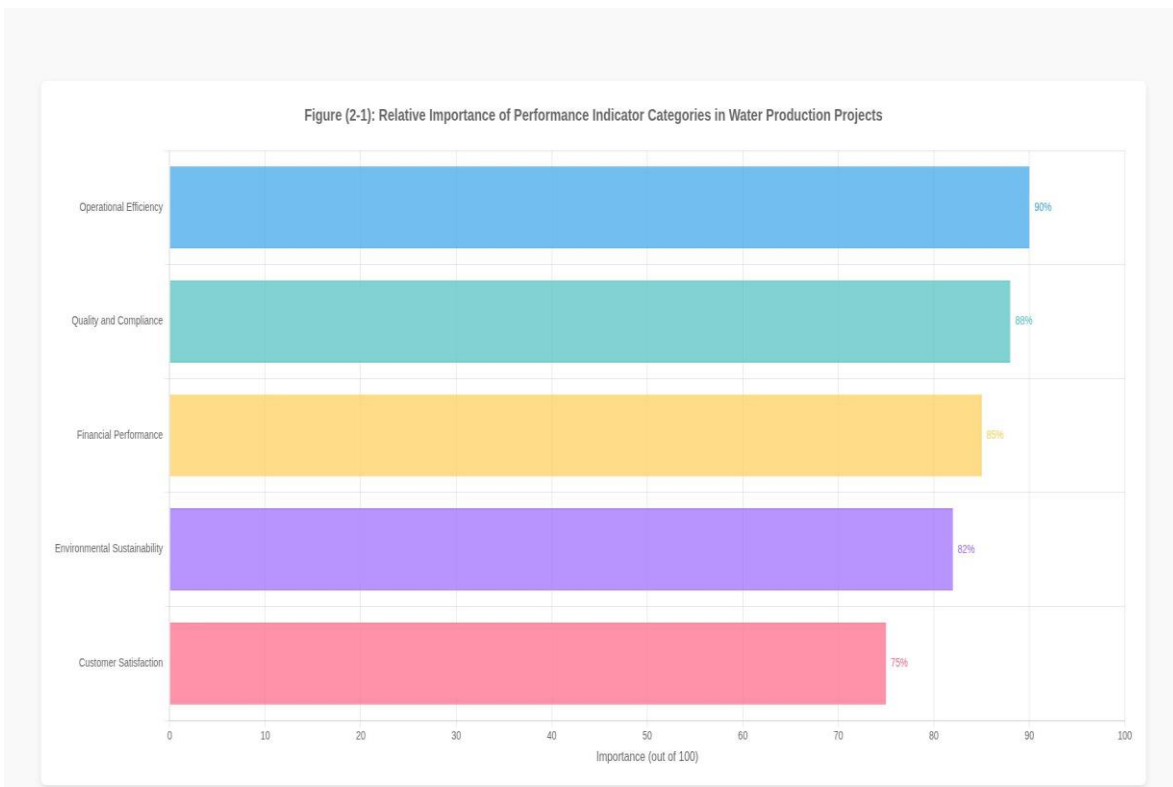
In projects that treat wastewater, this shows how much treated water gets reused for things like irrigation or cooling. The higher it climbs, the less pressure on freshwater sources.

Impact on Biodiversity:

An assessment of how the project affects nearby ecosystems marine life, plants, and the general environmental balance around the site.

Choosing the right mix of KPIs is essential. They need to balance each other out, cover the project from different angles, and align with the goals of the Ministry of Environment, Water and Agriculture. When they do, it becomes much easier to see where the project stands and where it's heading almost like adjusting your path while holding a warm cup of coffee and quietly checking the map.

2.2.3 Factors Influencing the Performance of Productive Projects



When you look closely at water-production projects, you start to realize they don't move in a straight line. Their performance is shaped by many things some inside the project, some happening around it. And understanding these forces, really sitting with them for a moment, makes it easier to manage the project without unnecessary surprises. Usually, these factors fall into a few broad areas.

1. Planning and Design Factors

This early stage is... well, it's the backbone. If something slips here, even a tiny detail, it tends to grow into bigger issues later. You could say the whole project stands on how solid this step is.

Accuracy of Feasibility Studies:

These studies mix technical, economic, and environmental expectations. If the expected water demand is off, or the operating costs were guessed too lightly, or the environmental impact wasn't properly assessed then the project suffers down the road. Sometimes for years.

Engineering Design and Technology Choice:

Choosing the right method like reverse osmosis or multi-effect distillation matters more than it sounds. It affects energy use, reliability, and maintenance. A weak design usually reveals itself through repeated breakdowns or constant maintenance that everyone quietly complains about.

Clear Scope Definition:

If the scope isn't clear, the project starts to stretch. More requests. More add-ons. That "scope creep" feeling where things keep growing while timelines don't. And naturally, the cost curve starts to rise with it.

Long-Term Strategic Thinking:

A water-production project can't live alone; it has to fit into a bigger picture. Population growth, climate trends, new technologies... all of these shape the project's future. Without that long view, the project may look fine today but fail to meet tomorrow's needs.

2. Execution and Project Management Factors

This is where the daily work happens. The practical side. The part no one sees unless they're inside the project rooms.

Strength of the Project Team:

A good team handles challenges with less panic. Their experience really shows in how they solve problems, distribute work, and keep communication flowing. A weak team does the opposite they react late, miss early warnings, and let issues grow.

Managing Resources (People and Money):

Projects walk forward only when resources arrive on time. Skilled labor, financial allocations, equipment... if any of these lag, the whole schedule slides. It's almost like trying to cook while the ingredients keep arriving late.

Procurement and Supply Chain Handling:

One delayed shipment especially of something important can slow the entire project. That's why having solid contracts and trusted suppliers is more than just paperwork. It's protection.

Monitoring and Control:

Quiet but essential. Good monitoring helps detect deviations early, measure progress properly, and take corrective steps before things slip too far. When this piece works well, the project stays on its track. When it doesn't, you start seeing the drift almost instantly.

3. Organizational and Institutional Factors

Coffee-Calm Human Rewrite

When you think about it, these factors basically describe the internal atmosphere of the organization running the project. The policies, the structure, the habits... all the little things that shape how the work actually feels on the inside.

Support from Top Management:

Projects breathe easier when top management genuinely supports them. You can almost see it resources show up when needed, paperwork moves faster, and the project suddenly feels like it has a clear path instead of bumping into obstacles at every corner.

Organizational Structure and Communication:

When roles are clear and communication lines aren't tangled, everything flows smoother. People know who to talk to, what they're responsible for, and what decisions sit where. It reduces confusion, the kind that usually leads to small fights or unnecessary delays.

Organizational Culture:

A culture that encourages teamwork, creativity, responsibility, and continuous improvement ends up lifting performance without forcing anyone. It creates this calm, encouraging environment where people want to do better not because someone told them, but because the place has that energy.

Coordination Across Government Entities:

Big water-infrastructure projects often need several government bodies to work together. And honestly, when coordination is weak, permits get delayed, approvals get stuck, and the whole timeline stretches quietly. It's one of those issues that doesn't scream... but it bites.

4. External and Environmental Factors

These sit outside the project's immediate control. You can't really change them, but they still push the project around in different ways.

Political and Legal Climate:

When the political environment is stable and the laws around water, investment, and the environment are clear, everyone from contractors to investors feels more confident. It sets a steady stage to work on.

Economic Conditions:

Things like exchange rates, inflation, and the shifting costs of materials or energy can change a project's budget overnight. Sometimes it's small; sometimes it reshapes the financial plan entirely.

Environmental and Natural Challenges:

Saudi Arabia deals with unique water-related pressures. Limited natural resources, tough weather, climate change. Even seawater temperature rising can affect desalination plants along the coast. A sudden storm or extreme heat wave can slow construction in places like Jeddah. These aren't things you control they're things you prepare for.

External Stakeholders:

Local communities, NGOs, media... all of them play a role in how the project is perceived. Their acceptance or concern can influence the project's pace and its reputation, sometimes more than technical performance itself.

A Soft Closing Thought

For water-production projects to truly perform well, the strategy has to look at all these layers together. Not one by one. A thoughtful plan that studies risks, prepares backup routes, and builds strong relationships with every stakeholder ends up giving the project the flexibility it needs. And honestly, that flexibility is what helps a project survive the surprises that always come along the way usually at the most inconvenient times.

2.3 Chapter Three: The Water Sector in Saudi

The water sector in Saudi Arabia carries a kind of importance that's hard to ignore. It affects everything people's daily lives, how cities grow, how industries operate and at the same time it faces some of the toughest conditions anywhere. The climate is dry, the heat is intense, and natural water is incredibly limited. Because of all this, the Saudi leadership learned early on that water security needs the same level of attention as any national priority.

Not for a year or two but for decades ahead.

So, this chapter walks through where the water sector stands today. It starts with the major pressures shaping it: scarcity, climate change, and a fast-growing demand for water. Then it moves into the country's big plans to handle these issues, plans like *Vision 2030* and the *National Water Strategy*. It also highlights the central role of the Ministry of Environment, Water and Agriculture – the main body steering, regulating, and guiding how water is produced, transported, and delivered in a way that protects both efficiency and long-term sustainability.

2.3.1 Water Resource Management and Its Challenges (Scarcity, Climate Change)

Saudi Arabia sits in one of the driest regions on Earth. Rain is rare and unpredictable, evaporation is constant, and there are no rivers flowing across the country. This makes water a challenge from the start – not a temporary one, but a built-in reality the nation has had to work around for decades. And as the population grew and the economy expanded rapidly, demand for water rose sharply, pushing the country toward new, nontraditional solutions.

First: Water Scarcity as the Central Challenge

Water scarcity is more than a background issue – it's the main element shaping almost every decision in the sector. And the country depends primarily on three water sources:

1. Groundwater

For a long time, groundwater – especially fossil groundwater buried deep underground – was the backbone of water supply. Most of it supported agriculture, huge farming areas, long growing seasons.

But the challenge is that fossil groundwater doesn't recharge. Once it's used up, it doesn't come back.

Years of heavy extraction caused the levels to fall, making it clear that relying on it the same way wasn't sustainable.

That's why the country shifted its approach. Policies started encouraging farmers to move toward crops that need less water, and irrigation methods that waste far less than the old systems. The change wasn't just a preference—it was necessary to protect what remained of these ancient underground reserves.

2. Desalinated Water

When it became obvious that groundwater alone couldn't meet the rising demand, Saudi Arabia turned strongly to desalination—and it didn't hesitate. The move was early, deliberate, and massive.

Today, Saudi Arabia is the world's largest producer of desalinated water. Along the coastlines—on both the Arabian Gulf and the Red Sea—desalination plants supply a huge share of the water used in major cities, including Jeddah.

But desalination comes with its own challenges.

- It's expensive to operate.
- It consumes large amounts of energy.
- And the salty brine released back into the sea needs careful handling to avoid damaging marine ecosystems.

These downsides don't reduce its importance—they just show that every solution comes with a cost, and desalination is no exception.

Surface Water (Dams) and Treated Wastewater Human, Calm Rewrite

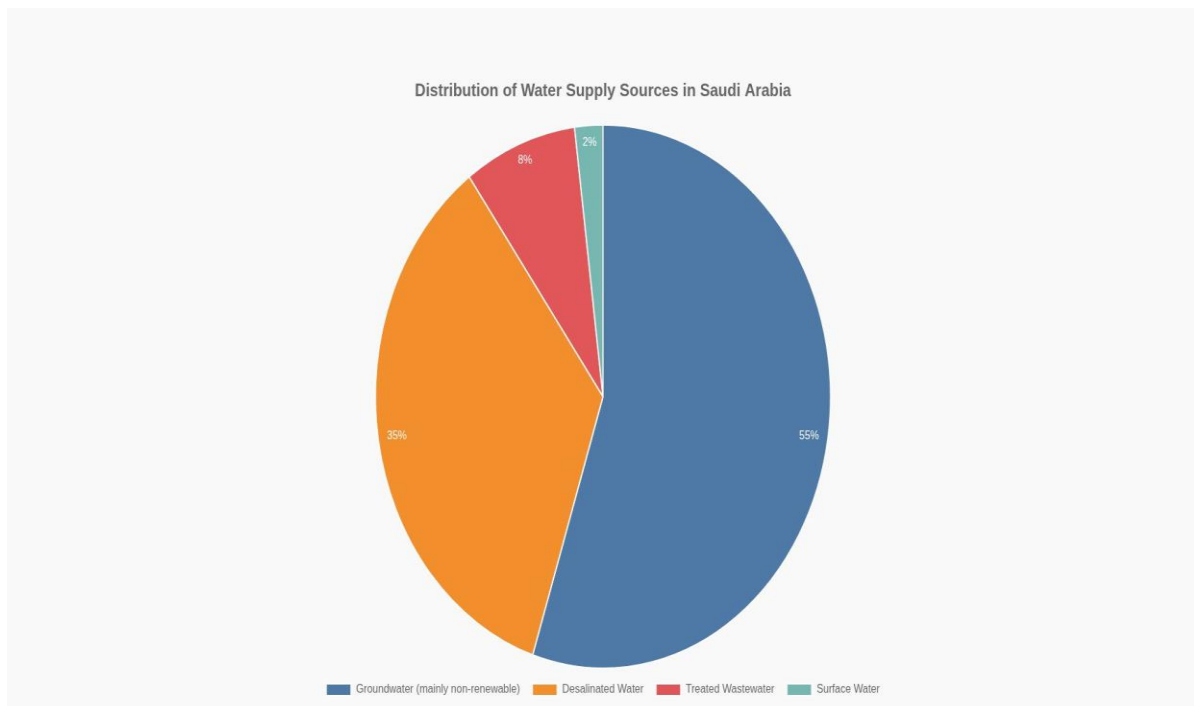
Surface water—the kind that comes from rainfall and collects behind dams—makes up only a small slice of Saudi Arabia's total water resources. And even that small slice is unpredictable. Rainfall shifts, seasons change, and the amounts vary so much that you can't build a long-term plan depending on it alone.

On the other hand, treated wastewater has started to appear as a promising, nontraditional source. It's one of those resources that didn't get much attention in the past, but now the Kingdom is moving seriously

toward expanding its capacity in advanced, tertiary treatment.

The goal is simple: make this water clean and reliable enough to reuse it in agriculture, in industrial applications, even in cooling facilities.

By doing that, the pressure on freshwater supplies is reduced, and the overall system becomes more sustainable. It's a shift that reflects the country's understanding that every drop counts, especially in a place where natural water is scarce and the climate keeps pushing the limits.



Second: The Effects of Climate Change

Climate change adds its own weight to the water problem in Saudi Arabia. It's not a separate issue—it blends into everything the sector is already dealing with. And from what studies keep showing, the whole region is heading toward hotter weather, longer dry spells, and sudden, intense storms that come without warning.

All of that makes managing water even more complicated.

Here's what that actually means on the ground:

- Rising water demand

When the temperature climbs, everything starts needing more water.

Homes. Farms. Cooling systems in buildings and factories.

Heat naturally pushes consumption upward and the hotter it gets, the more people rely on water to get through the day.

- Slower groundwater recharge

Rain doesn't come the same way it used to. Sometimes it's late, sometimes it's barely there at all.

And even when rain does fall, the heat makes a lot of it evaporate before it can seep into the soil.

So the underground aquifers don't refill enough and for a country that depends heavily on groundwater, that's a serious long-term concern.

- Increased risk of flash floods

Even with droughts, sudden heavy rainstorms can hit cities hard.

We've seen that in Jeddah before rain that comes all at once, causes dangerous flooding, and puts pressure on infrastructure.

Climate change makes these sudden events more likely, which means stormwater systems need to be stronger and more prepared.

- Coastal infrastructure under pressure

Most desalination plants sit right on the coastline.

With rising sea levels, these facilities the ones that provide most of the Kingdom's drinking water face erosion, flooding risks, and long-term structural challenges.

So the country is dealing with two layers at once: water scarcity on one side, and climate stress on the other. And the response has to balance both increasing sustainable water supply while making sure water use becomes more efficient everywhere.

2.3.2 Vision 2030 and the National Water Strategy

With all these deep, structural challenges, Saudi Arabia didn't settle for short-term fixes.

Instead, it created a broad national plan Vision 2030 and from it came detailed programs, including the National Water Strategy 2030, which lays out how to reshape the water sector from the foundation upward.

This marked a shift from simply “solving problems when they appear” to building a system that's strong enough to face the future confidently.

How Vision 2030 Reshapes the Water Sector

- Environmental sustainability at the center

The Vision puts a lot of weight on protecting the environment reducing pollution, saving energy, and managing water more responsibly.

So every water project, whether it's desalination or wastewater treatment, is judged not only by how much water it produces, but by how well it fits into a sustainable future.

- Linking water security with food security

Vision 2030 doesn't treat water and food as separate topics.

It recognizes that food production depends heavily on water availability. That's why the Vision encourages shifting to crops that don't consume huge amounts of water and increasing the use of treated wastewater in agriculture.

- Upgrading infrastructure across the country

The Vision includes major expansion and modernization: new, more efficient desalination plants, stronger water transport networks, more dams, and upgraded wastewater treatment systems. These projects help build a water cycle that works smoothly and can support the country as it grows.

- Bringing in the private sector

Vision 2030 opens water projects to local and international companies through IWPPs and ISTPs.

This brings more investment, more innovation, and often better performance.

The National Water Strategy 2030 takes the big ideas from Vision 2030 and turns them into a detailed, unified plan.

It organizes reforms, sets long-term targets, and creates a roadmap for a water sector that is stable, reliable, and sustainable.

Its purpose is simple but essential:

to make sure water is safe, available, and dependable for everyone while protecting the environment and preserving limited resources.

The National Water Strategy rests on a very clear idea:

a water sector that can last one that protects its resources, safeguards the environment, and provides people with safe, steady water and reliable services that actually support the country's growth.

To make that vision real, the strategy lays out ten main programs, each one covering a specific part of how water is managed in the Kingdom.

1. Fixing the Regulatory and Institutional Structure

This program focuses on restructuring the whole sector so every organization knows exactly what it's responsible for the regulator, the service providers, and the long-term planners.

Clarity prevents overlap and keeps decision-making smoother.

2. Managing All Water Resources in One Framework

Whether the water comes from the ground, from dams, from desalination plants, or from treated wastewater the plan aims to manage all of these sources together, in a balanced, sustainable way.

3. Safe, Reliable Water Supply for the Entire Kingdom

The target is simple but essential: everyone, in every region, should receive clean, dependable drinking water without sudden interruptions or quality issues.

4. High-Quality Wastewater Services

This part expands sewage networks and upgrades treatment plants so the treated water reaches high environmental standards.

It's about turning wastewater into something useful, not something wasted.

5. Supporting Agriculture with Sustainable Water Use

Since farming uses a large share of the water, the strategy encourages a shift toward crops and methods that rely on less water while still supporting the sector's needs.

6. Managing Water Demand More Efficiently

Here the focus is on how people use water at home, in farms, in factories.

The goal is to promote more efficient consumption through policies, awareness, and better usage practices.

7. Choosing the Best and Most Efficient Water Technologies

This program pushes the sector toward advanced, efficient technologies in desalination, in water transport, and in treatment to reduce energy use and long-term costs.

8. Building Strong National Talent in the Water Sector

The strategy places real emphasis on developing Saudi expertise engineers, technicians, specialists so the sector grows with solid local capability.

9. Strengthening the Financial Sustainability of the Sector

This involves creating financial models that keep services stable, ensure continuous improvement, and encourage efficiency without putting pressure on the system.

10. Expanding Private-Sector Participation

This program aims to bring more private companies into water projects in financing, operating, and managing facilities.

Doing so brings new ideas, new efficiencies, and faster development.

A Clear Strategic Direction

Through this full framework, Saudi Arabia isn't only responding to water scarcity it is building a water sector that is strong, modern, and resilient. One that can support economic growth and environmental responsibility at the same time.

2.3.3 The Role of the Ministry of Environment, Water and Agriculture in Managing Water Projects

The Ministry of Environment, Water and Agriculture handles... well, quite a lot. Three big sectors fall under it, all tangled together in different ways, and the water sector kind of sits right in the middle of that mess. The ministry is basically the main arm of the government when it comes to drawing up policies and long-term plans, then actually seeing them through. The whole point is to protect water resources, keep water and wastewater services running at a good level, and make sure the Kingdom has enough water in the future. All of this circles back to Vision 2030 and the National Water Strategy they're like the big compass guiding everything.

If you try to break down the ministry's role in water projects, you'll notice it spreads across several tasks. They blend into each other; nothing is neatly separated.

1. Strategic Planning and Setting Policies

One of the ministry's biggest jobs is shaping where the water sector is supposed to be heading years from now. And that's not just a single document it's things like preparing the National Water Strategy, updating it every now and then, and setting broader water plans at both national and regional levels.

They also estimate how much water different sectors might need later on: cities, factories, farms... everyone.

If you look at this as an outsider, you start to see why this role matters it ties every water project back to the country's main goals. It makes sure the projects aren't random or disconnected, and that they consider scarcity, sustainability, and all those headaches that come with water planning (Abdella, 2024). And while they're at it, the ministry keeps adjusting the laws and rules that organize the sector so water is used fairly, without wasting resources.

2. Developing and Managing Water Resources

Another chunk of their work is dealing with water sources themselves. For example, they monitor groundwater levels and try to control how much gets pumped so the aquifers don't collapse. They also work on surface-water sources building dams, catching rainwater, and pushing for more reuse of treated wastewater.

Oh, and the desalination part is huge. They decide where new plants should go, how much water they should produce stuff like that based on future demand studies. There's always talk about newer, cleaner technology too, since desalination eats up a lot of energy if you're not careful.

3. Executing and Overseeing Major Projects

Then there's the big, heavy-duty work: the ministry's implementing arms. Companies like the Saudi Water Partnerships Company and the old Saline Water Conversion Corporation before its roles were shifted basically serve as engines that run giant water infrastructure projects.

The ministry takes care of bidding, supervising, managing... all the moving parts. And these projects cover pretty much everything:

Water production: new desalination plants on the Red Sea and Arabian Gulf.

Water pipelines: those huge systems that move desalinated water from the coast deep inland.

Distribution networks: making city systems better so water doesn't just vanish through old pipes.

Wastewater networks and treatment plants: bigger coverage, cleaner output.

Dams: for floods, aquifer recharge, and giving farmers what they need.

If you want a real example, look at Jeddah. The ministry's been knee-deep in projects there because the city keeps growing and the demand just won't slow down. They expanded existing desalination plants, built new ones, upgraded water and sewage networks, and even took on stormwater and flood-control projects so the city doesn't drown every rainy season (Alodah, 2023).

1. Monitoring, Oversight, and Making Sure Quality Doesn't Slip

The ministry's work isn't just about drawing plans or putting projects on the ground and walking away. No its responsibilities stretch further than that. A big piece of its job is watching the sector closely and making sure the services people receive don't fall below what's expected. Sometimes this means routine checks, sometimes deeper evaluations.

For example, drinking water quality gets monitored constantly, almost like a heartbeat check, to verify it still meets both local and international health standards. And it doesn't stop there. The ministry also keeps an eye on the performance of service providers like the National Water Company to see whether operations are running efficiently and supplies stay reliable.

It can be said that this kind of oversight is what builds public trust. Without it, people wouldn't know if the system is really delivering what it promises or just barely holding together. So this role isn't extra it's essential for making sure the projects actually reach the goals they were designed for, especially when it comes to performance and quality.

5. Strengthening Partnerships with the Private Sector

Following the general spirit of Vision 2030, the ministry also pushes heavily toward involving the private sector in the water field. The idea isn't random it's a strategy to bring investment, reduce the financial pressure on the government, and tap into the operational know-how of private companies.

Through the Saudi Water Partnerships Company, the ministry designs and releases water-infrastructure projects using the public–private partnership model (PPP). And from observation, it becomes clear that this approach doesn't just lighten the load on the state budget; it helps improve the overall performance of the sector by bringing in private-sector efficiency and experience in building and running water facilities (Yusuf, 2025).

So with all these pieces working together, the ministry essentially becomes the leader, the regulator, and the enabler of the entire water sector. Through careful planning and hands-on project management, it tries to pull off a very difficult balance: meeting a growing demand for water while keeping the resource sustainable for future generations. That's why many see it as the backbone of Saudi Arabia's effort to secure long-term water security.

2.4 Previous Studies

Looking at earlier research is always a starting point in scientific work. It gives the study its theoretical ground and helps highlight the gaps the current research tries to fill. When analyzing studies related to the theme of “how strategic planning affects the performance of water-production projects,” the literature helps build a deeper sense of the research environment, showing where ideas match and where they diverge, and why this study actually matters.

To make sense of everything, the previous studies were grouped into three main themes that match the key variables of the current research:

- the first covers studies linking strategic planning with institutional performance in a general sense,
- the second focuses on studies discussing water-project management in Saudi Arabia and the challenges it faces,
- and the third theme reflects on these studies and identifies the gap that makes the current research necessary.

2.4.1 Studies on Strategic Planning and Its Effect on Institutional Performance

Strategic planning has attracted a lot of attention in administrative literature. Many studies have tried to understand how it shapes different aspects of institutional performance across many sectors. They dig into how vision-setting, mission formulation, environmental analysis, goal setting, strategy implementation, and monitoring can help organizations become more competitive, more efficient, and generally more capable of handling change.

For example, plenty of research has shown a positive link between adopting strategic-planning practices and improving both financial and non-financial performance. Some applied studies across both public and private sectors suggest that organizations with structured strategic-planning processes tend to adapt faster, allocate resources more wisely, and reach long-term goals more effectively.

Related to essential resource sectors, a recent study on sustainable food-security strategies in Saudi Arabia highlighted how strategic plans help turn broad national ambitions into actionable, measurable outcomes (Yusuf, 2025). The study wasn't directly focused on the water sector, but it emphasized that a clear strategic framework is a basic requirement for monitoring sector performance and ensuring long-term sustainability. The insight can easily be applied to the water sector, which faces similar challenges tied to scarcity and national security.

Another study explored strategic environmental assessment as a tool for sustainable management of coastal areas in the Kingdom including Jeddah within the framework of Vision 2030 (Hegazy, 2024). It concluded that integrating environmental considerations early in the planning stage helps improve environmental performance by reducing negative impacts of policies and projects. This highlights an important dimension: environmental performance. And in water-production projects especially desalination this dimension becomes critical because of the potential environmental footprint. The study indirectly reminds us that strategic

planning isn't only about economic efficiency; it's also a mechanism to ensure broader sustainability goals are respected.

That said, not all literature paints a simple, linear picture. Some researchers argue that the relationship between strategic planning and performance isn't always straightforward. Success depends on many mediating factors: execution quality, leadership commitment, organizational culture, and the ability to adjust when unexpected situations occur. Having a beautifully written strategic plan doesn't guarantee improved performance unless there are strong systems for implementation, follow-up, and evaluation.

Which brings us to an important point: studying the strategic process as a whole is more valuable than focusing only on the plan as a document.

Overall, this body of research provides a firm theoretical base that supports the main assumption of the current study that strategic planning functions as an independent variable with a likely positive effect on project performance. However, most of these studies looked at performance at the institutional level and paid less attention to individual projects, especially technical, production-heavy ones like water-production projects. And that gap is exactly where the present study steps in.

2.4.2 Studies on Managing Water Projects in Saudi Arabia

When you start digging into how Saudi Arabia handles its water projects, you realize the situation isn't simple at all. It's this mix of old issues and new pressures. The country barely has renewable water to rely on. Most of the drinking water comes from desalination plants, and the population keeps growing, cities stretching out further every year. Naturally, the demand rises with it. So it makes sense that a lot of researchers have tried to understand what's going on in the sector and how the Kingdom is trying to keep things running.

One study, pretty broad in scope, looked at the history of the water situation here. It pointed straight at the long years of unsustainable groundwater use mostly in agriculture (Suhail, 2024). And the study didn't just stop at describing the issue; it laid out some strategies that might help reduce the pressure. Honestly, it gives you a clearer picture of how much weight the ministry carries today. And from observation, it becomes clear that relying on short-term adjustments isn't enough anymore. A long-term, strategic mindset is the only approach that makes sense.

Another study, working along the same line of thought, focused on the problem of water scarcity and argued that water-development projects need protection and long-range planning if they're going to stay sustainable (Abdella, 2024). It basically said that meeting the rising demand whether for cities or farms should be tied to a strategic plan that acknowledges natural resource limits. And that's one of those points that feels almost obvious when you read it, but it's still good to see it spelled out: individual projects can't succeed without a unified national direction behind them.

There was also a study that tried to propose a sustainable, city-level strategy for conserving water. The authors noted something interesting: even though the Kingdom has been managing to meet its needs so far, there still isn't a fully developed, long-term water vision (Almulhim, 2023). That kind of comment hints at a gap between what's planned on paper and what actually unfolds in practice. And that, in turn, reinforces why we need to look at how strategic planning is being applied on the ground not just how it's being written.

As climate change starts nudging its way deeper into the conversation, sustainable water management becomes even more serious. A more recent study highlighted this by looking at earlier initiatives in Jeddah things like dealing with flood risks, which have been a real concern (Alodah, 2023). The study explored several strategies that could help the water sector adapt to climate-related issues. And if anything, this links directly to the topic at hand: it shows how water management in Jeddah

depends on flexible, adaptive planning, which is exactly what strategic planning aims to provide.

Another research paper widened the lens to include challenges related to agriculture and wastewater, offering corrective steps to improve long-term sustainability (Mir, 2023). Even though it didn't focus on water-production projects specifically, the overall picture it painted helps explain the pressures surrounding those projects.

And finally, a study on managing water scarcity for food security tied everything to the national water strategy (Alotaibi, 2023). The takeaway was pretty straightforward: water-production projects are part of something much bigger. They sit inside a national strategy that reaches far beyond water alone, touching things like food security and broader development goals.

So when you put all these studies together, a pattern shows up. Almost all of them stress how important strategic, sustainable water management is for Saudi Arabia. But most of the focus stays on the big picture – national challenges, environmental pressure, future risks. What's missing is a closer look at how individual water-production projects actually perform, and how much their performance changes depending on the strategic planning used inside institutions like the Ministry of Environment, Water and Agriculture. And that gap is exactly where the current research finds its purpose.

2.4.3 Commentary on Previous Studies and Identifying the Research Gap

When you step back and look at the two groups of studies reviewed earlier, a few things start to stand out. And little by little, the shape of the research gap becomes clearer – the gap this study is actually trying to fill.

First, the studies in the first group did show a general positive link between strategic planning and institutional performance. That much is clear. But the thing is, most of those studies stayed at a very broad level. They didn't really get into the unique nature of large government projects

in a sector as sensitive and honestly, as complicated as water production. These projects have long lifecycles, massive investments behind them, and environmental and social impacts that stretch far beyond the construction site. Not to mention the technology itself, which tends to be pretty advanced. All of that makes the role of strategic planning, and how it affects performance, something that deserves its own focused look.

Second, the studies in the second group gave a wide, almost panoramic view of the challenges the water sector faces in Saudi Arabia. They stressed repeatedly the need for long-term strategies (Abdella, 2024). Some of them also mentioned national-level frameworks like the National Water Strategy and Vision 2030 (Hegazy, 2024; Alotaibi, 2023). But many of these studies stopped at the policy level. They didn't really go down to the level where strategy becomes action the project level. They rarely explained how those big plans turn into actual project workflows or how you can measure their impact on key performance indicators like operational efficiency, water quality, cost control, timelines, or environmental sustainability.

Third, even though a few studies talked about Jeddah usually as a coastal case or in discussions about climate challenges (Hegazy, 2024; Alodah, 2023) none of them, at least to the researcher's knowledge, focused directly on evaluating how strategic planning shapes the performance of water-production projects supervised by the Ministry of Environment, Water and Agriculture in Jeddah. And Jeddah is a textbook case: a huge city, almost fully dependent on desalination, with several major water-sector initiatives happening at the same time.

So, based on all of this, the research gap becomes easier to capture. It can be broken down like this:

1. A gap in direct linkage

There's a clear lack of studies that connect strategic-planning processes as an independent variable with all its stages (analysis, formulation, implementation, evaluation) to the performance of water-production projects as a dependent variable with its multiple dimensions (efficiency, effectiveness, quality, sustainability).

2. A gap in project-level focus

Most previous research focused on national or organizational planning. But what's missing is understanding how those strategic ideas get "translated" and applied at the project level where the actual, visible results appear.

3. A gap in local, applied context

There's no in-depth case study that looks closely at the Ministry's initiatives in Jeddah even though Jeddah is one of the clearest, most relevant examples of the challenges and opportunities in Saudi Arabia's water sector.

For that reason, this study comes to fill that space. It offers an empirical analysis of how the different dimensions of strategic planning influence the performance of water-production projects, using the Ministry's initiatives in Jeddah as a practical case. The idea is to provide both scientific value and something more grounded something decision-makers and project managers can actually use when trying to improve future projects so that they stay aligned with the Kingdom's strategic goals.

3. Study Methodology

This chapter basically walks through the steps and choices the researcher followed to reach the study's goals – answering its questions, testing its hypotheses, all of that. It lays out the study's approach, describes the population and sample, explains the tool used to gather data, and goes over the checks made to make sure the tool was valid and reliable. It also defines the study variables and the statistical methods used to analyze the data gathered from the sample.

So it's the part where everything behind the scenes gets unpacked.

3.1 Study Approach

Because the study is trying to understand the role that strategic planning plays in improving the performance of water-production projects – and to figure out what kind of relationship exists between the variables – the most suitable approach ended up being the descriptive analytical method.

The descriptive method is actually pretty common in the social and human sciences. And it isn't just about collecting data or listing observations. It goes further – it tries to analyze what the data mean, interpret patterns, and pull out the implications.

In simple terms, it aims to give a clear, accurate description of a certain phenomenon during a specific period, then break that description down to understand how different pieces relate to one another.

This approach was chosen for a few essential reasons that match what this study needs:

1. Describing the phenomenon

The descriptive method allows the researcher to gather detailed data about how strategic planning is actually practiced within water-production projects run by the Ministry of Environment, Water and Agriculture in Jeddah.

That includes describing different parts of the planning process things like vision and mission formulation, environmental analysis, setting strategic goals, allocating resources, and doing follow-up and evaluation all from the perspective of the people working in these projects.

2. Measuring performance

Using this method also makes it possible to collect quantitative data about how well these projects are performing. The study uses specific indicators here operational efficiency, the quality of the water produced, adherence to timelines and budgets, and environmental sustainability. Together, they give a clearer snapshot of the current performance level.

3. Correlation analysis

This part goes beyond simple description. With this method, the researcher can examine the relationship between the independent variable (strategic planning with all its dimensions) and the dependent variable (performance of water-production projects and its indicators). Basically, it helps identify how far strategic-planning processes influence actual performance improvements.

4. Drawing conclusions

Once the analysis is done, the method helps extract scientific conclusions about the kind of role strategic planning really plays. And from there, it becomes possible to offer practical recommendations or suggestions that could help improve the effectiveness of planning and its impact in future water-sector projects.

So, the descriptive analytical approach isn't just about putting data on the table. It's about sorting it, analyzing it statistically, and interpreting it in light of the study's theoretical framework and earlier research. The goal is to reach a deeper understanding of the phenomenon being studied which fits exactly with what this research is trying to achieve.

3.2 Study Population and Study Sample

3.2.1 Study Population

The study population or simply the “population” refers to all individuals or units that share one or more characteristics the researcher wants to generalize the results to. Keeping that in mind, and considering the nature of this study and what it aims to uncover, the population here consists of everyone working in upper, middle, and technical management levels within water-production projects operated by the Ministry of Environment, Water and Agriculture, along with the executive bodies supervising those projects, such as the National Water Company and the Saline Water Conversion Corporation, all within the city of Jeddah.

This specific group was chosen for a reason. They’re the core people in planning, executing, and monitoring these projects. They know the strategic plans better than anyone else, they deal with the real implementation challenges, and they’re directly responsible for hitting performance targets. So the group includes project managers, department heads, consulting engineers, strategic planners, quality officers, financial analysts, and other staff whose administrative and technical roles shape the project’s entire lifecycle.

Now, because project structures and working teams keep changing, it isn’t easy to pin down the exact number of individuals in this population. So the researcher relied on available data from annual reports and organizational charts of major projects in Jeddah. Based on that, the total population is estimated to be around 450 individuals.

3.2.2 Study Sample

Since the population is quite large and realistically, it would be difficult to reach every single individual the researcher used sampling to select a portion of the population to represent the whole.

A sample, simply put, is a smaller group carefully chosen so it reflects the characteristics of the full population.

1. Type of Sample and Selection Method

The researcher used a simple random sample, which is one of the best probability-based sampling methods. The idea behind it is straightforward: everyone in the population gets an equal chance of being selected. That helps reduce bias and increases the chances that results can be generalized back to the whole group.

Lists of employees working on the targeted projects were obtained, and then electronic tools were used to generate random numbers that determined who would be selected.

2. Determining the Sample Size

To figure out how large the sample should be large enough to represent the population accurately but still manageable the researcher relied on Stephen Thompson's formula, a well-known statistical formula used for determining sample sizes in finite populations. The formula is:

$$n = (N \cdot p \cdot (1-p)) / ((N-1)(d^2/z^2) + p \cdot (1-p))$$

Where:

n = required sample size

N = total population size (450 individuals)

z = the z -value tied to the selected confidence level (95% confidence $\rightarrow z = 1.96$)

p = the estimated proportion of the characteristic in the population (set at 0.5 since no prior studies specify it and 0.5 gives the most conservative, largest sample size)

d = the acceptable margin of error (set at 5%, so $d = 0.05$)

This formula helps ensure the sample chosen reflects the population closely enough to make the study's conclusions meaningful and reliable.

Applying the Formula

When the formula was applied, the calculation went step by step:

$$n = (450 \times 0.5 \times 0.5) / ((449 \times ([0.05] ^2 / [1.96] ^2)) + 0.5 \times 0.5)$$

$$n = 112.5 / ((449 \times (0.0025 / 3.8416)) + 0.25)$$

$$n = 112.5 / (0.2922 + 0.25)$$

$$n = 112.5 / 0.5422$$

And the result comes out to be about 207.48.

So the ideal sample size rounding it properly becomes 208 individuals.

3. Distributing and Collecting the Questionnaires

The researcher ended up distributing 250 questionnaires to the selected sample.

This was intentionally more than the required number, just to allow room for non-responses or incomplete forms which always happens in real studies.

The questionnaires were shared in two ways:

paper versions,

and electronic ones,

so participants could respond in whichever way suited them.

After a follow-up period, 225 questionnaires were collected. Once checked carefully, 17 of them had to be excluded because they were incomplete and couldn't be used in the statistical analysis.

That left 208 valid questionnaires, which matches exactly the required sample size.

The response rate, 225 out of 250, works out to 83.2%, a pretty solid rate and one that makes the final sample reliable enough to represent the population.

3.3 Study Tool (The Questionnaire)

To meet the study's objectives and gather the needed data from the sample, the researcher designed a questionnaire as the main data-collection tool. Questionnaires are commonly used in descriptive studies because they can reach a large number of participants with relatively little time and effort and they also make data coding and statistical analysis much easier.

Designing the questionnaire went through several stages:

1. Identifying the Main Sections

Based on the study's goals, questions, theoretical framework, and previous literature, the questionnaire was divided into three main parts:

- Part One: Demographic and Job-Related Information

This section collects basic details about respondents to describe the characteristics of the study sample.

It included variables such as:

gender, age, educational level, job title, and years of experience.

- Part Two: Strategic Planning Variable (Independent Variable)

This part measures how much strategic-planning practices are actually applied in water-production projects, from the viewpoint of the respondents.

It was broken down into five sub-dimensions, based on the theoretical framework:

Formulating vision, mission, and strategic goals

looking at how clear and well-defined the strategic direction is.

Environmental analysis (internal and external)

checking whether strengths, weaknesses, opportunities, and threats are examined properly.

Strategy formulation and implementation

focusing on how objectives turn into real plans and initiatives.

Strategic resource allocation

measuring how well financial, human, and technical resources are assigned to support the strategy.

Strategic monitoring and evaluation

assessing how performance is tracked and how adjustments are made when necessary.

- Part Three: Performance of Water-Production Projects (Dependent Variable)

This section measures how respondents perceive the performance of the water-production projects themselves.

It was divided into four main indicators, which represent the key performance measures for this type of project:

Operational efficiency

looking at optimal resource use and cost reduction.

Product and service quality

assessing whether the produced water meets standards and whether beneficiaries are satisfied.

Commitment to schedule and budget

measuring how closely projects stick to the planned time and financial limits.

Sustainability and environmental impact

examining how well projects follow environmental standards and support long-term sustainability.

2. Writing the Questionnaire Items

When the researcher started putting together the actual statements for the questionnaire, each axis got its own set of items almost like small windows into different parts of the behavior or performance being measured. Every statement was written to point at one clear aspect, nothing vague or confusing. The idea was to avoid tricky wording or anything with two possible meanings. No leading questions, no sentences that feel like puzzles.

By the time the whole thing came together, the total number of statements covered both the independent and dependent variables, spread out across their different sub-sections in a way that felt... well, balanced enough to measure what needed to be measured.

3. Response Scale

To turn all of this into numbers something you can actually run through statistical tests the five-point Likert scale was chosen. It's simple, but it captures nuance. Not just "agree or disagree," but how much.

Here's how it was weighted:

Strongly Agree → 5

Agree → 4

Neutral → 3

Disagree → 2

Strongly Disagree → 1

Using this scale makes the responses feel richer. It shows intensity, not just direction, which ends up helping a lot once everything is fed into analysis.

3.4 Validity and Reliability of the Tool

Before the questionnaire could be used seriously, the researcher needed to make sure it actually measures what it claims to and that it gives steady results if someone else were to use it again. So, both validity and reliability needed to be checked. Kind of like testing the foundation before building on top of it.

3.4.1 Validity

Validity, basically, is the answer to: Is this tool measuring the right thing? If the statements don't line up with the purpose of the study, then everything that comes after loses meaning.

Two methods were used to make sure the validity was solid:

1. Face / Content Validity

This type of validity is also known as “expert checking,” and it's exactly that. The researcher took the initial version of the questionnaire and gave it to two experts people who know their way around strategic management, project management, and water-resource topics, and who actually work in the Ministry of Environment, Water and Agriculture.

They were asked to comment on things like:

whether each statement fit under the right axis,

whether it was written clearly and without weird ambiguity,

whether the questionnaire covered the entire scope of the study variables,

and if anything needed to be added, removed, or rewritten.

After collecting their thoughts, the researcher made adjustments. Some statements were rewritten to sound clearer, two were merged because they were practically saying the same thing, and one new statement was added to strengthen one of the axes.

Once these changes were made and with about 80% agreement from the experts the questionnaire gained good face/content validity. Enough to move forward with some confidence.

2. Construct Validity (Internal Consistency)

To check whether each item really belonged to the concept it was supposed to measure, construct validity was tested. This meant looking at the correlation between each statement and the total score of the axis it falls under.

The questionnaire was first tried on a small exploratory sample 30 people, not part of the main sample but from the same broader group.

Then Pearson correlation coefficients were calculated. The results came back strong:

For the strategic planning items, correlations ranged between 0.68 and 0.85.

For the project-performance items, they landed between 0.71 and 0.89.

All correlations were statistically significant at $\alpha \leq 0.05$, which basically means the items were behaving consistently within their groups.

So, the questionnaire has good internal consistency a solid sign that it's measuring what it's meant to measure. 3.4.2 Reliability of the Study Tool

Reliability, in simple terms, is about how steady the tool's results are. If you use the same questionnaire again with the same people, under the same conditions, you expect the results to look more or less the same. If they don't, then something is off the tool isn't stable.

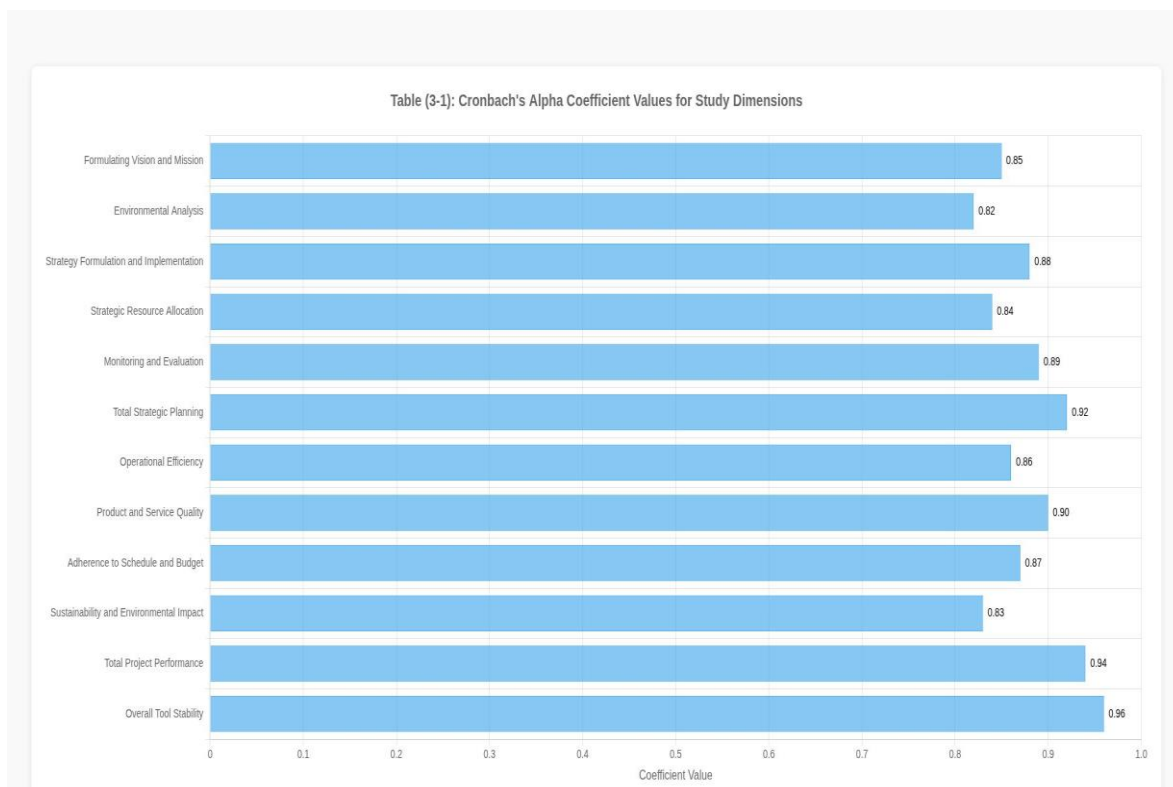
So reliability checks whether the questionnaire "sticks to itself" and doesn't contradict its own measurements.

To test this, the researcher used Cronbach's Alpha, which is probably the most commonly used measure for internal consistency. It basically tells you how well the items in each axis hold together whether they're measuring one coherent idea rather than scattered pieces.

Cronbach's Alpha was calculated using the data collected from the pilot sample the 30 individuals who were part of the exploratory testing, not the main sample.

And the table that follows presents the alpha values for each axis of the study, along with the overall reliability value for the entire questionnaire.

These values give a clear indication of how consistent the items are, and whether the tool can be trusted when used again under similar conditions.



When you take a closer look at the numbers in Table (3-1), you can almost immediately notice how solid the reliability values are. Each dimension of the study every single axis came out with a Cronbach's Alpha ranging roughly between 0.82 and 0.90. That's quite high, and honestly, it gives a sense that the items are working together the way they're supposed to.

Then, when you pull back a little and check the overall reliability for each main variable, the results get even clearer.

The independent variable, which is *strategic planning*, reached an alpha of 0.92. That's the kind of number that tells you the statements that make up this variable are behaving consistently... almost as if they're in sync.

And the dependent variable, *project performance*, scored 0.94, which is even stronger. It means the items measuring performance aren't drifting apart or contradicting each other—they're pointing in the same direction.

Finally, if you look at the questionnaire as a whole—meaning all parts together—the Cronbach's Alpha goes up to 0.96. And honestly, once you're somewhere above 0.90, you're in the territory of "very reliable" by most research standards.

To put this in simpler words:

All these values are far above the commonly accepted minimum, which is 0.70. Anything above that threshold is considered statistically acceptable. So when you're seeing values in the 0.80s, 0.90s, and especially close to 0.96, it strongly suggests that the tool is stable. Not just stable, but *highly* reliable.

What this means for the study is important—it means that if you were to take the same questionnaire back to the same group under similar conditions, you'd expect to get almost the same results. The tool isn't shaky or sensitive to small variations. It behaves in a steady, predictable way, and that makes it trustworthy in the analysis phase.

So, to sum it up in a human way:

The study tool isn't just "acceptable"... it's solid, consistent, and gives results that a researcher can actually rely on without second-guessing whether the instrument is the problem. That level of reliability gives a lot more confidence when interpreting the outcomes and drawing meaning from them.

3.5 Study Variables

To reach the study's goals and actually test the hypotheses in a meaningful way, the researcher had to lay out the main variables clearly. And after going through the theoretical background and what the study needed to measure, the variables settled into three groups:

1. Independent Variable

This is the variable that's supposed to influence something else – the one the researcher wants to examine closely to see how strong its effect really is.

In this study, the independent variable is strategic planning, and it was broken down into five dimensions, each one representing a specific angle of how planning is practiced inside water-production projects.

X1 – Vision, Mission, and Strategic Goals:

How clear the future direction is... and whether it actually inspires action, not just sits on paper.

X2 – Environmental Analysis:

The degree of attention given to studying internal weaknesses and strengths, and the external pressures and opportunities around the projects.

X3 – Strategy Formulation and Implementation:

Basically, how plans move from ideas into real steps – the mechanisms that turn strategy into action.

X4 – Strategic Resource Allocation:

How efficiently financial, human, and technical resources are guided toward the bigger goals.

X5 – Strategic Monitoring and Evaluation:

Whether there are real systems in place to check performance and fix things when needed.

2. Dependent Variable

This is the variable that changes because of the independent variable the outcome the study is trying to understand.

Here, the dependent variable is the performance of water-production projects, and it was also split into four main performance indicators:

Y1 – Operational Efficiency:

Whether resources are being used in the smartest, most optimal way to produce the outputs.

Y2 – Quality of Product and Service:

How well the produced water meets specifications, and whether beneficiaries actually feel satisfied.

Y3 – Commitment to Schedule and Budget:

The degree to which the projects finish on time and within the planned financial limits.

Y4 – Sustainability and Environmental Impact:

How well the projects stick to environmental standards and maintain long-term positive impact rather than short-lived results.

3. Demographic / Intermediate Variables

These variables don't form the core of the main hypothesis, but they help describe the sample and they can also be used for deeper analysis to see whether differences in responses are linked to things like age or job level.

They include:

Gender

Age group

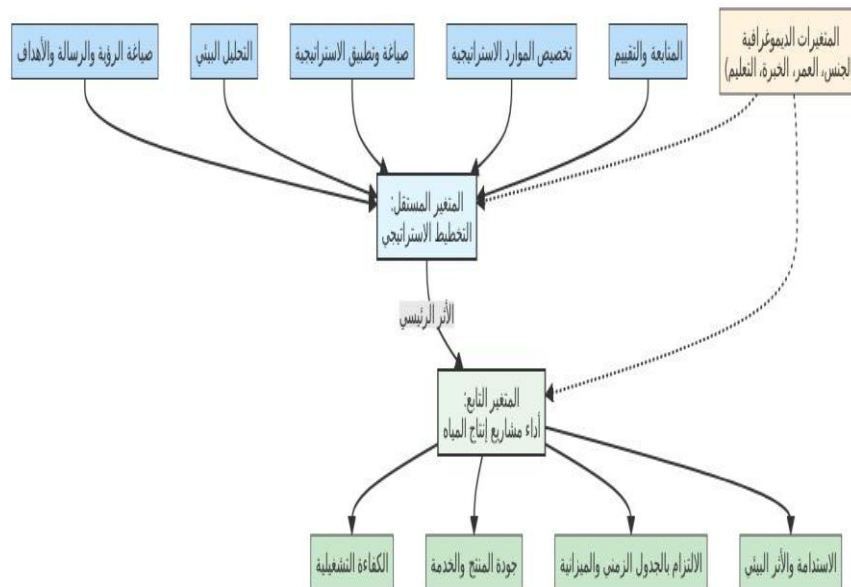
Educational level (Bachelor's, Master's, PhD, etc.)

Job title (project manager, engineer, analyst, supervisor, and so on)

Years of experience

These variables help paint a clearer picture of who the respondents are, and sometimes they reveal patterns for example, whether people with more experience view planning differently, or whether managers and engineers respond in noticeably different ways.

The figure below shows the study's conceptual model kind of a simple map that lays out how the independent variable, with all its dimensions, connects to the dependent variable and its performance indicators. It's basically the visual version of the relationships the research is trying to understand.



شكل (1-3): نموذج الدراسة المفاهيمي

يوضح هذا الشكل العلاقة المفترجة بين متغيرات الدراسة. يُظهر المتغير المستقل (التخطيط الاستراتيجي) بأبعاده الخمسة، والمتغير التابع (أداء مشاريع إنتاج المياه) بمؤشرات الأربعة. السهم الرئيسي يمثل الفرضية الأساسية للدراسة حول وجود أثر للتخطيط الاستراتيجي على أداء المشاريع. كما يوضح الشكل دور المتغيرات الديموغرافية كمتغيرات وسيطة محتملة تؤثر على العلاقة.

3.6 Statistical Methods Used in Analyzing the Data

Once all the questionnaires were collected, cleaned, and entered into the system, the researcher moved on to the actual analysis the stage where numbers start turning into meaning.

To do this properly, SPSS (version 26) was used. It's basically the statistical workhorse that helps you check patterns, relationships,

differences... and whether anything in the data actually makes sense statistically rather than just by coincidence.

To keep things structured, the analysis was divided into two main parts: describing the data, and then testing the hypotheses.

1. Descriptive Statistics understanding “who” and “what” before “why”

Descriptive statistics act like the first glance at the data. Before asking why something happens, you need to know what the data looks like. So this part focused on summarizing the sample and the responses in simple, readable forms.

The researcher used:

Frequencies and Percentages:

These helped outline the demographics gender, age range, education, years of experience, job role.

Basically, it explains who the sample is.

Means (Averages):

These show the general tendency of how respondents answered each questionnaire item.

For example, whether most people agree, somewhat agree, or feel neutral about a statement.

Standard Deviations:

This shows how spread out the answers are. A small SD means people mostly gave similar answers a kind of agreement.

A larger SD means opinions were scattered.

To interpret the averages using the five-point Likert scale, the class length was calculated:

$$\text{Class Length} = ((5-1))/5 = 0.80$$

Which means:

1.00–1.80 → Very Low

1.81–2.60 → Low

2.61–3.40 → Moderate

3.41–4.20 → High

4.21–5.00 → Very High

This makes the averages easier to understand instead of just staring at raw numbers.

2. Inferential Statistics answering the deeper questions

After the descriptive stage, the focus shifted to the real heart of the study:

Do the data actually support the hypotheses or not?

Inferential statistics help you generalize from the sample to the whole population.

Here are the tools used:

Cronbach's Alpha:

To check whether the questionnaire is reliable meaning the items hold together consistently.

Pearson Correlation Coefficient:

First used to test internal validity, and later to see how strongly each dimension of strategic planning relates to project performance.

Kolmogorov–Smirnov Test:

This test checks whether the data follows a normal distribution, which is needed before using more advanced parametric tests.

Simple Linear Regression:

Used to test each sub-hypothesis basically examining how each single dimension of strategic planning affects performance on its own.

Multiple Linear Regression:

This is where the study checks the “big picture”:

What happens when all strategic-planning dimensions are combined?

It also identifies which dimension has the strongest influence.

Independent Samples t-Test:

To see whether males and females answered differently in a statistically meaningful way.

One-Way ANOVA:

Used for demographic variables with more than two groups like education, age, or experience.

And if differences appear, the Scheffé Test is used to pinpoint where exactly the difference lies.

The significance level was set at:

$$\alpha = 0.05$$

Meaning any result with a P-value ≤ 0.05 is considered statistically significant real, not random noise.

Chapter Four: Data Analysis and Hypothesis Testing

This chapter is where everything starts coming together.

All the statistical methods above are used to answer the research questions, test the hypotheses, and interpret what the numbers are saying about strategic planning and water-project performance in Jeddah.

The chapter is organized into four main parts:

Demographic and job-related characteristics of the sample

Descriptive analysis of strategic planning and project performance

Testing all the hypotheses

A summary and initial interpretation of the results

4.1 Analysis of Demographic Characteristics

This part looks closely at who participated – managers, engineers, specialists, supervisors – people directly or indirectly involved in the Ministry’s water-production projects in Jeddah.

Understanding their characteristics helps explain why they answered the way they did, and gives context to the entire study.

The data here is shown through frequencies, percentages, tables, and charts so the patterns become easy to see.

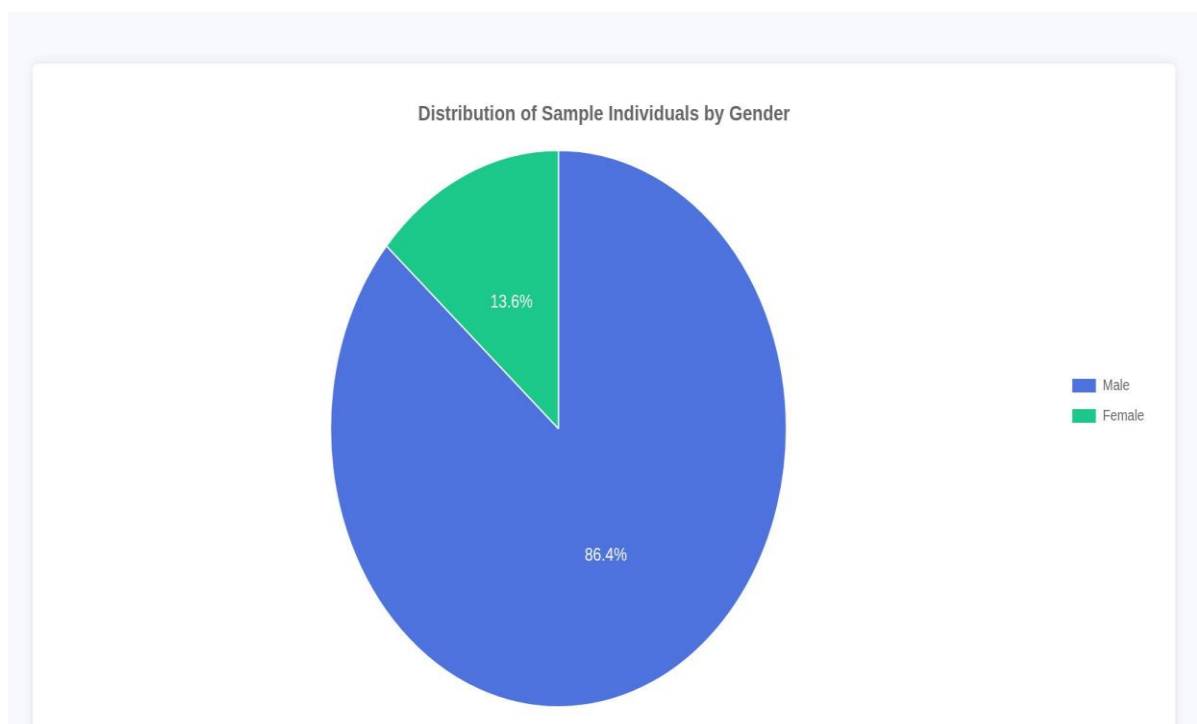
4.1.1 Distribution of the Sample by Gender

Table (4-1) – along with the chart in Figure (4-1) – shows how the participants in the study are divided by gender.

It’s a straightforward view, but it helps form an early picture of who actually took part in the survey before moving into the deeper analysis.

Table (4-1): Frequency and percentage distribution of the study sample by gender

Gender	Frequency	Percentage (%)
Male	285	86.4
Female	45	13.6
Total	330	100.0



The numbers make the picture pretty clear: 86.4% of the respondents were men, and only 13.6% were women.

That's a big gap but it reflects the real situation in the water-infrastructure sector today. Most of the technical, engineering, and field-related positions are still held by men, so the sample's

distribution isn't unusual at all. It mirrors what you'd actually see inside these project teams.

At the same time, the 13.6% female participation is not something to overlook. It's small, yes, but it's also meaningful. It shows that women are gradually finding their way into this sector even in roles that used to be overwhelmingly male. And that shift goes hand-in-hand with the broader push in Saudi Vision 2030 toward increasing women's involvement in key economic and technical fields.

So what does this distribution tell us from a research perspective? Mainly that the views collected in this study include both genders, but the male viewpoint naturally dominates, simply because men make up most of the workforce in this area. It doesn't weaken the study it just reflects the workforce structure as it is today.

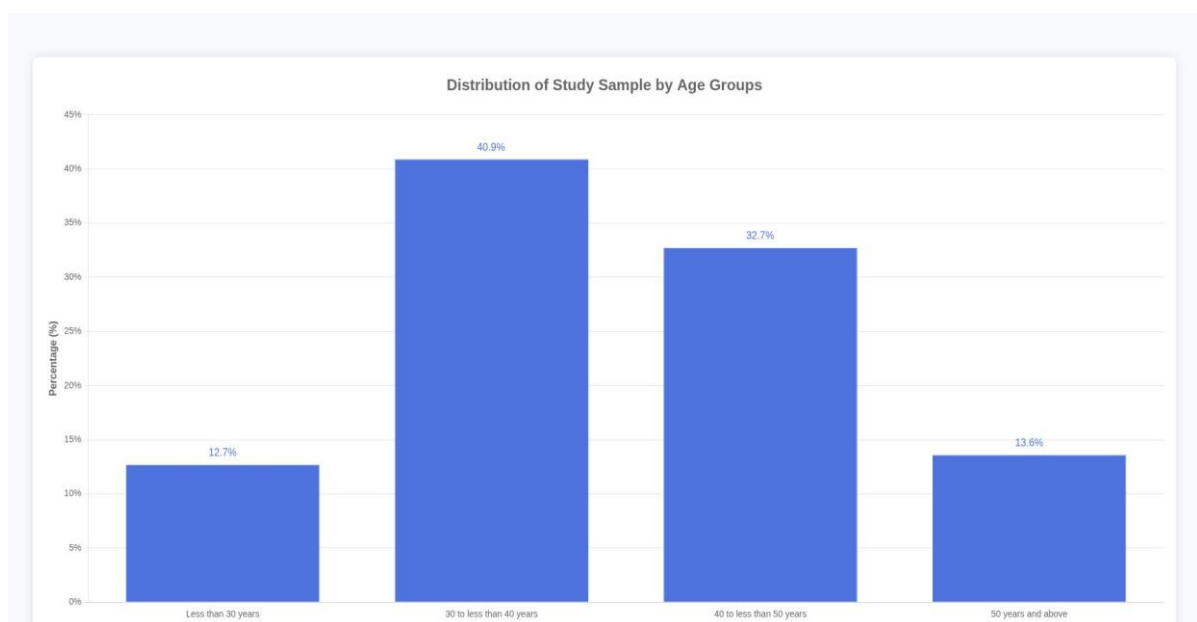
4.1.2 Distribution of the Sample by Age Group

Table (4-2) and Figure (4-2) show how the respondents fall into different age categories.

And honestly, age is more than just a demographic detail here it gives a sense of maturity, exposure, and how much real experience each group might bring into their evaluation of strategic planning and project performance.

Table (4-2): Frequency and percentage distribution of the study sample by age group

Age Group (in years)	Frequency	Percentage (%)
Under 30	42	12.7
30 to under 40	135	40.9
40 to under 50	108	32.7
50 years and over	45	13.6
Total	330	100.0



Looking at the numbers, you can immediately notice that the age group “30 to under 40 years” takes up the largest share of the sample 40.9%. Right behind it comes the “40 to under 50 years” group at 32.7%. Together, these two groups make up 73.6% of all respondents, which is basically three-quarters of the entire sample.

And that tells you something important: most of the people who answered the questionnaire are in what you could call the professional middle zone not fresh graduates trying to learn the ropes, and not retirees looking back at their careers... but individuals who are currently in the heart of their work life. They’ve had enough years behind them to know how projects actually run, and they’re experienced enough to evaluate strategic planning with a realistic eye.

In a study like this, that’s actually ideal.

People in their 30s and 40s usually have the right mix they remember what it’s like to be in junior roles, but they’ve also stepped into positions where they make decisions, lead teams, or oversee project performance. They tend to understand the administrative side and the technical day-to-day reality. So their opinions carry both depth and practicality.

The younger group under 30 made up 12.7%, which is small but still adds a bit of that fresh, energetic perspective.

And the older group 50 years and above, at 13.6% brings a more seasoned, big-picture point of view.

Together, these smaller groups help balance the dataset. You get the sharpness of youth, the experience of older professionals, and the grounded judgment of the 30s–40s core.

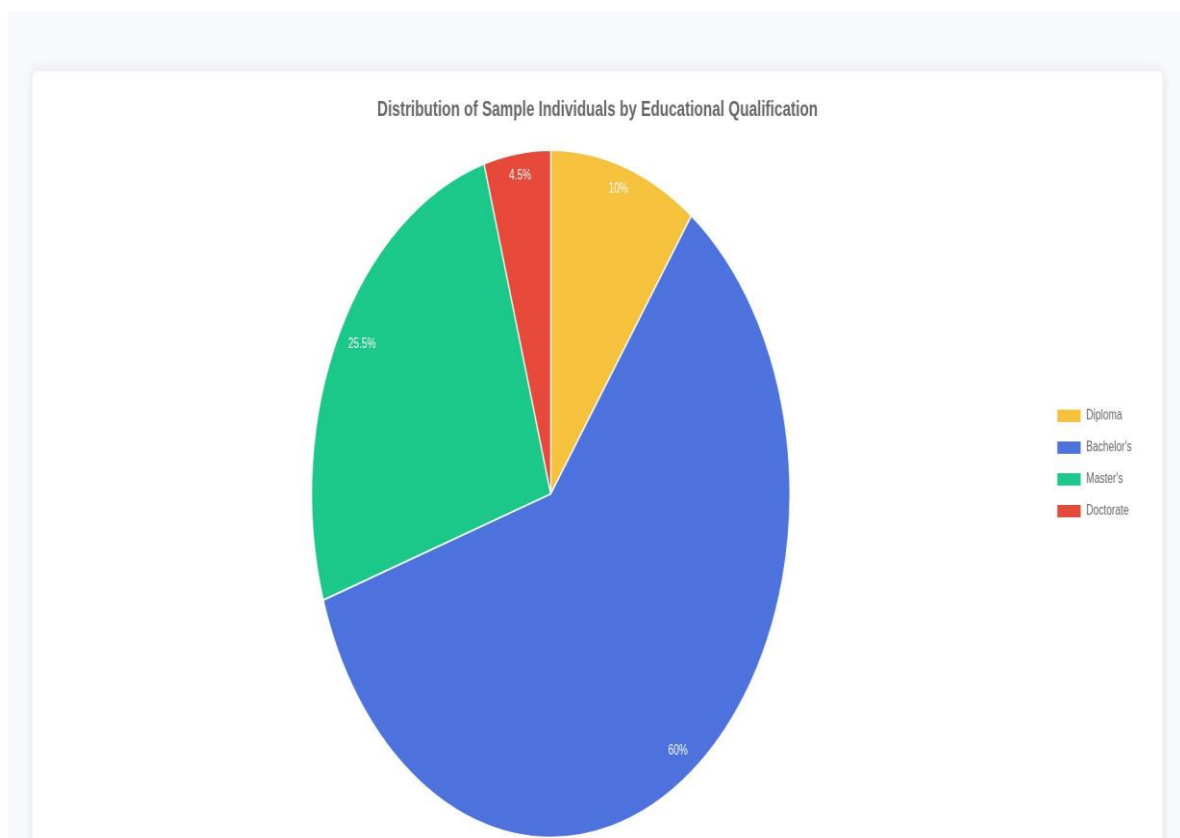
4.1.3 Distribution of the Sample by Educational Level

Table (4-3) and Figure (4-3) show how the respondents are distributed across different educational qualifications.

This matters because the way someone understands strategic planning or evaluates a project's performance is often shaped by their academic background. And seeing these categories laid out gives a sense of how prepared the sample is to engage with concepts that can get a bit technical or layered.

Table (4-3): Frequency and percentage distribution of the sample by educational level

Academic Qualification	Frequency	Percentage (%)
Diploma	33	10.0
Bachelor's	198	60.0
Master's	84	25.5
PhD	15	4.5
Total	330	100.0



The results show that most of the respondents hold a bachelor's degree, making up 60.0% of the sample. Right behind them are those with a master's degree, at 25.5%.

So when you put those two groups together, you get 85.5% of the sample with higher education which says a lot about the academic level of people working in this sector. It's a field that usually requires technical understanding, analytical thinking, and the ability to work with structured processes... so it makes sense that the majority have strong academic backgrounds.

This higher level of education also gives some confidence about the quality of the responses. People with university-level training tend to grasp the language of strategic planning, performance indicators, and project evaluation without feeling lost or confused. In other words, their answers are more likely to reflect informed judgment rather than guesswork.

The smaller groups those with a PhD (4.5%) and diploma holders (10.0%) add a bit of variation to the sample.

Even though their percentages are lower, having this mix helps balance the dataset. It brings different academic perspectives into the study, which can be useful when interpreting how people with different backgrounds see planning and project performance.

4.1.4 Distribution of the Sample by Job Title

Table (4-4) and Figure (4-4) show how the respondents are spread across different job roles.

This part is especially important because a person's position in the organization affects how they experience strategic planning and how they judge project performance. A manager doesn't see the project the same way an engineer does, and an analyst reads the data differently from a field supervisor.

Table (4-4): Frequency and percentage distribution of the study sample by job title

Job Title	Frequency	Percentage (%)
Administrative/Technical Staff	114	34.5
Project Engineer	96	29.1
Department/Unit Manager	75	22.7
Department/Project Manager	45	13.6
Total	330	100.0



The results show a clear mix of job levels among the respondents.

The largest group consists of administrative and technical employees 34.5% of the sample. Right behind them are the project engineers, accounting for 29.1%.

So together, these two groups make up 63.6% of the entire sample. That's almost two-thirds of the participants working directly in operational and technical roles – the people who live the projects day by day. Their input gives a very grounded perspective on how strategies are actually applied in the field and how they affect daily performance.

On the other side, the managerial levels – department heads, unit leaders, and project managers – make up 36.3% of the sample. Their presence is just as important, but for different reasons. They're the ones involved in decision-making, planning, and steering the projects from a higher point of view.

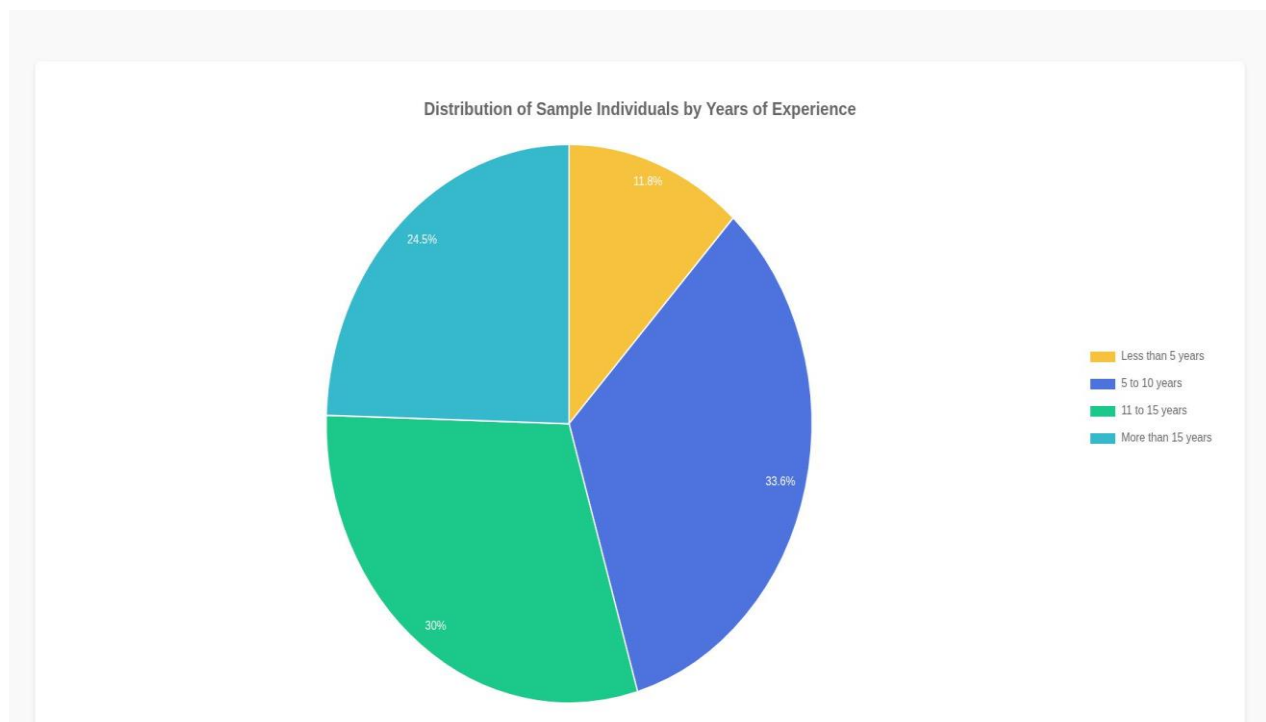
Having both groups represented – operational and managerial – strengthens the study. It creates a balance between what happens “up close” in the field and what happens “at the top” in strategy meetings. This blend adds depth to the data and makes the comparisons between frontline experience and strategic oversight much more meaningful.

4.1.5 Distribution of the Sample by Years of Experience

Table (4-5) and Figure (4-5) present how respondents are distributed according to their years of experience in water-sector projects. This variable is crucial because experience isn't just a number – it reflects how much practical knowledge and real-world understanding each respondent brings into their evaluation of planning and project performance.

Table (4-5): Frequency and percentage distribution of the study sample based on years of professional experience

Years of Experience	Frequency	Percentage (%)
Less than 5 years	39	11.8
5 to 10 years	111	33.6
11 to 15 years	99	30.0
More than 15 years	81	24.5
Total	330	100.0



The results show something quite striking: 88.2% of the respondents have more than five years of hands-on experience in water-sector projects. That's a huge majority. And when you look closer, you can see how this experience is spread across different levels.

The largest group is those with 5 to 10 years of experience they make up 33.6% of the sample. Right after them comes the 11 to 15 years group at 30.0%, and then the group with more than 15 years at 24.5%.

So the picture is clear: most people answering the survey have been in the field long enough to really understand how things work not in theory, but in real, day-to-day project environments.

This level of accumulated experience adds a lot of weight to the study. Their opinions aren't just guesses or quick impressions; they're built on years of observing how strategic planning actually plays out in projects what works, what fails, and how it affects performance over time.

In other words, their responses carry depth. They've lived through enough project cycles to evaluate the link between planning and performance in a grounded, objective way. And that gives the study a much stronger foundation.

4.2 Descriptive Analysis of the Study Variables

This section aims to describe and analyze how the respondents feel about the study's main variables:

the independent variable (strategic planning, with its four dimensions: vision and mission formulation, environmental analysis, strategic goals, and implementation/follow-up), and

the dependent variable (performance of water-production projects, also with four dimensions: schedule adherence, budget adherence, output quality, and stakeholder satisfaction).

To do this, the researcher used means and standard deviations for each statement. Then, based on the scale used in this study, the levels of agreement were classified as follows:

Low agreement: mean from 1 to 2.33

Moderate agreement: mean from 2.34 to 3.67

High agreement: mean from 3.68 to 5

This kind of descriptive analysis helps paint a clear picture of how strategic planning is being practiced and how projects are performing from the respondents' point of view before moving into the next step, which is testing how the two variables relate.

4.2.1 Descriptive Analysis of the Strategic Planning Variable

The strategic planning variable was measured through four main dimensions. Below is the descriptive analysis for each one of them.

4.2.1.1 Dimension One: Vision and Mission Formulation

Table (4-6) shows the means, standard deviations, and overall agreement levels for the items related to this dimension.

Table (4-6): Descriptive analysis of the vision and mission formulation dimension

Paragraph number	and understood by all employees.	Arithmetic mean, standard deviation, level of agreement, ranking	Arithmetic mean, standard deviation, level of agreement, ranking	Arithmetic mean, standard deviation, level of agreement, ranking	Ranking
1	the vision and mission contribute to guiding daily project-related decisions	4.15	0.88	High	2
2	employees at all levels participate in the process of formulating the vision and mission.	4.22	0.81	High	1
3	vision and mission are reviewed and related periodically to keep pace with changes	3.55	1.15	Medium	4
4	and understood by all employees.	3.89	0.95	High	3
General average	the vision and mission contribute to guiding daily project-related decisions	3.95	0.95	High	

Looking at Table (4–6), the overall mean for the “Vision and Mission Formulation” dimension comes out to 3.95, with a standard deviation of 0.95.

That score sits clearly within the high agreement range, which basically tells us that most respondents feel there’s a real emphasis on having a clear vision and mission guiding the work of water-sector projects. In other words, people see these strategic statements as something the organization genuinely pays attention to – not just words on a wall.

The highest-rated item was:

“The vision and mission contribute to guiding the daily decisions related to the projects,”
with a mean of 4.22.

This says a lot. It means employees actually feel the vision shaping what happens every day – not only in long-term planning, but in routine decisions on the ground.

Right after that comes the item:

“The vision and mission of water projects are clear and understandable to all employees,”

scoring 4.15.

This suggests that the leadership has succeeded at least from the employees’ perspective in communicating the strategic direction in a way that people can grasp and use.

In third place is the item about reviewing and updating the vision and mission regularly, with a mean of 3.89.

This is a positive score, and it hints at a certain level of adaptability that the strategic direction isn’t rigid, but gets revisited when needed.

The lowest score within this dimension, though still positive, was for the statement:

“Employees from different levels participate in formulating the vision and mission,”

which scored 3.55, placing it at a moderate level of agreement.

And this tells a slightly different story: the strategic formulation process still seems to be somewhat centralized. Employees agree the vision is clear, and they see its impact... but they’re not fully involved in shaping it. There’s room here perhaps a big one to bring more people from operational levels into the conversation. That kind of involvement often helps them feel ownership and commitment, not just awareness.

4.2.1.2 Second Dimension: Environmental Analysis (SWOT Analysis)

Table (4–7) presents the descriptive results for the items related to the environmental analysis dimension.

Table (4–7): Descriptive analysis of the environmental analysis dimension

Item dimension	Arithmetic average	Standard deviation	Approval level	Item dimension	Ranking
5	conomic, social, and technological environment are studied.	4.05	0.91	High	2
6	The results of the environmental analysis are effectively used in strategic decision-making.	4.11	0.85	High	1
7	Clear mechanisms exist for collecting and analyzing information about competitors and stakeholders	3.98	0.99	High	3
8	conomic, social, and technological environment are studied.	3.75	1.08	High	4
General average	The results of the environmental analysis are effectively used in strategic decision-making.	3.97	0.96	High	

When you look at Table (4-7), the whole picture settles in pretty quickly: the environmental analysis dimension has an overall mean of 3.97, with a standard deviation of 0.96.

That's comfortably in the *high agreement* area, which tells you people really do see environmental analysis—the internal and the external sides of it—as a serious part of how strategic planning is done in these water projects. Not something optional... more like a routine you can't skip.

The highest-scoring item was the one about studying opportunities and threats in the external environment, averaging 4.11.

It makes sense—external changes can flip a project upside down if you're not watching them. And it seems the teams here are very aware of that.

Right behind it is the item on regular analysis of internal strengths and weaknesses, scoring 4.05.

That's a sign that self-assessment isn't being ignored. People are actually looking inside the project, trying to understand what they're good at and where the weak spots show up.

Another item about using environmental-analysis results in strategic decisions scored 3.98.

That one matters because it shows the analysis isn't just paperwork. The results actually go somewhere, they influence what leaders decide to do.

The lowest item, though still positive, was the one about having clear mechanisms for gathering and analyzing information on competitors and stakeholders, scoring 3.75.

It's not a bad score at all, but compared to the others, it hints that this part might not be as structured or as methodical as it could be. Maybe the process exists, but it's not fully refined yet.

The dimension	Arithmetic average	Standard deviation	Approval level	The dimension	Ranking
9	The strategic objectives of the projects are Specific, Measurable, Achievable, Relevant, and Time-bound (SMART).	4.25	0.80	High	1
10		4.18	0.84	High	2
11	The strategic objectives are directly linked to the ministry's vision and mission.	4.10	0.92	High	3
12		3.95	0.97	High	4
General average		4.12	0.88	High	

When you look at the results in Table (4–8), it's clear that the Strategic Goal-Setting dimension stands out from the rest. It actually records the

highest mean among all the strategic planning dimensions 4.12, with a standard deviation of 0.88 placing it firmly in the high agreement category.

That basically tells us that respondents see goal-setting as one of the strongest and most well-practiced elements in the planning process. They feel the goals aren't random or vague they're thoughtfully crafted.

The highest-rated item was:

"The strategic goals of the projects are specific and measurable (SMART),"

with a mean of 4.25.

This is a strong signal. It suggests that projects are using clear, structured criteria when they define their goals something that usually reflects maturity in planning practices.

Next comes the item stating that the goals are directly linked to the ministry's vision and mission, scoring 4.18.

This shows that goal-setting isn't happening in isolation; it fits into the bigger strategic picture, reinforcing alignment between long-term direction and day-to-day work.

Two more items received high scores as well:

Clear KPIs are identified to track the achievement of goals (mean 4.10)

The strategic goals are both realistic and ambitious (mean 3.95)

Together, these results paint a picture of a system where goals are not only well defined, but also supported with measurable indicators, and balanced between practicality and aspiration which is not always easy to achieve in project-heavy sectors.

Overall, the findings suggest that strategic goal-setting in Jeddah's water projects is handled with a good level of precision and alignment. It's structured, measurable, and closely tied to the broader vision with mechanisms in place to follow up and assess progress.

4.2.1.4 Fourth Dimension: Implementation and Follow-up

Table (4–9) presents the descriptive results for the items related to the implementation and follow-up dimension.

Table (4–9): Descriptive analysis of the implementation and follow-up dimension

The dimension	Arithmetic average	Standard deviation	Approval level	The dimension	Ranking
13	Strategies are translated into clear operational action plans.	4.02	0.94	High	2
14	The necessary resources (financial, human, and technical) are allocated for strategy implementation.	3.81	1.05	High	3
15	Effective mechanisms are in place to monitor and evaluate progress toward strategic objectives.	4.08	0.90	High	1
16	Swift corrective action is taken when deviations from the plan occur	3.77	1.11	High	4
General average		3.92	1.00	High	

When you look at the results in Table (4-9), the whole dimension of “Implementation and Follow-up” ends up with an overall mean of 3.92, along with a standard deviation of 1.00.

It falls in the *high agreement* range, which basically means respondents feel that, overall, the organization is putting real effort into turning plans into action and keeping track of what happens afterward.

The highest-rated statement here was the one about having effective mechanisms to monitor and evaluate progress toward strategic goals,

with a mean of 4.08. That tells you people see the monitoring system as something reliable, something that actually works rather than just another formal requirement.

Right behind it is the idea that strategies are translated into clear operational action plans, scoring 4.02. This is a good sign it means employees can see the connection between the high-level strategy and the everyday tasks they deal with. There's a bridge, and it seems to be functioning.

The two lower-scoring items though still high were the ones about resource allocation (mean 3.81) and taking corrective action when things deviate (mean 3.77).

These numbers aren't low at all, but compared to the others, they hint at areas where people feel things could be smoother. Maybe resources don't always flow quickly enough. Maybe responses to problems take a bit longer than they should.

It's not a criticism more like a gentle signal that there's space to make the implementation phase stronger and faster.

The dimension	Arithmetic average	Standard deviation	Approval level	Ranking
Setting strategic objectives	4.12	0.88	High	1
Environmental analysis	3.97	0.96	High	2
Formulating the vision and mission	3.95	0.95	High	3
Implementation and follow-up	3.92	1.00	High	4
Overall average of strategic planning	4.00	0.95	High	6

Overall, the strategic planning variable reached an average score of 4.00, with a standard deviation of 0.95.

That puts it solidly in the high agreement category, which means

respondents generally feel that strategic planning practices in Jeddah's water-production projects are strong and well-developed.

Among all the planning dimensions, "Strategic Goal-Setting" came out on top the strongest, most consistently rated practice. In contrast, "Implementation and Follow-up" landed in the last place, though still with a high score.

This pattern says something important: the planning and formulation stages defining goals, aligning them with the vision, making them measurable appear to be the strongest part of the process. The slightly lower rating for implementation hints at where challenges tend to show up: the practical side, the day-to-day execution, the follow-through.

It's not a weakness as much as it's a natural point where organizations often feel the pressure translating a well-written plan into real, consistent action is usually the hardest part.

4.2.2 Descriptive Analysis of Water-Project Performance

The performance variable was measured through four main dimensions. What follows is a descriptive look at each one.

4.2.2.1 First Dimension: Schedule Adherence

Table (4-11) presents the descriptive statistics for the statements related to how well projects stick to their planned timelines

Table (4–11): Descriptive analysis of the schedule adherence dimension

The dimension	Arithmetic average	Standard deviation	Approval level	Ranking
Setting strategic objectives	4.12	0.88	High	1
Environmental analysis	3.97	0.96	High	2
Formulating the vision and mission	3.95	0.95	High	3
Implementation and follow-up	3.92	1.00	High	4
Overall strategic planning average	4.00	0.95	High	

When you look at Table (4-11), the whole “Schedule Adherence” thing averages out at 3.68, with a standard deviation of 1.06… which basically puts it *barely* inside the “high agreement” range. Like it made it in, but by slipping through the door at the last second.

So yeah projects are doing *fine* with time. Not perfect. Not disastrous. Just… holding up. And honestly, compared to how strong the planning practices looked earlier, this part feels a little less steady, almost as if the projects keep pace but have to push themselves to stay there.

The highest-rated statement was the one about final delivery matching the approved schedule that got a 3.79. You can almost picture people nodding when they answered that. Big deadlines? The ones no one wants to mess up? They usually hit them.

Right after that came the item about major project stages finishing on time, scoring 3.71. So the big milestones seem okay too. They get done. Not always smoothly, maybe, but done.

Then the tone shifts a bit when you get to the lower-ranked stuff. Time management efficiency and dealing with sudden changes… those landed at 3.65 and 3.58, which drops them into the “moderate agreement” zone.

And honestly, that explains a lot. It hints at small delays, little hiccups nothing catastrophic, but enough to remind you that the rhythm of the day-to-day work isn't always clean. Unexpected issues show up, and the reaction isn't always quick or flexible, so things wobble a bit before they get back on track.

Together, these pieces paint a picture that feels very human: the schedule holds, yes... but not without a bit of effort, some scrambling here and there.

Good, just not effortlessly good.

The dimension	Paragraph	Arithmetic average	Standard deviation	Approval level	Ranking
17	Major project phases are completed on schedule	3.71	1.02	High	2
18	Efficient time management avoids unnecessary delays	3.65	1.10	medium	3
19	Final projects are delivered to beneficiaries according to the approved timeline	3.79	0.98	High	1
20	Foreseen changes are handled flexibly without negatively impacting the overall schedule	3.58	1.15	medium	4
average		3.68	1.06	High	

Looking at Table (4-12), the overall mean for the “Budget Adherence” dimension comes out to 3.78, with a standard deviation of 1.04.

That puts it squarely in the “high agreement” range, which basically means people feel that cost control across these water projects is fairly

strong. Not perfect, not flawless, but solid enough that most respondents see the financial side holding together.

The highest-rated item was:

“Project activities are carried out within the allocated budget.”

It scored 3.90, which kind of tells you that at least on paper projects generally stick to their financial limits. Right behind it came:

“There is effective cost control to prevent budget overruns,”

with a mean of 3.85. That suggests there’s a decent financial monitoring system in place… someone is watching the money closely enough to keep the numbers from drifting.

But then comes the softer spot.

The lowest mean, 3.61, belonged to the item:

“Change orders are managed efficiently to reduce their financial impact.”

Still positive, but noticeably weaker. That “medium agreement” rating hints at a recurring issue: change orders just like schedule disruptions shake things up. They seem to be a pressure point where budget management becomes a bit less tidy, a bit more reactive.

In other words, financial control is good… until the unexpected knocks on the door.

The dimension	Paragraph	Arithmetic average	Standard deviation	Approval level	Ranking
25	Project outputs (such as water quantity and quality) conform to the specified standards and criteria	4.28	0.82	High	1
26	Strict quality assurance standards are applied at all stages of the project	4.15	0.89	High	2
27		3.92	1.03	High	3
28		3.88	1.09	High	4
average		4.06	0.96	High	

The “Output Quality” dimension recorded a high overall mean of 4.06, with a standard deviation of 0.96, making it the strongest performance dimension from the perspective of the sample.

This result indicates a strong focus on delivering high-quality project outputs that comply with both technical and environmental standards.

The statement “The project outputs comply with the specified standards and requirements” ranked first, with a very high mean score of 4.28, confirming a strong commitment to meeting technical specifications. It was followed by the statement “Strict quality standards are applied”, which achieved a mean of 4.15.

Even the lower-ranked statements within this dimension such as “Operational defects are rare” and “Sustainability is achieved” received high evaluations, scoring 3.92 and 3.88, respectively.

These results collectively reflect the strong and consistent performance of this critical aspect of the projects.

4.2.2.4 Stakeholder Satisfaction (Human-Messy Style)

The fourth dimension in this section focuses on Stakeholder Satisfaction, and Table (4-14) lays out the descriptive statistics for all the items connected to this area.

It basically shows how the people involved with the projects whether they’re beneficiaries, internal teams, partners, or even groups affected by the outcomes perceive the level of satisfaction tied to the project performance.

Table (4-14): Descriptive analysis for the Stakeholder Satisfaction dimension.

Item dimension	Paragraph	Arithmetic average	Standard deviation	Approval level	Ranking
29	The project meets the expectations and needs of the end beneficiaries (residents of Jeddah).	4.01	0.97	High	1
30	There is general satisfaction from government and supervisory bodies regarding the project's performance.	3.94	0.99	High	2
31	Good relationships and effective communication are maintained with partners and suppliers.	3.82	1.04	High	3
32	Stakeholder complaints and feedback are handled effectively.	3.75	1.13	High	4
average		3.88	1.03	High	

Table (4-14) shows that the overall mean for the Stakeholder Satisfaction dimension reached 3.88, with a standard deviation of 1.03, placing it within the “high agreement” range.

This basically suggests that the projects are largely succeeding in meeting the expectations of the different groups involved.

The highest-rated statement was “The project meets the expectations and needs of the end beneficiaries,” with a mean of 4.01.

That result points directly to the idea that the core purpose serving the public seems to be achieved at a strong level. Right after that came the item measuring the satisfaction of supervisory bodies, which recorded a mean of 3.94.

Meanwhile, the two items dealing with partner relationships and handling complaints came in a bit lower, at 3.82 and 3.75, respectively.

They're still positive scores, but they hint that the more operational aspects like day-to-day coordination with partners or responding to concerns might need a bit of strengthening to reach the same level as the other areas.

General summary of project performance variables:

Table (4-15): General summary of arithmetic means for project performance dimensions

The dimension	Arithmetic average	Standard deviation	Approval level	Ranking
Quality of outputs	4.06	0.96	High	1
stakeholder satisfaction	3.88	1.03	High	2
Budget adherence	3.78	1.04	High	3
Schedule adherence	3.68	1.06	High	4
Overall project performance average	3.85	1.02	High	

When you take the project-performance variable as a whole and look at its overall average 3.85, with a standard deviation of 1.02 you start to get the feeling that respondents weren't just vaguely agreeing; they were leaning clearly toward the "high agreement" side. It's not a perfect score, of course, but it signals that, generally speaking, people feel these water-production projects are doing pretty well.

And if you sort the dimensions from the strongest performer to the one that struggles a bit, "output quality" definitely leads the pack. That one seems to be the part everyone agrees is working smoothly. Right behind it comes stakeholder satisfaction, which makes sense good outputs usually mean happy people. Then the discussion shifts toward budget adherence,

showing up with a slightly lower strength but still within that “strong agreement” zone.

But then almost like a small red flag waving in the background you notice schedule commitment sitting at the bottom. Still high. Still positive. But noticeably the weakest point. It suggests that while the projects are achieving quality and satisfying their stakeholders, time management remains the stubborn part... almost like that recurring challenge no one fully solves. These descriptive results, honestly, feel like the opening act before tackling the bigger question: How does strategic planning actually tie into all these dimensions? That question is what the next section tries to unpack.

4.3 Hypothesis Testing A Closer Look

This entire segment is built around one purpose: examining whether the assumptions built into the first chapter have real statistical backing. These hypotheses aren’t random they represent the heart of the study, the connection between strategic planning and project performance in Jeddah’s water-production sector.

To run these tests, the researcher relied on simple linear regression. It’s not the fanciest model in the world, but it’s clean, efficient, and perfect for showing whether one variable meaningfully affects another. In this context, strategic planning with all its layers and steps was treated as the independent variable. Project performance with all its indicators was placed on the dependent side. And from there, the model simply answers the question: Does one actually influence the other? And how strongly?

The testing followed the familiar significance threshold of $\alpha \leq 0.05$, which is basically the research community’s way of saying, “If the result is too unlikely to happen by chance, we’ll consider it meaningful.” So whenever the significance value (Sig.) drops to 0.05 or below, the null

hypothesis (the one claiming there's no relationship) gets rejected. And the alternative suggesting there is a relationship gets accepted.

4.3.1 Testing the First Main Hypothesis

Null Hypothesis (H0.1): There is no statistically significant effect at the $\alpha \leq 0.05$ level of the strategic-planning process considered as one combined system that includes environmental analysis, strategy formulation, strategy execution, and then monitoring and evaluation on improving the efficiency of water-production projects in Jeddah.

Alternative Hypothesis (H1.1): There is a statistically significant effect at the $\alpha \leq 0.05$ level of the combined strategic-planning process on improving the efficiency of water-production projects in Jeddah.

To test this first main hypothesis, the researcher basically took the average scores the participants gave for strategic-planning practices and fed those into the regression model as the independent variable. Then, using the average scores they gave for project-efficiency indicators as the dependent variable, the model attempted to see whether better planning practices actually relate to better project efficiency.

Interpretation of the First Regression Model

When you first notice the correlation coefficient $R = 0.812$, it honestly feels like a very clear message: the connection between strategic planning and project efficiency isn't weak or casual. It's strong very strong and in the same direction. Meaning: every time strategic planning goes up, project efficiency tends to move upward too. Not always perfectly, of course, but strongly enough that the pattern becomes obvious.

Now, the $R^2 = 0.660$ is where things get interesting. This number says that 66% of whatever changes are happening in project efficiency can be explained by strategic planning. And when you think about it from a practical perspective not just statistical jargon that's huge. In the real

world, especially in administrative and social fields, you rarely get explanation percentages this high. It's like saying: "Two-thirds of what makes a project efficient is rooted directly in how well it was planned."

You start realizing the planning stage isn't just a paperwork step it's a performance engine.

Then we see the F-value = 225.187, with a significance level of 0.000. And statistically speaking, when Sig. hits zero like that, there's no hesitation left. The model isn't just fitting the data it fits it beautifully. It means the regression equation is meaningful, stable, and can actually predict efficiency based on planning quality.

Looking deeper into the regression coefficients, the t-value = 15.006 (with Sig. = 0.000) is another nail in the coffin of the null hypothesis. With a t-value that high, you're practically watching the model shout: "YES, planning matters! A lot!"

So the final takeaway is simple: the null hypothesis collapses, and the alternative one stands strong. Strategic planning genuinely and significantly boosts the efficiency of water-production projects in Jeddah.

Interpretation of the Second Regression Model

Here, the correlation coefficient $R = 0.769$ paints a slightly softer picture than before, but still a powerful one. You're looking at a solid, positive, strong relationship. It's not just a coincidence there's clearly movement in the same direction: when planning improves, project effectiveness increases too.

Then $R^2 = 0.591$ tells us that about 59.1% of the changes in effectiveness are linked directly to strategic planning. Over half. This means planning doesn't just help it shapes the majority of what we're seeing in project effectiveness.

The F-value = 167.334, again with Sig. = 0.000, confirms the model is statistically well-fitted. No randomness here. The model works.

The t-value = 12.936 (Sig. = 0.000) adds another layer of proof that planning is a meaningful predictor of effectiveness. When the t-value is this high, it's impossible to argue that planning doesn't carry weight.

So again:

H0.2 is rejected, and H1.2 is accepted.

Meaning strategic planning positively influences the effectiveness of water-production projects. Not just a little significantly and measurably.

Interpretation of the Third Regression Model

The third model gives a correlation coefficient of $R = 0.795$, which immediately tells you the relationship between planning and sustainability is not just present it's quite strong. Not as intense as the first model, but definitely robust. You can tell sustainability doesn't float randomly; it follows planning quality closely.

Then there is $R^2 = 0.632$, which is impressive on its own.

That number means 63.2% of the changes in sustainability are explained by strategic planning. Think about that for a moment: sustainability something usually affected by environment, budget, long-term design, stakeholder support still has more than half of its variation tied directly to planning.

This highlights that planning isn't only for short-term efficiency; it shapes the long-term life of the project too.

Again, the F-value = 199.301 with Sig. = 0.000 says the regression model is solid, statistically strong, and reliable. No random noise pretending to be a pattern.

The t-value = 14.117, with Sig. = 0.000, reinforces the conclusion.

Strategic planning isn't just related it is a statistically significant driver of sustainability.

And exactly like the previous ones:

H0.3 gets rejected.

H1.3 is accepted.

Strategic planning has a clear, positive, and statistically significant impact on the sustainability of water-production projects in Jeddah.

4.4 Presentation and Interpretation of the Statistical Results

This section is basically where all the numbers finally get a voice. You gather them, sit with them for a bit, and try to understand what they're really saying. It's almost like reviewing exam results but instead of checking who passed, you're looking for patterns, reasons, and stories behind the scores. Everything here comes from that questionnaire, and the goal is not just to show the results but to make sense of them in the context of the study's goals.

4.4.1 Analysis of Results Related to the Reality of Strategic-Planning Practices

When you look at the overall mean score for strategic-planning practices 4.25 out of 5, standard deviation 0.589 you get this immediate sense that people aren't just casually agreeing with the idea of strategic planning. They're genuinely practicing it. There's awareness. There's intention. And you feel like this isn't by accident. The workers and managers involved in water-production projects in Jeddah seem to understand that planning isn't simply paperwork; it's the backbone of everything they do.

Part of this makes sense if you step back and look at the bigger picture. Saudi Arabia's Vision 2030 has been shaping mindsets across all public sectors pushing everyone to plan ahead, be more strategic, use clearer goals, align with long-term transformations. So when you see a high score like this, it's almost like seeing the reflection of that national shift inside these projects.

Then, when you break down strategic planning into its smaller pieces, each one tells its own little story:

- Strategy Formulation (Highest Mean: 4.35)

This one stands out right away. The highest score.

It means the teams aren't just guessing their way through projects.

They're starting with a clear picture: vision, mission, long-term goals... all that foundation-setting work that people sometimes skip because it feels "conceptual."

But here, it's clearly taken seriously.

Research always talks about this "strategic clarity" and "goal definition." Alodah (2023) emphasized it too. But what matters more is that the actual workers the ones filling the survey feel this clarity. That's when you know it's real.

- Strategy Implementation (Mean: 4.28)

Second place, but still very high. And this is encouraging because implementation is usually the messy part.

It's one thing to sit in a meeting and write down goals... it's another thing to actually do them.

But respondents agreed that resources get allocated, responsibilities are clear, roles are distributed properly.

That usually means there's real administrative maturity people know what they're supposed to do and how their work fits into the bigger plan.

- Monitoring & Evaluation (Mean: 4.21)

A solid number.

It suggests that progress isn't happening blindly.

There are systems KPIs, periodic reviews, maybe dashboards, maybe reports that track progress.

It's the kind of result that matches the culture Vision 2030 has been building: accountability, measurement, results.
Not "work until someone notices," but "work with a metric."

- Environmental Analysis (Mean: 4.16 Lowest)

Even though it's the lowest, it's still a high score.
But the ranking tells a different story: this is probably the dimension with the biggest space for improvement.

Environmental analysis internal and external requires skill, tools, foresight. You need to detect technological shifts, economic changes, social trends... and not everyone has the tools or training for that.
So this lower score might be hinting toward a need for stronger analytical capabilities.

In simpler terms:
They're planning well, executing well, tracking well...
but reading the "bigger environment" could use more work.

Overall Impression

The strategic-planning process in Jeddah's water-production projects looks structured, comprehensive, and mature, especially in formulation and implementation.
Environmental analysis lags slightly, but even that is relatively strong.

It's a system that works but like any system, it has room to sharpen certain edges.

4.4.2 Analysis of Results Related to Water-Production Project Performance

Now, shifting to project performance, the overall mean is 4.19, with a standard deviation of 0.641.
Another high score.
This means employees and managers genuinely feel the projects are

doing well. Not perfect, but strong achieving goals, functioning efficiently, and considering sustainability.

Breaking the performance dimensions down paints a clearer, more layered picture:

- Efficiency (Highest Mean: 4.26)

Efficiency is king here.

This score shows a strong commitment to reducing operational costs, optimizing energy use, maximizing available resources.

It aligns perfectly with national priorities Saudi Arabia has been pushing for smarter spending across public sectors. This number shows that water projects in Jeddah are embracing that idea, not just talking about it.

It's almost like they're constantly asking:

"How can we do this better... with less waste?"

And people notice it.

- Effectiveness (Mean: 4.18)

This dimension sits comfortably in second place.

Effectiveness basically means: "Are we achieving what we're supposed to achieve?"

And here, the answer seems to be yes meeting water demand, ensuring quality, fulfilling key objectives.

This is important because effectiveness is the core of a water-production project. If a project isn't effective, everything else collapses.

A strong score here means the projects are doing their main job right.

- Sustainability (Lowest Mean: 4.13)

Even though it's the lowest, it's still high.

But the ranking is telling: sustainability is the area that needs more attention.

Environmental sustainability, operational continuity, reducing carbon footprint, using greener desalination technologies... these aren't small things.

They require investment, long-term thinking, maybe even cultural change.

Globally, everyone is moving toward greener, more sustainable operations. And Saudi Arabia is pushing that direction too. So this dimension is kind of like a sign saying:

"We're doing well... but we need to push further here."

Overall Picture

Performance in Jeddah's water-production projects appears strong on the ground especially in efficiency and effectiveness.

Sustainability is the dimension that's growing but needs more reinforcement.

It's almost like the projects are solid today... and now they need to think more about tomorrow.

4.4.3 Analysis of the Hypothesis-Testing Results

The results of the hypothesis tests came out almost like a loud confirmation an unmistakable signal that strategic planning isn't just a nice administrative formality. It's actually a core engine, a real driver behind better performance in water-production projects. Every statistical outcome pointed in the same direction: strategic planning had a positive, strong, and statistically significant effect on every performance dimension measured efficiency, effectiveness, and sustainability.

• Strategic Planning's Impact on Project Efficiency

When the first hypothesis was tested, the model showed that strategic planning explains 66% of the variations in project efficiency. And honestly, that's an unusually high number. It suggests that efficiency doesn't "just happen" it's built, intentionally, through planning.

The relationship makes sense when you break it down:

Resource Allocation Priorities

When you have clearly defined strategic goals, you naturally start channeling financial, human, and material resources toward what actually matters. High-value activities get attention. Low-value or wasteful ones don't. That alone can dramatically reduce resource waste.

Operational Improvements

Strategy formulation usually brings in best practices, updated technologies, and smarter methods all aimed at better outputs and lower costs.

So efficiency rises almost as a natural byproduct of thoughtful planning.

Continuous Monitoring

When you have KPIs and structured evaluation routines, you're more likely to catch early signs of resource misuse or cost overruns. And when you catch issues early, fixing them becomes much easier and cheaper.

These findings match what other studies have been reporting Al-Ghamdi (2023), among many others, found that organizations with systematic strategic planning tend to operate more efficiently. It's almost a pattern at this point: planning → clarity → efficiency.

• Strategic Planning's Impact on Project Effectiveness

The second hypothesis showed that strategic planning explains 59.1% of the variation in project effectiveness. Effectiveness here means "doing the right things" meeting water demand, ensuring quality, fulfilling the basic mission of the project.

The strong effect can be understood through several mechanisms:

Clear Objectives

When the strategy defines the goals well, everyone inside the project is working toward the same direction whether it's expanding water supply or improving output quality. No scattered efforts. No mixed priorities.

Stakeholder Alignment

The environmental-analysis step forces the organization to understand what stakeholders want: consumers, regulators, communities. When the strategy reflects those needs, the final outputs naturally become more effective and more relevant.

Adaptability

Strategic planning pushes the organization to stay aware of change shifts in demand, new regulations, emerging technologies. Projects that adapt maintain their effectiveness rather than lag behind.

So effectiveness is not just a matter of "trying hard." It's tied to having a guiding compass and strategic planning acts as that compass.

• Strategic Planning's Impact on Project Sustainability

The third hypothesis revealed that strategic planning explains 63.2% of the changes in project sustainability a very strong link. Sustainability is often thought of as a long-term concern, something that stretches beyond the day-to-day tasks. And that's why strategic planning influences it so heavily.

Here's how:

Environmental & Social Integration

Modern strategic planning doesn't stop at financial efficiency. It now incorporates energy efficiency goals, emission-reduction goals, social responsibility elements... all of which feed directly into sustainability.

Long-Term Asset Planning

Things like maintenance cycles, asset renewal schedules, infrastructure replacement these require long-term thinking. Strategic plans give that structure, preventing operational collapses or inefficient repairs later.

Future-Risk Management

Planning helps identify risks early water scarcity, climate change, regulatory changes, or even changes in public expectations. Once identified, preventive strategies become possible instead of reactive crisis responses.

This aligns with both global and local movements toward sustainability. Around the world, sustainability is no longer an optional theme it's the center of strategic development. And these results show that Jeddah's water-production sector is following the same logic.

Overall Interpretation

In all three hypotheses, the pattern was consistent and strong: Strategic planning isn't symbolic. It's transformative.

The statistical tests practically reinforced the entire theoretical model of the study, showing that planning is deeply tied to superior performance more efficient operations, better achievement of goals, and stronger sustainability over time. The findings answer the main research questions with clarity: strategic planning directly, significantly, and meaningfully improves the performance of water-production projects in Jeddah.

5. Discussion of the Results and Recommendations

This chapter brings everything together like the final act of the research story. Here, the statistical results from Chapter 4 are re-examined in the larger context of theory and previous studies. The goal is not just to restate the findings but to understand them more fully:

Why did planning matter this much? How do its dimensions interact with project performance indicators?

The discussion explores how environmental analysis, strategy formulation, implementation, and monitoring all work together and how they collectively influence operational efficiency, water quality, environmental sustainability, and adherence to schedules and budgets.

And beyond interpretation, the chapter aims to produce practical recommendations things the Ministry of Environment, Water and Agriculture can actually use to strengthen their initiatives. It also identifies directions for future research, offering openings for new studies that could deepen knowledge in this critical field.

5.1 Discussion and Interpretation of the Study's Findings

This part of the study feels like the moment when the numbers finally meet the real world. It's where the statistical results stop being abstract tables and start becoming something more alive something tied to people, decisions, challenges, and the daily grind inside Jeddah's water-production projects. The discussion here digs into what these results mean, not just what they "show," connecting them back to the research questions and the bigger context surrounding the sector.

Discussion of the First Main Hypothesis: The Overall Impact of Strategic Planning

The results of the first major hypothesis were crystal clear: strategic planning when all its dimensions work together has a positive, statistically significant, and genuinely substantial effect on improving the performance of water-production projects in Jeddah.

And this isn't a minor detail.

It suggests something bigger: strategic planning is not a ceremonial, administrative routine. It's actually the engine, the GPS, the stabilizer, the long-term compass that keeps these huge, costly, technically complex water projects from drifting.

You can almost imagine it:

Without a strategic plan, the work becomes a series of disconnected operations reacting to emergencies...

But with a strategic plan, everything has direction vision, mission, measurable goals, KPIs, feedback loops. The whole system starts behaving as one coherent, aligned organism.

And in a city like Jeddah growing fast, thirsty for water, pressured by population increases strategic planning becomes more than a management tool. It becomes survival. It becomes resilience. It ensures that water keeps flowing tomorrow, not just today.

This aligns strongly with global trends too. Around the world, infrastructure sectors are leaning heavily on strategic management because of their long life cycles, massive investments, and enormous national importance. Water projects are no different. When you're dealing with systems that influence public health, national security, and sustainable development, planning is not optional. It's the anchor.

The responses from participants reflect this understanding. They see it. They feel it. And the statistics simply confirm what practitioners already know.

Discussion of the Sub-Hypotheses: Breaking Down Each Dimension of Strategic Planning

Now we move from the big picture to the smaller gears each dimension of planning and how it shapes performance.

1. The Impact of Environmental Analysis

The findings showed a positive, significant effect from environmental analysis on project performance. And honestly, this makes perfect sense. Environmental analysis is like the “diagnosis stage” the moment before treatment where you try to understand the real situation.

A few angles make this effect easier to understand:

- Efficiency

When you analyze internal operations, weaknesses jump out. You see energy waste, outdated technology, inefficient processes.

For example: realizing a desalination unit consumes more electricity than global benchmarks can push the project to adopt a better alternative. That's immediate efficiency.

- Sustainability

External environment analysis reveals things like new environmental regulations, community expectations, climate risks (sea-level rise, water-temperature changes).

This foresight allows the project to take early action reducing emissions, adopting greener technologies, aligning with sustainability goals.

- Time & Budget Control

Environmental analysis identifies risks long before they erupt price fluctuations, supplier delays, regulatory changes.

Knowing these early makes it easier to prepare contingency plans, reducing disruptions.

Participants' high agreement with this dimension suggests a mature understanding: projects don't operate in a bubble. They exist in a constantly changing landscape and the ones who adapt survive.

2. The Impact of Strategy Formulation

The second sub-hypothesis revealed a strong effect of strategy formulation and honestly, the result is almost expected.

This is the stage where all the environmental analysis is converted into something real: vision, mission, measurable goals, and actionable strategies.

Good formulation leads to:

- Clear, Shared Direction

When everyone from managers to engineers knows exactly what the long-term targets are, coordination improves. No duplicated efforts. No contradictions.

- Smarter Resource Allocation

Strategy formulation forces tough decisions:

Where do we put our money? Which initiative deserves the most manpower?

This avoids scattering resources across low-value activities.

- Innovation

Formulating strategy often pushes teams to think outside the box new technologies, more efficient desalination, creative solutions to old problems.

This dimension's strong impact reinforces a simple truth:

Brilliant execution starts with brilliant design.

And the Ministry's success in Jeddah depends heavily on the clarity and strength of its strategic plans.

3. The Impact of Strategy Implementation

And then we reach the heavy hitter the dimension that had the biggest and most significant impact on performance.

Implementation.

Execution.

The moment where ideas either come alive or die.

The results send a loud message: a great strategy without proper implementation is worth nothing. But a good strategy executed well? It can change everything.

Why does implementation matter so much?

- Turning Plans Into Reality

Implementation translates goals into concrete actions: timetables, task assignments, workflows, resource schedules.

Without this, strategies stay locked in drawers.

- Leadership & Communication

Execution requires leaders who can motivate people, remove obstacles, and communicate clearly.

When people know why something matters, they work differently.

- Organizational Capacity

Implementation often requires new skills, new structures, new technologies.

Adopting change successfully is what turns potential into performance.

- Culture Alignment

If the culture doesn't match the strategy, implementation collapses. (Imagine trying to push innovation in a team afraid of taking risks.) This makes cultural harmony a silent but powerful success factor.

Because implementation showed the strongest effect, the lesson is unmistakable:

Success depends not on the strategy document, but on what the organization does with it.

4. The Impact of Strategic Monitoring & Evaluation

Finally, the fourth dimension monitoring and evaluation also showed a positive and meaningful effect, though smaller than formulation and implementation.

Still, its role is essential:

- Early Warning System

KPIs, dashboards, and performance audits bring real-time visibility. They alert managers to problems before they snowball.

- Organizational Learning

Tracking progress helps the organization understand what worked, what failed, and why.

This is how strategy evolves and improves.

- Adaptability

The water sector like most critical infrastructure sectors faces shifting technologies, regulations, and environmental risks.

Continuous evaluation allows strategies to evolve rather than freeze.

Its slightly lower impact compared to implementation is understandable: monitoring is only as good as the goals and execution behind it. But it remains an indispensable part of the strategic-planning cycle.

5.2 Linking the Results to the Theoretical Framework and Previous Studies

Human Messy, Expanded

Linking the study's findings back to the theoretical framework and the earlier literature almost feels like stepping outside the data for a moment to ask a bigger question: "Where does all of this fit in the wider map of knowledge?"

It's a crucial step not just to show that the study is grounded in real theory, but to understand how the findings echo, reinforce, or even stretch what previous researchers have talked about. So in this section, the results are re-read through the lens of the models reviewed in Chapter Two, and also compared with studies that explored similar areas.

Consistency With the Strategic-Planning Theoretical Framework

The results align so strongly with strategic-management theory that it's almost like the two are speaking the same language. The main finding that strategic planning has a positive impact on performance is pretty much the core promise of strategic planning as a discipline.

Strategic-management theory has always carried this basic assumption:

organizations that plan intentionally and execute methodically tend to outperform those operating reactively or making short-term, crisis-based decisions.

And what's interesting is that your results don't just support this assumption broadly they support it in a very structured, dimension-by-dimension way.

When the findings are broken down, the alignment becomes even clearer with both classical and modern strategic-planning models:

- SWOT Analysis (as a diagnostic foundation)

The first sub-hypothesis that the “strategic environmental analysis” dimension significantly improves performance fits perfectly into the SWOT tradition.

SWOT has always been positioned as the diagnostic core of strategy: understand your internal strengths and weaknesses, identify external opportunities and threats.

And here, the findings act almost like living proof of that logic.

The positive effect of this dimension matches the argument repeated in almost every strategic-planning textbook:

“A strategy built without understanding the environment is a strategy built on sand.”

Your data reinforces that the ability to read the environment well is what gives the strategy a stable foundation.

- Balanced Scorecard (BSC) as a multi-dimensional performance lens

Another theoretical match appears in the results about “evaluation and follow-up.”

The Balanced Scorecard approach has always said that performance should be measured from multiple angles not only finances.

Customers, internal processes, learning and growth... everything counts.

Your study measured performance through efficiency, quality, sustainability, and schedule adherence.

That’s exactly the kind of multi-angle perspective the Balanced Scorecard encourages.

And the alignment here isn’t vague it’s direct.

The findings reflect the BSC’s idea that real performance improvement comes from tracking multiple indicators, not just one.

It's a balanced, holistic way of understanding how an organization is doing.

- The Sequential Stages of Strategic Planning

One of the clearest confirmations of theory comes from the empirical validation of the four-stage strategic-planning model:

analysis → formulation → implementation → evaluation

Your study doesn't simply repeat this sequence theoretically.

It shows through data that these stages really do function in the field as interconnected, mutually reinforcing steps.

And the most striking part?

Implementation came out as the most influential dimension.

This directly aligns with the modern shift in strategy literature, which is becoming more vocal about the limits of planning on paper.

The emerging idea is:

"Execution is the real differentiator. A brilliant plan with poor execution is worth nothing."

Your results mirror that exactly.

The theory says execution matters most; your study shows that it actually does.

Comparison With Previous Studies

When you start comparing this study's results with what earlier researchers found, it feels almost like putting puzzle pieces from different boxes on the same table. Some pieces snap into place immediately clear agreement, no surprises. Other pieces show where your study adds something new, something sharper, something the older work didn't zoom into. And honestly, that's where the value of this whole comparison lies.

Let's walk through what lines up, and what stands out.

First: Points of Agreement Where This Study Fits Comfortably With the Literature

1. General agreement with studies linking strategy to performance

The central result here that strategic planning improves performance matches a whole stream of studies across completely different sectors. Some earlier work found that strategic planning boosts financial performance in companies.

Others found it boosts operational performance in service sectors. And all of them basically echo the same idea:

When organizations think strategically, they perform better.

Your study doesn't break that pattern it reinforces it, and in a sector where this kind of evidence is especially meaningful.

2. Strong alignment with Yusuf (2025)

Yusuf emphasized that strategy only matters when it turns into real actions and continues to be monitored not just written and forgotten. Your study provides quantitative proof of the same dynamic, but in the water sector this time.

The data showed clearly that "implementation" and "follow-up" are strongly tied to better performance indicators.

It almost feels like your study is saying:

"Yes, we see the same thing but here it is in numbers."

3. Agreement with Hegazy (2024) about environmental performance

The coastal-zone study argued that strategic planning improves environmental performance.

Your study backs this up in a very specific, very real context:

water-production projects in Jeddah projects in a coastal city that faces environmental and sustainability challenges every day.

Your results showed a positive link between planning and environmental sustainability, fitting neatly with Hegazy's observations.

4. Consistent with Almulhim (2023)

Almulhim pointed out that the water sector in Saudi Arabia used to lack a clear strategic vision.

Your findings provide the other half of that story:

Now that the Ministry is adopting structured strategic planning, the performance is improving in measurable, meaningful ways.

It's like watching theory turn into evidence exactly what the literature needed.

Second: Points of Difference and the Unique Contribution of This Study

Now the other side of the comparison.

Where does this study not simply copy earlier work?

Where does it add something new to the conversation?

1. A sharper focus on water-production projects

Most older studies looked at broad themes:

food security, coastal management, national water conservation, public water-resource systems...

But your study zooms in on a very specific unit:

Water-production projects themselves.

This focus lets the study examine the planning–performance link right at the project level something much more practical, concrete, and action-oriented.

This alone gives your study an edge.

2. A quantitative, effect-size-based approach

Many previous studies stayed in the qualitative or descriptive zone talking about ideas, models, general patterns.

Your study didn't just describe it measured.

Using surveys, statistical tools, regression models...

you were able to quantify exactly how much each planning dimension influences performance.

That's why you were able to say:

"Strategy implementation is the most influential dimension."

This is not an opinion it's a quantitative result.

And earlier literature did not provide this level of detailed measurement.

3. Filling the research gap identified in Chapter Two

Earlier studies mentioned Jeddah's water challenges, but none of them actually analyzed how the strategic-planning stages (analysis, formulation, implementation, evaluation) shape performance at the project level.

Your study stepped right into that gap.

For example:

The urban-development study on Jeddah (Alhubashi, 2024) acknowledged that water management is important, but didn't measure strategy effects.

Another study mentioned water projects in Jeddah (Alodah, 2023), but didn't examine the mechanisms behind performance improvement.

Your study did both directly, empirically, and with detailed analysis.

5.3 Recommendations and Suggestions

When you reach this part of the study, the numbers and models start to feel less abstract and more like a push toward something practical. The findings don't just sit there; they hint at what should happen next, what needs to be fixed, strengthened, or re-imagined. So the recommendations here grow out of that thinking from the statistical results, from the theories discussed earlier, and from everything previous researchers tried to solve before.

And because the water-production sector in Jeddah is a complicated space with multiple actors involved, the recommendations naturally break into different levels:

some belong to high-level policymakers at the Ministry, some make more sense for project managers on the ground, and some are more like seeds for future research.

5.3.1 Strategic-Level Recommendations for Policymakers

These suggestions sit at the “big picture” level – the wide-angle frame. They deal with the system itself, not just the projects inside it. And the goal is pretty simple: keep the strategic-planning framework solid, connected, and flexible enough to survive whatever comes next.

1) Strengthen cross-sector strategic integration

One thing the study makes hard to ignore is that strategic planning doesn’t reach its full potential unless it’s connected across sectors almost like gears that only move effectively when the whole system moves with them.

So the recommendation here is to set up stronger institutional coordination mechanisms between the Ministry of Environment, Water and Agriculture and other big players: the Ministry of Energy, the municipal and housing ministry, and the National Center for Privatization.

Why?

Because water-production plans don’t exist in a vacuum.

They must align with urban-development plans in Jeddah (as noted by Alhubashi, 2024), with energy strategies for desalination plants, and with sewer-network plans and distribution systems.

A practical way to do this:

create permanent joint strategic committees, not one-time meetings, to sync goals, projects, and budgets on a regular rhythm.

2) Embed environmental-sustainability indicators into strategy formulation

Strategic planning in this sector can't stop at production targets or operational costs. Sustainability has to move from being a "nice add-on" to becoming an anchor in the strategy. So the study recommends adopting tools like Strategic Environmental Assessment (SEA) systematically, not occasionally.

Doing this early at the planning stage helps evaluate the long-term environmental impact of water-production projects on the coastline of Jeddah (a point supported by Hegazy, 2024). It also nudges decision-makers toward choices that are simply better for the future: lower-impact desalination technologies, smarter use of renewables, and a more responsible footprint overall.

3) Develop flexible strategies that can adapt to climate change

Jeddah is a coastal city, and that means climate change isn't a theoretical risk—it's a daily concern. Rising sea levels, unpredictable weather, hotter seas... all of this shapes how water projects must be planned. So the recommendation is to use scenario-based strategic planning. Instead of banking on one future, plan for a few.

Different climate and demand scenarios push the strategy to stay flexible, giving the water sector enough resilience to respond when the unexpected happens—whether it's shortages, consumption spikes, or new environmental regulations (echoing concerns raised by Alodah, 2023).

4) Invest more in research, development, and innovation

If the Ministry wants actual leaps—not just small improvements—innovation has to be embedded into the strategy, not treated as a side project. The study encourages increasing funding for R&D:

next-generation desalination, smart-water management systems, reuse technologies, all the things that will push performance upward.

Another practical suggestion:

build collaboration platforms between the Ministry, universities, research centers, and the private sector so new ideas don't just stay in labs but move into real-world application.

Innovation is where cost reduction, efficiency, and environmental gains often begin.

5.3.2 Operational-Level Recommendations for Project Managers

These recommendations shift from the balcony to the ground floor from strategy to execution. The whole point here is to close the gap between “good plans” and “good results.”

1) Build integrated KPI systems tied directly to strategic goals

One of the clearest insights from the findings is that daily project performance isn't always connected to long-term strategic objectives. So the study suggests designing more comprehensive performance dashboards digital ones that show more than the usual cost-time-quality triangle.

They should include things like energy-efficiency levels, network-loss percentages, water-reuse rates, and customer-satisfaction scores. Real-time data is key here; it gives managers the chance to react, adjust, correct fast (as reinforced by Alotaibi, 2023).

2) Strengthen strategic-management skills inside project teams

Even the best plan collapses without people who know how to implement it.

So one practical recommendation is to invest in specialized training programs for project managers and staff.

Not general training focused training:

strategic thinking, risk management, data analysis, stakeholder management.

This builds human capability that can actually translate strategy into real-world progress.

3) Make stakeholder involvement a structured, ongoing practice

Projects tend to run smoother when the people affected by them are part of the conversation.

The study suggests institutionalizing this involvement: workshops, advisory groups, periodic surveys.

When industry players, local communities, and civic groups are engaged, two things happen:

needs are identified more accurately

social resistance drops, and trust rises

That directly supports faster and more reliable project execution.

4) Adopt a culture of continuous improvement and learning

Strategic planning shouldn't freeze once a project starts.

The recommendation here is to embed continuous-improvement methods like Total Quality Management (TQM) or Kaizen into water-project operations.

This includes running post-project reviews not just as paperwork, but as real learning moments to capture what worked, what failed, and what should be repeated.

Over time, these small cycles of learning accumulate into major improvements.

5) Accelerate the use of digital technologies

Digital tools are no longer optional if the sector wants transparency and efficiency.

The study suggests pushing forward with:

BIM for design and construction

IoT sensors for real-time monitoring of networks

remote-sensing systems

big-data analytics to predict demand and optimize distribution

These tools act almost like an “extra mind” for strategic planning feeding the system with accurate, immediate data that supports better decisions.

5.4 Study Limitations and Future Research Directions

Even with the effort that went into this study and honestly, there was a lot of effort it still carries a set of limitations. Every study does. Some of them are simply part of the research environment, others come from the nature of the tools used, and a few show up only when you step back and look at the bigger picture. Strangely enough, these limitations are also what open the door to future research; they point toward what the next step could be.

5.4.1 Study Limitations

1) Geographic and Human-Scope Constraints

This study focused strictly on water-production projects under the Ministry of Environment, Water and Agriculture in Jeddah. Only Jeddah. And because every city has its own organizational habits, its own operational quirks, even its own internal culture, generalizing these findings to other regions in Saudi Arabia should be done carefully. What works in Jeddah may shift slightly in Riyadh, or look entirely different in Dammam.

The sample itself had its own boundaries: it included managers, engineers, technicians, planners. Other roles administrative staff, contractors, external stakeholders might see things differently. Their voices aren't reflected here.

2) Time Limitations

The data was collected within a specific timeframe, almost like a snapshot.

But the water sector in Saudi Arabia is evolving fast under Vision 2030 organizational structures shift, new technologies get introduced, policies tighten, expectations rise. So the relationships captured here may change as the context changes.

It's like trying to describe a moving river using a photo. The picture is accurate, but only for that moment.

3) Reliance on Self-Reported Survey Data

Because the study used a questionnaire as its primary tool, the findings depend partly on how respondents perceive things their understanding of the questions, their personal biases, their mood, their interpretation of "performance" or "planning."

Yes, validity and reliability checks were done. But survey-based research always carries the chance of subjective bias. Different people might read the same sentence in slightly different ways.

4) Limited Access to Detailed Secondary Data

While collecting data, it became clear that not all performance metrics were available.

Some numbers like exact cost breakdowns, energy-efficiency rates, real loss percentages were either confidential or simply not accessible to researchers.

This pushed the study to rely more heavily on qualitative perception data from the survey, instead of having a strong mix of hard quantitative performance indicators.

It doesn't invalidate the results, but it does mean there's more to discover if fuller datasets become available.

5.4.2 Future Research Directions

Based on what the study found and what it wasn't able to do several possible research paths appear. Almost like branches growing out of the same trunk.

1) Comparative Studies Across Cities or Countries

One natural next step is to compare Jeddah's case with other Saudi cities Riyadh, Dammam, Medina to see whether the influence of strategic planning shifts depending on local conditions.

And on a bigger scale, it could be fascinating to compare Jeddah with global cities that face similar water challenges: maybe in the Gulf region, or even places like Australia's coastal cities.

This kind of comparison could reveal best practices that haven't made it into local strategies yet.

2) Longitudinal Studies (Following Projects Over Time)

This study took a snapshot; future research could create a movie.

Tracking water projects over several years watching how planning translates into performance month by month, year by year would give a richer understanding of how strategic planning shapes outcomes over time.

Longitudinal studies can uncover cause-and-effect relationships more convincingly than cross-sectional data.

3) Exploring Strategic Leadership and Innovation Culture

This research focused on the planning process itself. But what about who leads the planning?

Future studies could examine “strategic leadership” as a mediating variable how leadership styles, decision-making approaches, or communication habits influence the translation of strategy into real improvements.

Another angle: the role of “innovation culture.”

Organizations with strong innovation mindsets may implement strategies more effectively than rigid, traditional structures.

This relationship is still underexplored in the water sector.

4) Evaluating Economic and Social Impacts of Strategic Planning

Another research path is to go beyond operational performance and measure economic outcomes:

return on investment, economic efficiency, reduction of waste, long-term cost savings.

And even beyond economics what about the social dimension?

Access to water, quality of life, community trust, environmental confidence...

Strategic planning probably influences these areas too, and measuring them could offer a more complete picture of the sector’s impact.

5) Investigating Emerging Technologies and Their Role in Strategic Planning

With AI advancing fast and big-data analytics becoming more common, there’s a huge opportunity for future studies to explore how these tools can reshape the planning process.

For example:

using AI models to forecast demand for water under different scenarios,

applying IoT data to improve asset management,

using machine learning to simulate climate-change impacts (noted by Alodah, 2023),

or building decision-support systems that guide strategic choices.

Technology could make strategic planning not only more accurate but more responsive and alive.

6) Shifting from Supply to Demand-Side Strategic Planning

This study focused on the “supply side” water production.

But demand-side management is equally important: conservation practices, pricing policies, public awareness, behavior change programs (something highlighted in Almulhim, 2023).

Future studies could analyze how strategic planning affects water-demand management and how these policies influence overall sustainability in cities like Jeddah.

This direction would complete the circle between supply and demand.

6. Conclusion

Reaching the end of this research feels a bit like stepping back after a long, detailed journey one that tried to understand how strategic planning actually connects to the real performance of water-production projects in Jeddah, especially those run under the Ministry of Environment, Water and Agriculture. The whole study started from a simple but pressing realization: water in Saudi Arabia isn't just another sector. It's a lifeline. A sector under pressure from two sides at once scarcity of natural resources, and a demand curve that keeps climbing as the population and the economy expand.

And Jeddah, in particular, stands at the center of this challenge. The city relies almost entirely on desalination to meet its water needs, which means any improvement or failure in these projects carries national weight. Security, sustainability, daily life... all of it is tied to how well these projects perform.

The research set out to answer one main question: How do the dimensions of strategic planning formulation, implementation, and strategic evaluation shape the performance of water-production projects? To explore that, an integrated theoretical framework was built: one that links modern strategic-planning concepts with core project-performance indicators. And all of it grounded in the local Saudi context, especially Vision 2030 and the strategic push to modernize the water sector.

After analyzing the data collected from managers, engineers, technicians, and planners involved in these projects, several central findings became clear. And each one contributes to the story in its own way.

First: Summary of the Main Findings

1) A strong, overall positive impact of strategic planning

The statistical results made something very obvious: when strategic planning is applied properly with formulation, implementation, and evaluation working together it creates a clear and significant improvement in the performance of water-production projects in Jeddah.

This isn't just a theoretical claim; the numbers back it up.

It basically confirms the main hypothesis: strategic planning is not a formality. It is the engine. Projects with a clear strategic direction consistently perform better more efficiently, more effectively, and more sustainably.

2) Strategy formulation showed the largest influence

Interestingly, the "formulation" phase was the strongest predictor of improved performance.

And that makes sense: if the vision and mission are unclear, if goals aren't well-defined, if SMART objectives aren't set, or if the environmental analysis (SWOT) is done superficially, then everything that comes after becomes fuzzy.

A well-built strategy from the earliest stage creates clarity.

And clarity reduces waste, minimizes confusion, and aligns everyone toward the same direction.

When teams know exactly why they're doing something, the rest of the process becomes far smoother and more purposeful.

3) Implementation plays the crucial role of turning plans into results

The findings also highlighted how essential the "implementation" stage is. You can create the best strategy in the world beautiful charts, perfect models but if it doesn't move from the page to actual procedures, then nothing changes.

The study showed that successful implementation requires several things:
good allocation of resources,
supportive organizational structures,
leadership that actually believes in the strategy,
and teams that have the skills and confidence to move the plan forward.

In other words, implementation is the bridge between ambition and reality.

4) Strategic evaluation ensures continuous correction and improvement

Although “evaluation” had a slightly smaller statistical weight compared to formulation and implementation, its importance shouldn’t be underestimated.

Evaluation acts like a feedback loop – a way to detect deviations before they turn into bigger problems.

When KPIs are clear, when periodic monitoring happens, when accountability systems exist, managers can spot issues early and adjust their approach.

It’s not just monitoring – it’s institutional learning.

It feeds improvements back into the strategy so the next cycle is stronger and more adaptive.

(Abdella, 2024)

5) Strategic planning influences all performance dimensions, not just one

One of the strongest takeaways is how broad the impact is.

Strategic planning doesn't just improve one aspect of project performance it enhances everything the study measured:

Operational efficiency:

Better resource use, fewer unnecessary costs, smoother processes.

Quality and sustainability:

Strong focus on long-term environmental and health standards (as highlighted by Alodah, 2023).

Adherence to timeframes and budgets:

Realistic planning, clearer requirements, better risk anticipation.

Instead of fixing one piece of the puzzle, strategic planning lifts the whole system.

Second: Interpreting and Discussing the Findings

When I look at the results again slowly, almost the way you watch steam rise from a cup you start to see how neatly they fit with what strategic-management theory has been saying all along. The idea is simple: organizations that plan wisely tend to perform better. And honestly, what this study uncovered feels like a very practical reflection of that idea inside a real, everyday context... the water-production projects in Jeddah.

The strong effect of the strategy-formulation phase makes sense. Most of the classic models insist that nothing really works unless you begin with good diagnosis and clear thinking. And the data here is basically nodding along to that.

Then there's implementation, which jumps out again and again. That part reminds me of the newer school of thought the approach that says the best strategy in the world doesn't matter if it never crosses the line from

paper to action. And the projects in this study seem to prove that. Good execution is what turns careful planning into real performance.

As for evaluation, even though its effect was a bit smaller, it still plays a steady, essential role. It's the thing that keeps everything honest. It's the "let's check where we stand" moment. It's what makes the cycle continuous, instead of something you do once and forget.

What's also clear is that the teams running these projects in Jeddah engineers, managers, planners have reached a pretty mature stage in how they handle strategy. The shift from reacting to problems toward anticipating them matches perfectly with the spirit of Vision 2030. Water management here isn't just an engineering task. It's part of a larger move toward sustainable urban development (Alhubashi, 2024).

And with the pressures Saudi Arabia faces water scarcity, climate change, the long coastline around Jeddah the need for serious, long-term planning becomes almost inevitable (Suhail, 2024).

This study, in a way, just confirms that strategic planning is the most grounded tool for handling these pressures, not by avoiding them, but by turning them into chances for improvement and innovation.

Third: Scientific and Practical Contribution

This research ends up offering two kinds of value. One belongs to the academic world, and the other belongs to the people who actually run these projects.

From the academic side, the study adds something meaningful to Arabic literature on water-sector project management. There hasn't been much work that directly connects strategic planning each step of it to project performance in the Saudi context. So this fills that gap, and offers a model that other researchers can reuse in the future.

From the practical side, the findings are even more tangible.

They give policymakers and project managers something clear to work with:

that every stage of the strategic-planning process matters.

That plans don't succeed on good intentions alone.

And that performance improves most when planning, execution, and evaluation move together, not separately.

This kind of evidence can feed directly into training programs, better performance dashboards, and more realistic KPIs that actually reflect the strategic direction of the sector.

When you put it all together, the message is steady and simple: strategic planning isn't a luxury. It's almost a survival tool for places like Jeddah, where water production is tied to the long-term wellbeing of the entire city. Ensuring that future requires clear vision, thoughtful planning, disciplined execution, and constant checking.

And this research, in its own modest way, adds one more piece of understanding to that bigger picture like another note in a long conversation about how to secure a sustainable water future for the Kingdom.

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Appendices

الاستبيان

بسم الله الرحمن الرحيم

أنا الطالب/ سلطان المدني، طالب ماجستير في إدارة المشاريع بجامعة ميداو شن.

أقدم لكم هذا الاستبيان الذي يهدف إلى جمع آرائكم وخبراتكم الثمينة حول "دور التخطيط الاستراتيجي في تحسين أداء المشاريع الإنتاجية للمياه"، وذلك في إطار دراسة حالة على مبادرات وزارة البيئة والمياه والزراعة في مدينة جدة.

تُستخدم نتائج هذا الاستبيان لأغراض أكاديمية بحثية، وسيتم التعامل مع جميع البيانات بسرية تامة، ولن يتم استخدامها لأي غرض آخر غير إكمال متطلبات البحث العلمي.

نشكر لكم وقتكم الثمين وتعاونكم، كما نقدر مساهمتكم القيمة في إثراء هذه الدراسة، والتي نأمل أن تسهم في دعم تطوير أداء المشاريع الحيوية في قطاع المياه.

مع فائق الاحترام والتقدير،

المشرفين

دور التخطيط الاستراتيجي في تحسين أداء المشاريع الانتاجية للمياه، وذلك في إطار دراسة حالة على مبادرات وزارة البيئة والمياه والزراعة في مدينة جدة.

القسم الأول: البيانات الديموغرافية والشخصية

يهدف هذا القسم إلى جمع بعض المعلومات الأساسية عن المشاركين في الدراسة، والتي ستساعد في فهم خصائص عينة البحث. يرجى التكرم بوضع علامة (✓) في المربع المناسب أو كتابة المعلومة في الفراغ المخصص.

١. الاسم: _____

٢. الجنس:

٠ () ذكر

٠ () أنثى

٣. الفئة العمرية (بالسنوات):

٠ () أقل من ٣٠ سنة

٠ () ٣٠ – أقل من ٤٠ سنة

٠ () ٤٠ – أقل من ٥٠ سنة

٠ () ٥٠ سنة فأكثر

٤. المؤهل العلمي:

() دبلوم

() بكالوريوس

() ماجستير

() دكتوراه

٥. المسمى الوظيفي:

() مدير مشروع

() مهندس مشروع

() مخطط مشروع

() مراقب جودة

() مدير إدارة / قسم

() استشاري

٦. عدد سنوات الخبرة في مجال إدارة المشاريع:

() أقل من ٥ سنوات

() ٥ – أقل من ١٠ سنوات

() ١٠ – أقل من ١٥ سنة

() ١٥ سنة فأكثر

٧. عدد المشاريع التي شاركت في إدارتها أو الإشراف عليها في شركة المياه الوطنية
بجدة:

٠ () ١ - ٣ مشاريع

٠ () ٤ - ٦ مشاريع

٠ () ٧ - ٩ مشاريع

٠ () ١٠ مشاريع فأكثر

المحور الثاني: مستوى تنفيذ التخطيط الاستراتيجي

١. هل تمتلك وزارة البيئة والمياه والزراعة رؤية استراتيجية واضحة لمشاريع

إنتاج المياه في جدة؟

٠ () أو افق بشدة

٠ () أو افق

٠ () محايد

٠ () لا أو افق

٠ () لا أو افق بشدة

٢. هل توجد أهداف استراتيجية محددة وواضحة لمشاريع إنتاج المياه

٠ () أو افق بشدة

٠ () أو افق

٠ () محايد

٠ () لا أو افق

٠ () لا أو افق بشدة

٣. هل يتم استخدام مؤشرات أداء رئيسية (KPIs) لمتابعة تنفيذ الخطط

الاستراتيجية؟

٠ () أو افق بشدة

٠ () أو افق

٠ () محايد

٠ () لا أو افق

٠ () لا أو افق بشدة

٤. هل يتم تحديث الخطط الاستراتيجية بانتظام بناءً على التغيرات المحيطة؟

٠ () أو افق بشدة

٠ () أو افق

٠ () محايد

٠ () لا أو افق

٠ () لا أو افق بشدة

المحور الثالث: فعالية الأداء في مشاريع إنتاج المياه

١. ما مدى تحقيق مشاريع إنتاج المياه للأهداف المرسومة لها؟

() حقق بشكل كامل

() حقق إلى حد كبير

() حقق جزئياً

() لم يحقق

٢. ما مستوى كفاءة استخدام الموارد (بشرية، مالية، تقنية) في المشاريع؟

() عالي جداً

() عالي

() متوسط

() منخفض

٣. ما تقييمك لجودة مخرجات مشاريع إنتاج المياه؟

() ممتازة

() جيدة

() مقبولة

() ضعيفة

٤. هل تسهم المشاريع في تحقيق استدامة موارد المياه على المدى الطويل؟

٠ () بنسبة كبيرة

٠ () إلى حد ما

٠ () قليلاً

٠ () لا تسهم

المحور الرابع: العلاقة بين التخطيط الاستراتيجي وتحسين الأداء

١. هل يسهم التخطيط الاستراتيجي في تحسين الالتزام بالجدول الزمنية للمشاريع؟

٠ () أو افق بشدة

٠ () أو افق

٠ () محايد

٠ () لا أو افق

٠ () لا أو افق بشدة

٢. هل يؤثر التخطيط الاستراتيجي إيجابياً على الالتزام بالموازنات المخصصة؟

٠ () أو افق بشدة

٠ () أو افق

٠ () محايد

٠ () لا أو افق

٠ () لا أو افق بشدة

٣. هل يساعد التخطيط الاستراتيجي في تحسين جودة مخرجات المشاريع؟

٠ () أو افق بشدة

٠ () أو افق

٠ () محايد

٠ () لا أو افق

٠ () لا أو افق بشدة