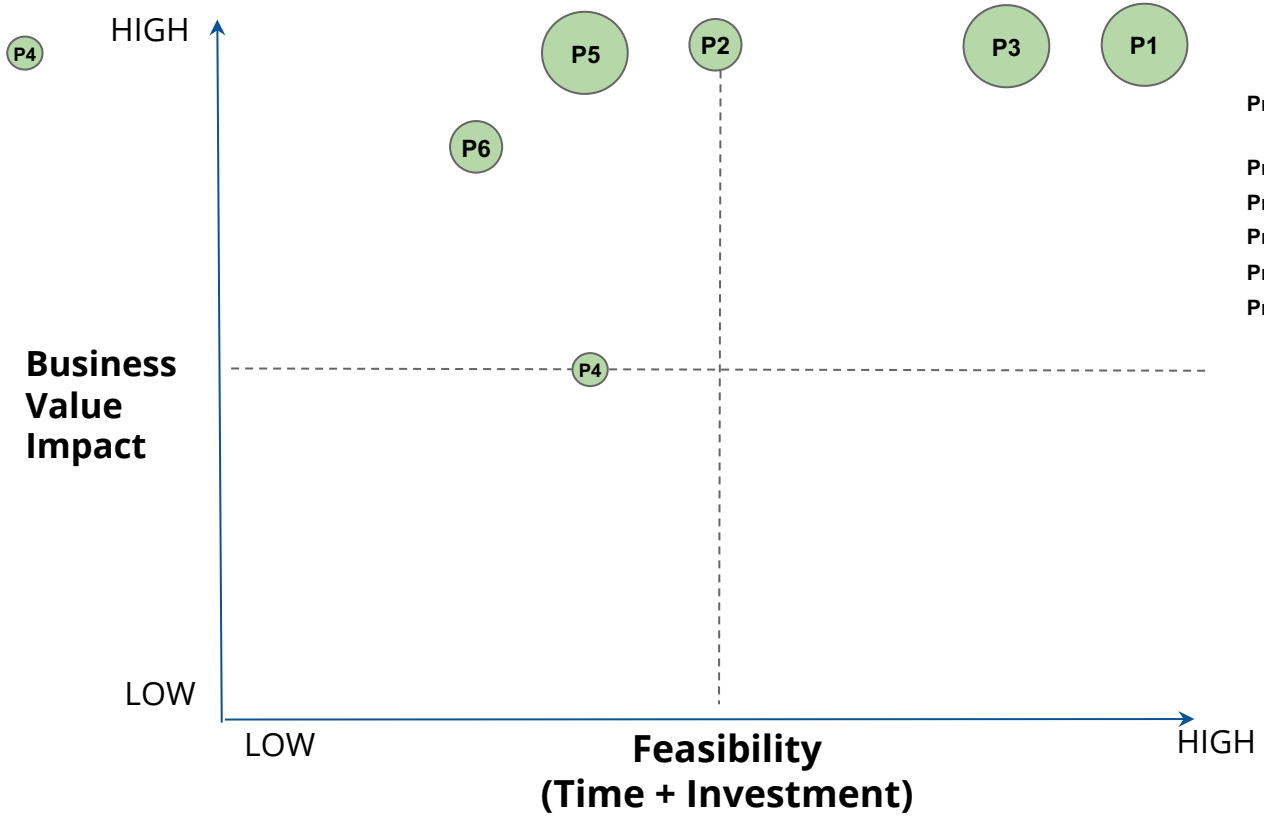
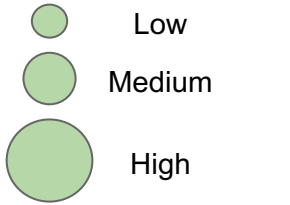
Step 2, Part 2: Complete the "Data Science Opportunity Matrix" below by modeling each of the six projects in terms of feasibility (time & investment), business value impact, and likelihood of value capture



Project 1: Research and development project prediction machine learning
Project 2: Customer segmentation
Project 3: Infrastructure utilization dashboard
Project 4: Customer services enhancement
Project 5: Lab's demand forecasting
Project 6: HR chatbot

Likelihood of Value Capture



KACST Data science initiatives

Bandar Dakhel Almutairi
Data project leader

15/01/2023

Executive Summary

Purpose of 100-day plan

Prepare exhaustive data science projects to plan for the upcoming 100 days. It would generate momentum toward a data-driven culture that aligns with the new mandate of KACST that aim to drive national science & technology innovation to advance economic competitiveness, ensure sustainable development, and steer a business hub to facilitate knowledge and innovation commercialization by connecting businesses and start-ups in science & technology to drive value creation.

Approach

1. Six data science opportunities for KACST.
2. KACST roadmap for executing these six data science opportunities.
3. KACST Human Capital plan for data science.
4. KACST Technical plan for data science.

Results

- Achieve KACST OKRs & KPIs.
- Increase revenues from commercialization.
- Increase profits.
- Increase and optimize utilization of existing research infrastructure on KACST premises.
- Decrease operational expenditure costs.
- Improve customer services.

Scope of Work for First 100 Days

- **Implement six data science initiatives focused on finance, marketing, operation, supply chain, and human resources that have been arranged based on several factors**
- **Building a structure of the data science teams and workforce is needed to implement data science initiatives.**
- **Publishing strategies for promoting a data-driven culture in KACST**
- **Design technical infrastructure needed on KACST to support the data science organization in terms of data requirements, data governance, technology, skills and Capacity, and Machine learning architecture.**

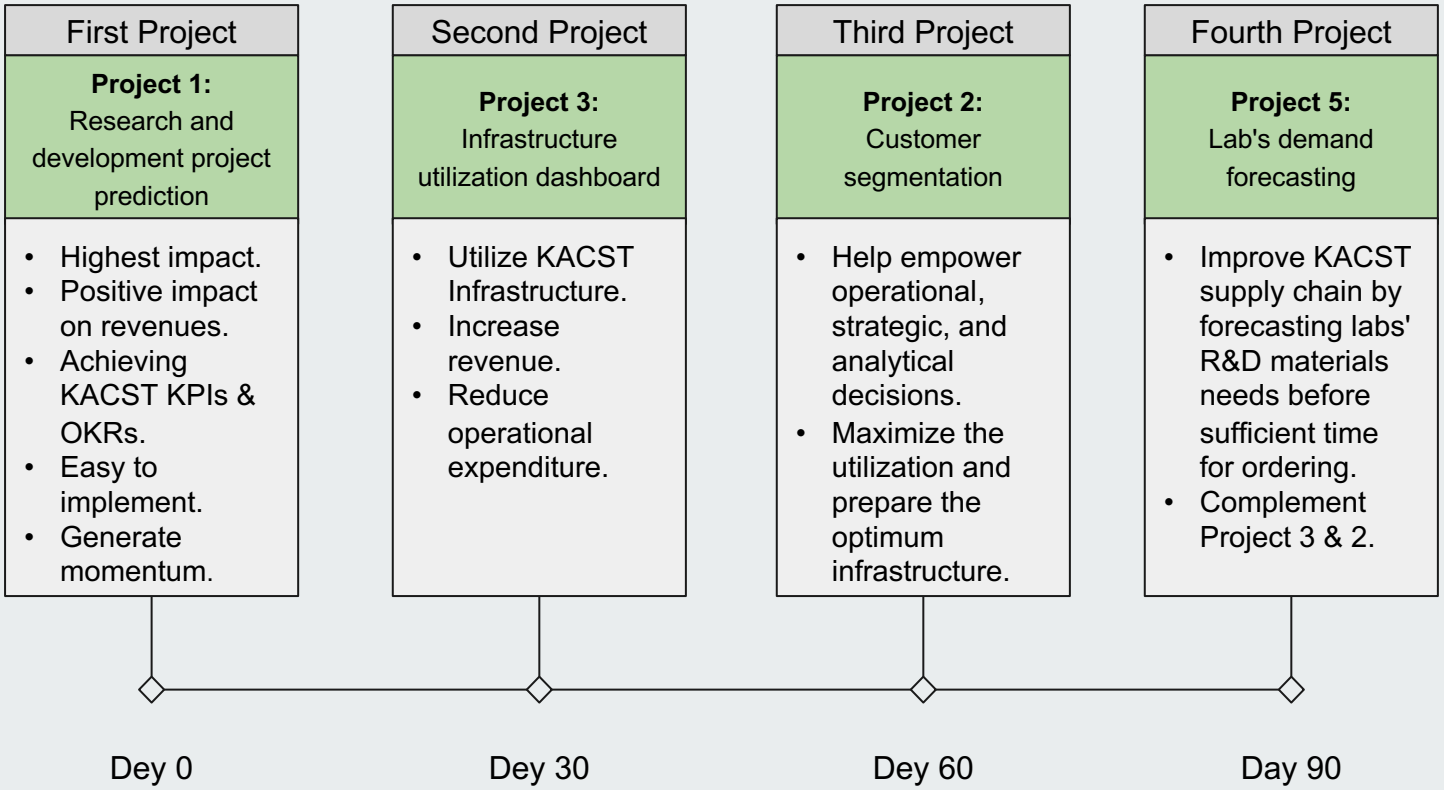
Candidate Data Science Projects

	Functional Area	Project Description
Project 1: **Research and development project prediction machine learning**	Finance	Predict research project outputs to give the management the right decision to invest.
Project 2: **Customer segmentation**	Marketing	Segment KACST customers (RDI researchers, universities, government, semi-government, SMEs, entrepreneurs.. Etc..) using clustering techniques for better marketing.
Project 3: **Infrastructure utilization dashboard**	Operation	Operational, Strategic, and Analytical dashboard to get insight and empower decisions.
Project 4: **Customer services enhancement**	Operation	Enhance KACST customer services (RDI performers, universities, government, semi-government, SMEs, entrepreneurs.. Etc..) and discover valuable insights.
Project 5: **Lab's demand forecasting**	Supply chain	Forecast KACST Labs' inventory demand to drive the supply chain decision-making process.
Project 6: **HR chatbot**	Human Resources	Improving KACST employee experience by using a new channel to communicate with HR.

Step 2, Part 3: Complete the “Data Science Road Map” below with the first four data science projects chosen for implementation.

Order	Project	Order Justification
1	**Project 1:** Research and development project prediction	The project has the highest impact among other projects and have a positive impact on revenues and achieving KACST KPIs & OKRs.
2	**Project 3:** Infrastructure utilization dashboard	This project will help to utilize KACST Infrastructure which are the one of the main pillars of KACST strategy to increase revenue and reduce operational expenditure.
3	**Project 2:** Customer segmentation	It is best to implement this project after the second project (the infrastructure utilization dashboard) since decision-makers get insight that helps them empower operational, strategic, and analytical decisions that maximize the utilization and prepare the optimum infrastructure. After that, it is time to focus on marketing, improving customer needs, and offering service recommendations.
4	**Project 5:** Lab's demand forecasting	Since the previous projects focused on finance, operation, and marketing, this project which focused on the supply chain will be implemented after finishing them to get the most benefit from it.

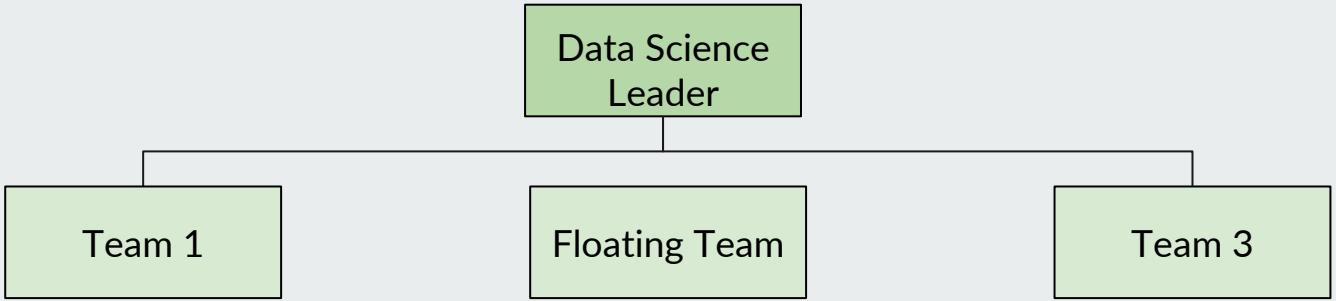
Step 2, Part 3: Complete the “Data Science Road Map” below with the first four data science projects chosen for implementation.



Our Highest-Priority Data Science Projects

Order		Direct Alignment with Strategic Goals?	Cost	Complexity of Implementation	Certainty of Value Capture	Magnitude of Benefit
		1=Low; 5=High	1=High; 5=Low	1=High; 5=Low	1=Low; 5=High	1=Small; 5=Large
First	Project 1: Research and development project prediction	5	5	5	5	5
Second	Project 3: Infrastructure utilization dashboard	5	5	4	5	5

Initial Structure of the Data Science Team



- Data Scientist hacker
- Machine Learning Engineer
- Data Engineer

- Data Analyst
- Data visualization Engineer
- Business Intelligence Engineer
- Senior Data Engineer

- Data Scientist Hacker
- Machine Learning Engineer
- Data Engineer

I have identified six strategies for promoting a data-driven culture in our business

Strategies for promoting a data-driven culture

Strategy 1: Get buy-in and support from KACST's top management.

.Strategy 2: Increase KACST spending by decision-makers on data infrastructure.

Strategy 3: Offer specialized training in data science to employees, such as data science courses and Excel courses, to enhance data literacy.

Strategy 4: Integrate data capability into each area of KACST to transfer data knowledge and learning across KACST

Strategy 5: Make data warehouses available through cloud pools for easy access to relevant stakeholders.

Strategy 6: Simple proofs of concept

Technical Infrastructure Needed to Support the Data Science Organization

Data Requirements	What data should be included in the Data Strategy?	• Data from ERP system, LIMS system • Data about KACST customers • Researcher data
Data Governance	Data Availability	• Automate failover • Improve your physical infrastructure • Proactive monitoring
	Usability	• Findability and Consistency • Accuracy and Granularity • Comprehensiveness • Quality • security
	Integrity	• Access control (Physical security – Cybersecurity) • Validate data • Backup data • Audit
	Security	• Effective policy (availability of data - usability of data- quality of data - integrity of data -security of data) • Data governance roles in terms of ownership, accessibility, security, quality, and knowledge • Data governance tools include DLP, firewall, encryption, backup, UBA, DAM.etc.

Technical Infrastructure Needed to Support the Data Science Organization

Technology	Data Architecture Components	• Data pipelines • Cloud storage using KACST Cloud • API's • AI/ML Models • Cloud Computing using KACST HPC
Skills and Capacity	Data literacy skills and organizational capacity	• Training on KACST academy (statistics, data science, excel, tools used). • Data weekly sessions to promote knowledge about data interpretation. • Make data available to all KACST employees.
Support for Machine Learning	Machine learning architecture	• Use In-house data and machine learning architectures with KACST HPC because of KACST capability from operation and human resources perspective. • Build an In-house ML model, deploy and maintain because KACST has capability in terms of researchers in the data science field.