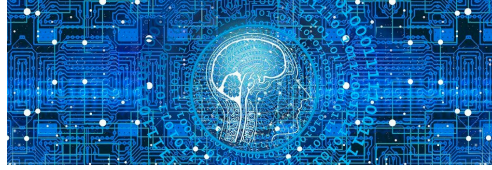# 2022 ICM
Problem D: Data Paralysis? Use Our Analysis!

Background

Many companies view data as a strategic asset but acknowledge great difficulty deriving value from this asset. Proper management of this precious resource can lead to a competitive advantage. Thus, companies need to establish an integrated **data and analytics (D&A) system**, where they can guarantee that they have the right people, technologies, and processes in place to manage, manipulate, use, and protect this resource.

Your consulting team develops models that evaluate D&A systems to help company executives make the right decisions pertaining to three key components: people, technologies, and processes. When it comes to D&A, your models provide companies with the ability to measure the D&A system maturity through examination of these three key components. To maximize the potential of their data assets, companies want highly skilled people, relevant technologies, mature processes, and a strong connection between all three components. Your models help companies assess their current state and provide insight into the system changes needed to maximize the potential of their D&A system. Companies use your model(s) to optimize their analytic capabilities, obtain a competitive advantage, and give customers confidence in the company's ability to manage data.

Intercontinental Cargo Moving (ICM) Corporation operates a large seaport and has hired your team. ICM Corporation wants you to measure the maturity of their current D&A system and provide a solid plan to optimize their D&A capabilities. Using your model, ICM Corporation hopes to instill customer trust and confidence in their data practices.

Requirements

Due to company regulations, ICM Corporation is unable to share specifics about their people, technologies, processes, or data with your team. However, a general description of ICM Corporation's operations and the types of data that they deal with on a regular basis is included . Develop a model to evaluate the D&A system of ICM Corporation. Your model development and report should include the following:

- A metric to measure the current D&A system maturity level for ICM Corporation. Include **key performance indicators** that measure the success of their D&A people, technologies, and processes.

- After ICM Corporation uses your model to determine their current D&A maturity level, demonstrate how they could use your model to recommend changes to the system allowing the company to maximize the potential of their data assets.

- Suggest protocols that ICM should put in place to measure the effectiveness of their D&A system.

- Demonstrate how your model might be applied to a larger or smaller seaport. Analyze how your system maturity metric could be adapted to other industries. Specifically, could a trucking company use your maturity metric? If customers of ICM Corporation, like a trucking company, also used your metric, how could this benefit ICM Corporation?

Ultimately, the ICM Corporation cares about customer satisfaction and confidence. Write a one-page letter to ICM Corporation's customers (the port users) outlining your proposed methods of measurement and instilling confidence in ICM Corporation's D&A system.

Your PDF solution of no more than 25 total pages should include:
- One-page Summary Sheet.
- Table of Contents.
- Your complete solution.
- One-page letter to ICM Corporation's customers (port users).
- Reference List.

Note: The ICM Contest has a 25-page limit. All aspects of your submission count toward the 25-page limit (Summary Sheet, Table of Contents, Reference List, and any Appendices). You must cite the sources for your ideas, images, and any other materials used in your report.

Glossary

Data and analytics (D&A) system: a complex interconnected system of people, technologies, and processes used to manage data and analytics.

Key performance indicators: a measurement of business performance to understand progress towards an intended goal.

A Brief Overview of ICM Corporation's Operations and Data

ICM Corporation's customers include those companies whose employees use the port. When a cargo ship pulls into the port, ICM Corporation offloads containers from the ship, moves the containers through customs, places the containers in the appropriate storage location, and then transfers the containers to trucks and freight trains for inland transport. Containers also arrive at the port on trucks and freight trains where ICM Corporation must off-load, store, and load those containers onto the ships for shipment by sea. This movement of cargo generates a significant amount of data including ship arrival/departure times, cargo manifests, shipping container inventories, customs inspection reports, container location within the port, and inland transport arrival/departure manifests and schedules. An effective D&A system ensures this process is efficient so that the time a ship, truck, or train spends at the port is minimized. ICM Corporation hopes your model will help them 1) optimize their D&A system (people, technologies, processes) in the management of this data and 2) project D&A competence to instill confidence and attract additional business for the port (i.e., increase number of port users).

ICM Corporation's management team has concerns about each component of the D&A system, as well as their ability to work together as an integrated system:

People – Hiring managers at ICM Corporation need to know if they have the right D&A talent. They also need innovative ways to obtain D&A talent. The hiring managers have many questions when it comes to D&A talent: How do we assess our current D&A talent? How do we identify our talent shortfalls? Who should we hire? What skills should they have? How many individuals should we hire? Where should we look for D&A talent? Should we consider contracting instead of hiring? Should we look to train our current workforce to be more data-savvy? Should we look at a combination of hiring, contracting, and training our D&A talent?

Technology – The Information Technology (IT) department at ICM Corporation knows that selecting a data analytics technical solution is complicated. They also know that technology & software solutions will change over time. The IT department does not want you to tell them which software solution is best today but hopes your model will provide them with a way to measure the effectiveness of technology solutions now and in the future. They care more about the framework in which they should be selecting software or other technology options than in specific tools available now. The IT department has many questions: What types of technology do we need? Do we need a single product or a set of products? How do we differentiate one product from the other? Which product attributes are most important?

Process – The Information Security Officer (ISO) at ICM Corporation is concerned about the D&A processes that are in place to protect and manage the data. He knows that ICM Corporation needs a good **data governance** program. A good governance program provides oversight of the data resources, tracks and approves access and changes to data, and provides **metadata** consistency across the organization. As the business has grown, independent data processes have created inconsistencies between the port operations, transportation schedules, customs inspections, and container storage. Additionally, the ISO recognizes the need to catalog and aggregate the data across all facets of the business as well as develop a process to manage the data throughout its entire lifecycle. Data governance is new to ICM Corporation, so the ISO is unsure of what questions he should ask.

Glossary

Data governance: a process to oversee the quality, access, and use of data in an organization.

Metadata: data that provides information about other data. It is often a description of the data and its content.