Excel models won't get you a corner office (but these new tools might).

New data science techniques are pushing data analytics to the next level, and you don't need to know Python to use them.

Table of contents

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Introduction

Modern technology has been responsible for many things — in fact, way too many things. Consider the massive increase in the creation and storage of information, leading to exploding data volumes.

> " According to Forbes, **90%** of the world's data was generated in the last two years with **2.5 quintillion** bytes of data being created each day.

Technological innovations have changed the rules of big data and data analysis. Thanks to advanced software systems, companies can analyze data much faster, reduce costs, and democratize data analysis through low-code to no-code applications.

Today, many legacy companies still rely on Excel or Tableau for data analytics and visualization. However, these tools are not equipped to deal with complexity, uncertainty, and constant changes in information.

As a result, operational decision-makers believe there are only two options:

Same as it ever was	Throw money at the problem
Business as usual/imperfect analysis leads to different answers each time data is analyzed. It is often followed by presenting the results to the same commercial leaders, which are met with frowns, confused looks, skepticism, and a less than favorable outcome.	Implementing data science is not always accessible or cost-effective. Moreover, this might lead to siloed teams and the inability to continuously combine the right data sets with the right people, teams, technology, and analytics — another unfavorable outcome.

However, there is a third way to meet strategic goals and execute on a single source of truth: implement a new generation of tools that enable analysts to use cutting-edge technologies, such as Ikigai, without implementing data science or learning coding, Python, SQL, Julia, or Scala.

More than ever, managing torrents of data is critical to business success. The data management function is a good place to start. However, it cannot be effective without a coherent strategy between executives and data teams, where the teams support executive decision-making and enable the achievement of business objectives.

Just as every company is unique, so is its tech stack transformation journey. Ultimately, data collection, extraction, analysis, and interpretation are about generating new opportunities by harnessing the strengths of data teams (analysts, operators, etc.) to solve business challenges.

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What is Data Science and why it's so valuable for data analytics?

- Data science is the process of extraction of actionable insights from data.

- Essentially, this sphere of study involves applying advanced analytics techniques, scientific principles, and complex algorithms to draw meaningful information that analysts can use for strategic decision-making.

- Jessica Stauth, managing director for data science in the Fidelity Labs unit at Fidelity Investments, believes there is a strong relationship between data science and business outcomes.

- She elaborates on the potential business benefits of data science, including higher ROI and sales growth, more efficient operations, faster time-to-market, and increased customer engagement and satisfaction.

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Garbage in, garbage out: why data preparation is essential for data science

Data preparation, or data prep, is a mission-critical process in data analytics that refers to

Cleaning,

Collating,

Structuring, and organizing raw data into the desired output for business intelligence (BI),

Downstream analytics, and

Data visualization applications.

The core stages of data preparation include

| Data preprocessing | Profiling | Cleansing | Validation | and Transformation |

where data is pulled together from disparate internal systems and external sources.

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Factors that hinder data preparation

The activities in a typical data preparation process may seem straightforward, but they are inherently complicated due to the fact that datasets are compiled from disparate sources. The typical challenges that hinder data preparation are the quality, inaccuracy, and inconsistency of the data. The data must be manipulated to weed out irrelevant information and generate valuable insights through patterns and decisions, among other difficulties.

Resolving data preparation challenges has now become a business imperative for organizations that are mainstreaming data analytics to maximize ROI. Some of the biggest challenges encountered in the data preparation process are:

Time and resource-intensive

Historically speaking, preparing data is a time-intensive activity, with statistics quoting the 80/20 rule often applied to analytics applications (with about 80% of the work allocated to collecting and preparing data and only 20% to analyzing it). Internalizing data expertise is, therefore, imperative for extracting the knowledge and value from the data.

Standardizing data from heterogeneous sources

With data extracted and consolidated from heterogeneous sources, disparate, unstructured, or semi-structured information often generates non-uniform formats of data. Complexities in data formats make data preparation, in terms of filtering and standardizing data, arduous and lead to unreliable decision-making.

Misallocation of organizational resources

Data analysts are often used for cleaning data and data preparation. To maximize business value, it is essential to properly mobilize data analysts' skills and knowledge.

However, analysts are unable to provide end-to-end support since they do not have visibility into the raw data source, which would otherwise benefit optimization of data transformations and analysis.

Lack of business objective

Organizations that often overlook the significance of business objectives lack mature data analysis practices. After engaging in several cycles of dataset curation, data analysts find that the relevant context is absent, and the dataset is useless. Fragmentary analysis of data is primarily due to the missing collaboration between various stakeholders and business units and the lack of communication on the long-term value of analytics.

Identifying data quality issues

The quality of data is typically driven by the level of consistency, compliance, relevance, and completeness. The challenge of identifying and fixing data quality issues can be attributed to the immense data volumes amounting to petabytes of data that organizations process frequently.

Uncertainty in data

Knowing past events helps data teams understand industry trends. Using historical trending works when there is long-term stability in demand and conditions that make data predictable. Traditionally, historical data has been the cornerstone of any forecasting process. Although, it is currently becoming more complicated. The new circumstances imposed by COVID-19 require a drastic change in the behavior of data prep, analysis, and forecasting. This "new normal" demands even more from the data tools deployed across organizations to make decisions with agility and scenario planning where historical trends are no longer applicable.

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Implementing the right tools to support business operations

In the age of digitalization and big data, business and data teams are well aware of the importance of selecting the right tools to support their business and data strategy. Choosing relevant tools requires a shift from tactical to strategic thinking, where data teams systematically approach the business and its needs.

Some important factors to consider when evaluating and selecting data and business intelligence tools are:

Business objectives

Like any investment, a data platform should support both your existing and future business needs. For this to be successful, you must establish the core objectives of your business and outline your goals. Then break your business objectives into measurable targets. Finally, choose a platform that provides data and reporting capabilities that can help you meet these business objectives.

Multiple data sources

Modern analytics tools are capable of combining multiple data sources and analyzing structured, semi-structured, and unstructured data. Integrating data from different systems into one dashboard allows you to have a complete overview of your business performance. Choose tools that don't require the help of your IT department.

Advanced analytics

Your prospect platform must be able to identify data patterns and predict future events, trends, and outcomes. Analysts should be able to visualize data easily on a platform that extends beyond mathematical calculations.

Agility

A cloud-based analytics platform has the ability to scale with your business. With a platform that scales based on your business needs, data analysts can derive timely insights to make informed decisions at each stage of the business.

Integrations

When selecting your analytics tool, you must determine if you need a standalone or integrated solution. With standalone solutions, you have a wide range of options. However, with integrated solutions, you can tap into data using applications your users are already familiar with. Understanding how the prospect platform can connect to your existing systems and third-party data sources is vital. As a necessary step, you should also consider moving your data from one system to another, which can be done easily.

Security

To safeguard your information, you must evaluate the security of your future provider and vendor. Establish security controls and procedures at all levels — the process level, system level, and data level — so data and business teams can determine which users or groups can access what information.

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Implementing the right tools to support business operations (continued)

Adaptability

Today, data tools that use artificial intelligence respond and adapt to previously unpredictable circumstances. These tools help companies accurately respond, plan, and predict when reality deviates from the plan. Algorithms can detect anomalous situations and redirect resources based on more than just historical data. The combination of machine learning (ML) and artificial intelligence (AI) provides powerful tools to address today's unique challenges. These applications improve forecast accuracy, manage demand fluctuations, and help adjust business strategy in real time through "what-if" analysis or scenario planning.

Low-code/no-code

Today's tools make data analysis possible for everyone with the help of low-code/no-code functionality, which is based on visual programming. Drag and drop interfaces are used to build a pipeline of blocks, with each block implementing a specific function. Teams can utilize this capability to analyze data and make predictions without writing a single line of code, making data analysis available across all departments within an organization. Teams can build a pipeline of actions and connect to and reconcile data from any source.

Effective forecasting

The COVID-19 pandemic and the recent economic downturn have taught us that looking backwards and using historical data to forecast trends poses a misleading perspective. Modern data tools that are forward-looking answer the question, "What should we do now?" Forward-looking analytics tools analyze data daily to identify what can be changed here and now. This is great when executing short-term tactics. For example, "How did our rebate offer on Product X work last month? Do we expect it to perform about the same, given the hike in gas prices?" Forward-looking analytics is often a part of business intelligence (BI) technologies. It is also called predictive intelligence or forward-looking BI.

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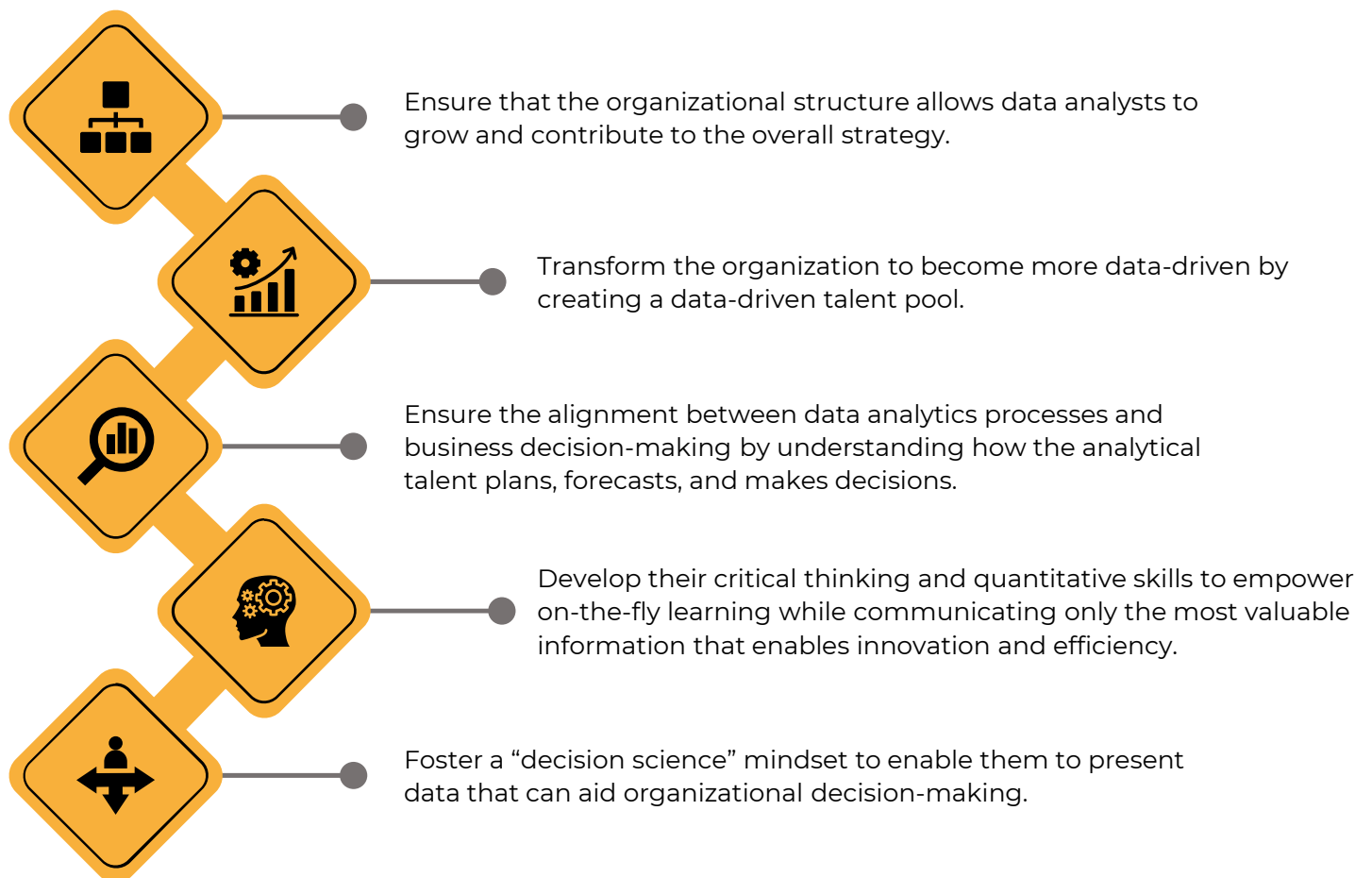Check out our blog

How can data analysts be more strategic team members than tactical?

The core business objective for which data science techniques are implemented is imprecise. Anyone dealing with data performs model-driven data analyses to identify the key areas that boost planning and productivity. For this reason, data analysts should ideally operate at tactical, operational, and strategic levels to share insights.

However, the ground reality is that data teams are primarily engaged with the tactical approach of identifying datasets and performing data analysis, and they lack clarity in the overall business objective.

For data analysts to be a better fit for the "strategy-oriented" approach, the following measures can be implemented:

Ensure that the organizational structure allows data analysts to grow and contribute to the overall strategy.

Transform the organization to become more data-driven by creating a data-driven talent pool.

Ensure the alignment between data analytics processes and business decision-making by understanding how the analytical talent plans, forecasts, and makes decisions.

Develop their critical thinking and quantitative skills to empower on-the-fly learning while communicating only the most valuable information that enables innovation and efficiency.

Foster a "decision science" mindset to enable them to present data that can aid organizational decision-making.

The convergence of innovative tools aligned with forecasting and analytics can generate strategic insights

With the increasing volume of data used in analytics applications, data preparation can pull the requisite resources, such as BI, analytics, and data management practitioners, away from high-value activities.

Innovative data integration tools have become increasingly significant for organizations that enable business units to spearhead their data science techniques and accomplish faster strategic insights.

These tools largely automate the data preparation process and help your organization unlock the maximum business value out of big data investments:

Self-service data preparation

- Accelerates the data preparation process. It is designed on the "ease-of-use" approach for business users in a self-serve environment.
- Self-service reporting provides business users with direct access to the source of data analysis and enables faster delivery of integrated and curated data.
- Business users (such as data analysts and engineers, citizen integrators, and citizen data scientists) leverage self-service data preparation to integrate internal and external datasets, identify anomalies and patterns, and review and improve the quality of their findings.

Augmented data preparation

- Employs ML algorithms to automatically detect and analyze data usage by blending and identifying relationships.
- The process of cleaning, enriching, and manipulating data becomes less time-consuming and effort-intensive and allows business users to conserve time for analyzing data.
- Embedded ML algorithms help automate routine data preparation tasks and expedite time-to-delivery of data and insights.

The future of data preparation lies in tools that can address a wider range of use cases and foster tight collaboration among IT professionals, data experts, and business users. These tools help discover new patterns that can drive immeasurable business benefits for organizations.

To support this shift towards a "strategic approach," data teams need to be equipped with the right toolkit that can:

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Automate data-driven operations

01 Companies face a number of challenges when working with data applications, including poor quality data output, messy data, unstable data pipelines, or a lack of clear, actionable insights.

02 Deficient data also prevents organizations from using AI/ML tools that are becoming widely available.

03 While many costly and disruptive solutions have been developed to provide a "common" view of data, they lack easy-to-use decision-making tools (including AI/ML) and require integration with automation platforms.

03 It is natural to wonder why there isn't a data decision and automation solution that allows connections to various data sources at scale, leverages BI, AI, and ML tools, and simplifies decision-making by providing various scenarios while automating the next steps.

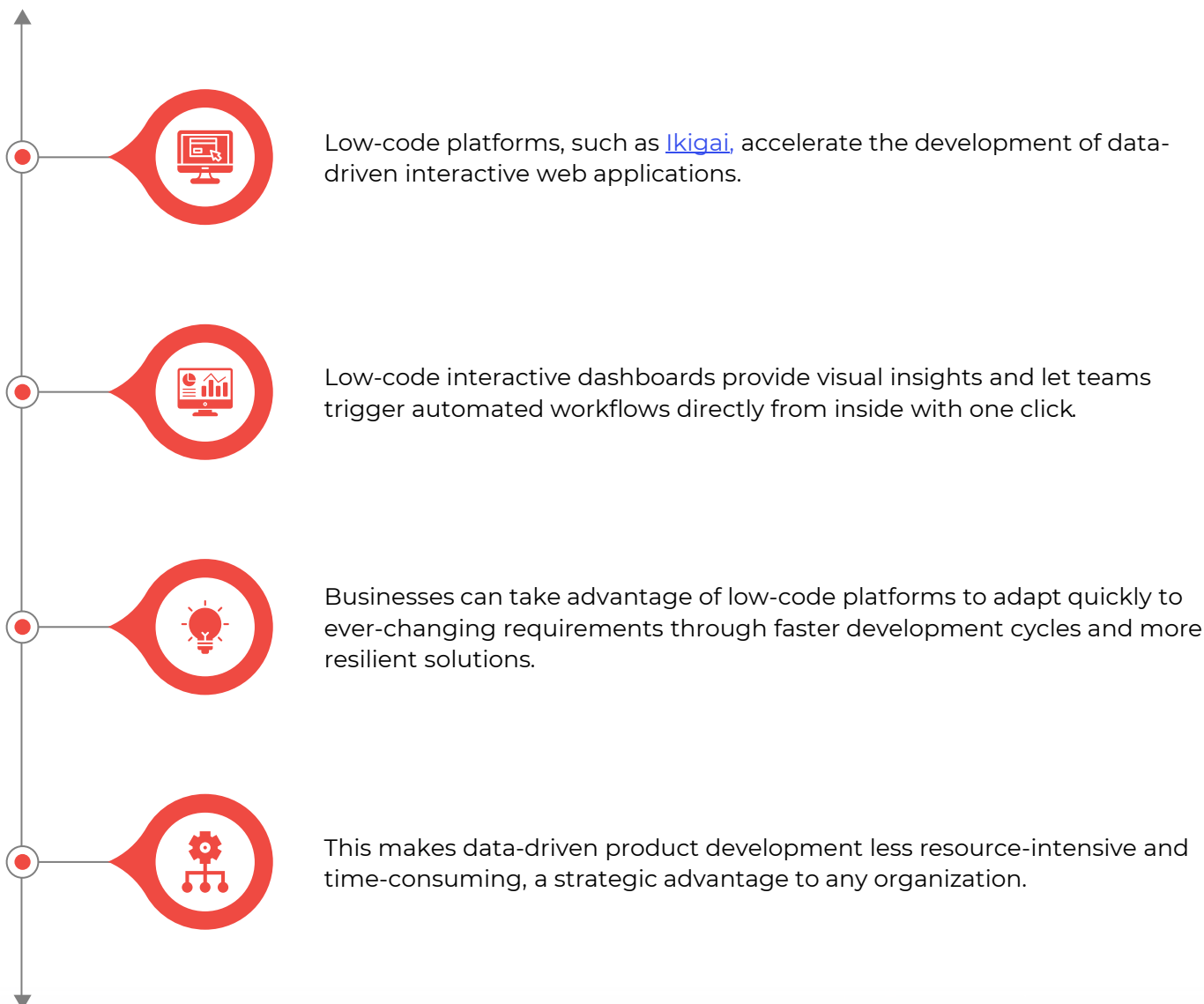Ikigai has built a cloud-native scalable platform to address this challenge.

With Ikigai, a data analyst or a business manager can create these end-to-end data apps powered by AI/ML with human-in-the-loop.

In turn, the results are higher productivity, reliability, and performance, as well as reduced operating costs.

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Interact with a low-code platform for immediate action

Low-code platforms, such as Ikigai, accelerate the development of data-driven interactive web applications.

Low-code interactive dashboards provide visual insights and let teams trigger automated workflows directly from inside with one click.

Businesses can take advantage of low-code platforms to adapt quickly to ever-changing requirements through faster development cycles and more resilient solutions.

This makes data-driven product development less resource-intensive and time-consuming, a strategic advantage to any organization.

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Get a 360-degree view with Advanced Data Integration

Today, data is a key component of operations for any organization.

When data scales with an organization, the corresponding data pipelines and data stores (now also called data lakes) become more challenging to manage, even for a large team.

At this point, organizations must have data tools that support Automated Data Preparation. Automated Data Preparation (ADP) handles preparing data by assessing your data and identifying fixes, screening out problematic fields, deriving new attributes when appropriate, and enhancing performance using intelligent screening approaches.

Using ADP enables you to prepare your data for model building without requiring prior knowledge of the underlying statistical concepts.

Besides accelerating model construction and scoring, ADP improves the reliability of automated modeling processes.

Business users can now leverage ADP and ML to perform predictive analytics and arrive at actionable insights faster for a greater impact on their operations.

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Thank you

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