

Qlik Sense for Business Intelligence

Leveraging Qlik Sense for advanced analytics

Satyam Garg



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Dedicated to

*To my beloved wife, **Megha**, and our wonderful son, **Ian**.
Your love and support have been my greatest strength.*

About the Author

Satyam Garg is a seasoned Business Intelligence (BI) and data warehousing developer with over a decade of experience. Since 2012, he has specialized in Business Intelligence, helping organizations unlock the full potential of their data through interactive visualizations and advanced data modeling. With extensive knowledge of the Qlik platform, Satyam has guided businesses in optimizing data-driven decision-making processes.

In addition to his expertise in Qlik Sense, Satyam has worked with various industry-leading tools and technologies, including Oracle's OBIEE, OWB, ODI, and Endeca, as well as Microsoft Power BI and Azure cloud services. He is proficient in ETL tools such as Informatica and ADF, building strong data integration solutions.

Satyam holds certifications from Oracle and Microsoft, as well as a B.Tech degree in Information Technology. After working for four years in Hyderabad, India, he moved to Switzerland in 2016, where he continues to expand his expertise in BI.

An avid Python programmer, Satyam frequently uses Python for automating complex tasks and enhancing BI workflows. Through his diverse skill set, he bridges the gap between data management and business strategy, empowering organizations to harness the power of BI for success.

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Acknowledgement

This book would not have been possible without the unwavering support of my family. When I embarked on this journey, my son, Ian was not even a year old. My wife, Megha, took on the tremendous task of caring for him while I dedicated countless hours to writing, often sacrificing our weekends together. For their patience, understanding, and the many sacrifices they made, I am deeply grateful.

I would also like to extend my heartfelt thanks to BPB Publications for giving me this incredible opportunity.

Preface

The rapid evolution of data analytics and business intelligence (BI) in recent years has revolutionized the way organizations operate. In today's data-driven world, businesses must not only gather vast amounts of data but also transform it into actionable insights. Qlik Sense stands at the forefront of this transformation, offering a powerful platform for creating interactive data visualizations, dashboards, and advanced analytics that drive informed decision-making.

As a BI and data warehousing developer, I have witnessed firsthand how effective data management can impact business success. Over the years, I have been working with Qlik Sense and have explored its full potential in various industry sectors. This book is a culmination of my experiences, knowledge, and best practices in using Qlik Sense to unlock the power of data.

This book is designed to be a comprehensive guide for both beginners and seasoned professionals. It covers everything from understanding the fundamentals of business intelligence to advanced Qlik Sense features, ensuring that readers not only learn how to build effective data models and visualizations but also gain the practical skills needed to apply them in real-world scenarios.

I hope this book serves as a valuable resource for anyone looking to deepen their understanding of Qlik Sense and leverage its capabilities to make data-driven decisions. In this book, you will learn the following:

Chapter 1: Understanding Business Intelligence - This chapter introduces the fundamentals of business intelligence, explaining its evolution, importance, and benefits in modern organizations. It explores key components of BI, including data collection, warehousing, visualization, and analytics, along with an overview of popular BI tools like Qlik Sense.

Chapter 2: Introduction to Qlik Sense - In this chapter, readers will learn about the core architecture of Qlik Sense and how to set up the environment. This chapter walks through the process of creating the first Qlik Sense application and introduces collaboration features that allow teams to share insights effectively.

Chapter 3: Creating Data Visualizations - In this chapter, the focus shifts to building visual representations of data. It covers the basics of Qlik Sense visualizations, such as creating charts, graphs, and tables, and dives into advanced techniques like interactivity and drill-down capabilities.

Chapter 4: Data Modeling and Integration - Readers will explore Qlik Sense's data modeling capabilities, including data loading, transformation, and creating associations between data sets. The chapter also delves into best practices for optimizing data models to ensure efficient performance.

Chapter 5: Advanced Data Modeling Techniques - This chapter takes data modeling further, introducing advanced concepts like on-demand app generation and association techniques. Readers will learn how to handle complex data relationships and create models that accommodate dynamic user needs.

Chapter 6: Advanced Visualization Techniques - Building on the foundation of earlier chapters, this section focuses on dynamic and interactive visualizations in Qlik Sense. Readers will discover advanced charting options, explore the use of extensions, and apply principles of data visualization to maximize impact.

Chapter 7: Creating Interactive Dashboards - In this chapter, readers will learn how to design effective interactive dashboards using Qlik Sense. Key concepts like drill-down functionality, enhancing interactivity with actions, and performance tuning are covered, along with principles for dashboard design and user testing.

Chapter 8: Building NPrinting Reports and Mashups with Qlik Sense - This chapter explains how to use Qlik Sense for report building, including designing and distributing NPrinting reports. It also covers the creation of mashups to integrate Qlik Sense applications into custom web pages or platforms, extending its reach beyond traditional reporting.

Chapter 9: Data Analysis with Qlik Sense - Here, readers will learn essential data analysis techniques, including data exploration, filtering, sorting, and grouping. The chapter also covers statistical analysis, set analysis for advanced discovery, and using alternate states for comparative analysis.

Chapter 10: Implementing Collaboration and Sharing in Qlik Sense - This chapter focuses on leveraging Qlik Sense's collaboration features, such as creating data-driven stories, utilizing annotations, and sharing insights with teams. Readers will also learn how to use the storytelling feature to present insights in a meaningful narrative.

Chapter 11: Administering Qlik Sense Environment - In this chapter, readers will explore the administrative side of Qlik Sense, learning how to perform routine maintenance tasks, monitor server performance, manage services, and implement best practices for administering Qlik Sense environments.

Chapter 12: Managing Qlik Sense User Access, Security, and Governance - This chapter provides an in-depth look at security and governance in Qlik Sense. It explains user management, security rules, roles, and responsibilities, as well as how to implement data-level security and establish governance policies for a secure and controlled environment.

Chapter 13: Monitoring and Troubleshooting a Qlik Sense Environment - Readers will learn how to monitor the system's health, performance, and troubleshoot common issues in a Qlik Sense environment. The chapter also includes a case study that demonstrates optimizing performance for global sales analytics.

Chapter 14: Backup and Recovery of a Qlik Sense Environment - This chapter covers the critical task of designing backup strategies for Qlik Sense environments. Readers will learn how to perform backups, restore data, and recover from system failures or disasters, ensuring data integrity and availability.

Chapter 15: Common Interview Questions and Answers - The final chapter serves as a resource for professionals preparing for interviews. It includes a curated list of common questions and answers related to data warehousing, business intelligence, and Qlik Sense, helping readers prepare for real-world job opportunities.

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Code Bundle and the *Coloured Images* of the book:

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<https://github.com/bpbpublications/Qlik-Sense-for-Business-Intelligence>.

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CHAPTER 1

Understanding Business Intelligence

Introduction

Business intelligence (BI) refers to the process of collecting, analyzing, and presenting data to support informed decision-making within organizations. It involves the use of technology and strategies to transform raw data into meaningful insights that can drive business growth and competitive advantage.

Structure

In this chapter, the following topics will be discussed:

- Business intelligence
 - Evolution and importance of BI in modern organizations
 - Benefits and potential applications of BI
- Key components of business intelligence
 - Data collection and integration
 - Data warehousing and data modeling
 - Data visualization and reporting
 - Data analytics and decision support

- Business intelligence lifecycle
 - Data acquisition and data quality management
 - Data transformation and data modeling
 - Data visualization and reporting
 - Data analysis and decision making
- Business intelligence tools and technologies
 - Overview of popular BI tools and platforms
 - Comparison of different BI technologies
 - Understanding the role of Qlik Sense in the BI landscape

Objectives

This chapter offers a comprehensive exploration BI, covering its key components, lifecycle, and tools. Readers will gain a solid understanding of fundamental concepts driving effective BI implementation in organizations. The chapter introduces BI, examines its evolution and significance, and explores its benefits and applications. It delves into key components such as data collection, integration, warehousing, modeling, visualization, reporting, analytics, and decision support. The BI lifecycle is explained, including data acquisition, quality management, transformation, modeling, visualization, reporting, analysis, and decision-making. Popular BI tools and platforms are discussed, with a focus on the role of Qlik Sense. By the end, readers will be well-equipped to delve deeper into specific BI tools and applications in subsequent chapters.

Business Intelligence

Business intelligence (BI) refers to *the process of collecting, analyzing, and transforming raw data into actionable insights to support data-driven decision-making. It involves technologies, methodologies, and practices that enable organizations to extract valuable information from their data assets.*

Business intelligence encompasses a range of activities aimed at extracting valuable insights from data to enhance business performance. It involves gathering, organizing, and analyzing data to uncover patterns, trends, and correlations that can guide strategic planning and operational decision-making.

The purpose of business intelligence is to provide organizations with a comprehensive understanding of their business operations, customers, and market dynamics. By leveraging BI, companies gain actionable insights that enable them to optimize processes, identify opportunities, mitigate risks, and achieve their goals effectively.

Evolution and importance of BI in modern organizations

The field of business intelligence has evolved significantly over the years. Initially, BI was primarily focused on generating reports and providing historical data analysis. However, with advancements in technology and data processing capabilities, BI has become more sophisticated and dynamic and includes advanced analytics, data visualization, and predictive modeling.

In today's fast-paced business environment, organizations recognize the crucial role that BI plays in staying competitive. By harnessing the power of data, businesses can gain a competitive edge by making data-driven decisions, identifying market trends, understanding customer behavior, and adapting quickly to changing market conditions.

Benefits and potential applications of BI

Business intelligence offers numerous benefits and has a wide range of applications across various industries. Some key benefits of BI include:

- **Enhanced decision-making:** BI provides decision-makers with accurate, timely, and relevant information, enabling them to make informed decisions based on data-driven insights.
- **Improved operational efficiency:** By analyzing and optimizing processes, BI helps organizations identify inefficiencies, streamline operations, and reduce costs.
- **Increased revenue and profitability:** BI enables businesses to identify new market opportunities, understand customer preferences, and develop targeted marketing and sales strategies, leading to increased revenue and profitability.
- **Risk mitigation:** BI allows organizations to identify and mitigate potential risks by monitoring key performance indicators, detecting anomalies, and conducting predictive analysis.
- **Customer relationship management:** BI helps organizations gain insights into customer behavior, preferences, and satisfaction levels, enabling them to enhance customer service, loyalty, and retention.

BI finds applications in various areas, including sales and marketing, finance, supply chain management, human resources, and **customer relationship management (CRM)**, among others.

Key components of business intelligence

To effectively implement business intelligence, organizations need to understand its key components and how they interact to deliver actionable insights.

Data collection and integration

Data collection is the process of gathering relevant data from internal and external sources. Internal data sources include operational systems, transactional databases, and **enterprise resource planning (ERP)** systems. External data sources encompass market research, social media, government databases, and third-party data providers.

Data integration involves consolidating data from disparate sources into a unified and consistent format for analysis. This may involve data cleansing, data transformation, and data enrichment to ensure data quality and accuracy.

Data warehousing and data modeling

Data warehousing is a crucial component of business intelligence that involves the creation of a centralized repository for storing integrated and structured data. This repository, known as a data warehouse, serves as a foundation for data analysis and reporting activities. Let us explore the concept of data warehousing in more detail, including the key elements such as facts and dimensions.

Data warehousing

A data warehouse is designed to support efficient querying, analysis, and reporting of data from various sources. It acts as a single source of truth for an organization's data, providing a unified view that allows for consistent and reliable analysis. The data warehouse is specifically optimized for analytical processing, enabling complex queries and aggregations across large volumes of data.

Facts and dimensions

In a data warehouse, data is organized using a dimensional model, which consists of facts and dimensions. Facts represent the measurable, numeric data points that are the focus of analysis, such as sales revenue, customer orders, or website visits. Facts are typically stored in a fact table, which contains the numeric values associated with specific events or transactions.

Dimensions provide the context and descriptive attributes for the facts. They represent the various perspectives through which the facts can be analyzed and understood. For example, in a retail setting, dimensions may include product, customer, time, and location. Dimensions are stored in dimension tables, which contain the descriptive attributes related to each dimension.

The relationship between facts and dimensions forms the basis of data analysis in a data warehouse. Facts are linked to dimensions through key relationships, allowing for slicing and dicing of data based on different dimensions. This enables users to explore data from multiple perspectives and gain deeper insights into their business operations.