Chapter 11
Big Data Visualization:
KPI Dashboards for Big Data Visualization

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ABSTRACT

In today's data-driven world, organizations across industries are grappling with vast amounts of data, and the realm of market intelligence is no exception. The explosive growth of big data has created both opportunities and challenges for businesses seeking to gain valuable insights from their data assets. This chapter proposes to explore the significance of big data visualization with key performance indicator (KPI) dashboards as a powerful technique to visualize and extract actionable intelligence from complex datasets in the context of market intelligence. This chapter provides a comprehensive overview of KPI dashboards as these are essential tools for monitoring and analyzing business performance and to make data-driven decisions. The chapter explores the importance of KPIs, the design and implementation of KPI dashboards in big data. Additionally, it discusses the benefits and challenges associated with these tools, along with real-world examples of their successful implementation.

INTRODUCTION

In the dynamic and competitive business environment and with huge volume of Big data, organizations strive to monitor their performance effectively and make informed decisions to drive success. Key Performance Indicators (KPIs) play a crucial role in this process, providing measurable metrics that enable businesses to evaluate their progress towards strategic objectives using Big data. However, manually tracking and analyzing KPIs can be laborious and error-prone, leading to a need for efficient tools that can streamline the process when it comes to big data.

DOI: 10.4018/979-8-3693-0413-6.ch011

Background and Literature Review

The concept of using KPIs to study Big data has gained widespread recognition across various industries as a means of evaluating performance. KPIs are specific metrics that provide organizations with quantifiable insights into their performance in relation to their strategic goals (Parmenter, 2015) These indicators span different dimensions of business performance, including financial, operational, customer-centric, and employee-related aspects. By tracking KPIs metrics, businesses can assess their progress, identify areas for improvement, and make data-driven decisions to enhance overall performance. Traditionally, organizations relied on manual processes and static reports to track KPIs metrics, often involving complex spreadsheets and time-consuming data analysis. However, with advancements in technology and the exponential growth of data, businesses have shifted towards automated KPI dashboards that offer real-time visibility and interactive visualizations of performance metrics (Kiron, 2018). KPI dashboards provide executives and managers with a consolidated view of critical indicators, facilitating quicker and more informed decision-making. Building visualizations can yield several benefits for businesses. They enhance transparency and accountability, promote a data-driven culture, facilitate early identification of performance gaps, and support proactive decision-making (Wixom, 2010). However, challenges exist in the design, implementation, and utilization of these tools, such as data quality issues, integration complexities, and ensuring user adoption and engagement. Ensuring the quality and accuracy of Big Data is paramount. Researchers such emphasize KPIs related to data cleansing efficiency, error rates, and consistency across datasets as essential in assessing the reliability of Big Data analytics outcomes (Smith, 2017). Operational KPIs assess the efficiency of processes involved in collecting, storing, and processing Big Data. Response time, system downtime, and resource utilization are vital indicators in evaluating the operational performance of Big Data system (Brown, 2018). In the realm of business intelligence, KPIs focus on how well Big Data insights align with strategic goals. Metrics like customer acquisition cost, customer lifetime value, and market basket analysis are crucial in evaluating the effectiveness of Big Data-driven decision-making processes (Chen L. e., 2019).

Objective of Chapter

This chapter will explore the design principles and best practices for implementing KPI visualizations, the considerations for selecting relevant metrics, and the potential benefits and challenges associated in shaping marketing intelligence strategies. Real-world marketing and business examples to explain and highlight successful implementations of KPI dashboards and share valuable insights into their practical application and impact on business performance. Readers can use the tools and technologies covered in this chapter based on various marketing related problems to work on and answers business questions.

KEY PERFORMANCE INDICATORS (KPIS) FOR BIG DATA

Key Performance Indicators (KPIs) are measurable metrics that organizations use to evaluate their performance and progress towards achieving their strategic objectives. KPIs provide quantifiable evidence of an organization's success or failure in meeting its goals and can be used to track progress over time (Parmenter, 2015). KPIs serve as a valuable tool for businesses as they provide a clear and objective assessment of performance, enabling organizations to identify areas for improvement, make informed deci-