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The Impact of Dashboards on Risk Management and Decision-Making in Finance

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Abstract

Effective risk management and decision-making are paramount in finance sector. This research explores the effectiveness of dashboards as pivotal tools in these processes, focusing on their role in data aggregation, risk monitoring, performance tracking, and decision-making efficiency. The study combines qualitative analyses of dashboard functionalities with quantitative metrics to evaluate their impact in financial contexts. The core of our investigation lies in the ability of dashboards to aggregate and visualize large volumes of financial data from diverse sources. This capability facilitates the identification of critical trends and patterns, essential for informed decision-making. We examine how dashboards serve as a conduit for real-time monitoring of key financial indicators, including cash flow, revenue growth, and expense trends, which are crucial in preemptive risk management and strategic planning. Moreover, our research delves into the role of dashboards in tracking performance metrics and key performance indicators (KPIs). We assess their effectiveness in comparing current performance against benchmarks or historical data, a vital aspect of financial decision-making. The study also explores the customization and flexibility of dashboards, highlighting their adaptability to specific institutional needs or roles. An important facet of our analysis is the examination of dashboards in enhancing decision-making efficiency. By simplifying complex data into a comprehensible format, dashboards significantly reduce the time and effort required for data analysis, a critical advantage in the fast-paced

financial sector. Additionally, we consider the predictive capabilities of advanced dashboards, which extend beyond reporting current data to forecasting future trends based on historical analysis. This predictive aspect is invaluable for anticipating market shifts and mitigating potential risks. The research also addresses the role of dashboards in fostering transparency and accountability within financial organizations, enhancing communication and collaboration among stakeholders. Our study underscores the indispensable role of dashboards in modern finance, demonstrating their efficacy in consolidating data, enhancing risk management practices, improving decision-making efficiency, and fostering an environment of transparency and collaborative decision-making.

Introduction

Risk management is a critical discipline that has evolved over centuries to address the inherent uncertainty and potential hazards that individuals, organizations, and societies face in their pursuits. At its core, risk management refers to the systematic process of identifying, assessing, prioritizing, and mitigating risks to achieve objectives while minimizing potential negative outcomes. It involves a comprehensive understanding of both the nature of risks and the available strategies to manage them effectively.

The history of risk management can be traced back to ancient civilizations, where communities had to contend with various forms of risk, such as natural disasters, conflicts, and economic fluctuations [1]. Early risk management practices were often intuitive and localized, relying on knowledge and experience passed down through generations. For instance, ancient maritime communities developed rudimentary insurance-like arrangements to protect against the loss of ships and cargoes, showcasing early risk transfer mechanisms.

The formalization of risk management as a discipline began to take shape in the late 19th and early 20th centuries, driven by the rise of industrialization and the need for more structured approaches to risk. Insurance companies played a pivotal role in this development, pioneering actuarial methods to assess and price risks accurately. In the corporate world, the need to safeguard investments and assets prompted the emergence of financial risk management, focusing on tools like derivatives and hedging strategies. As the global economy grew increasingly complex, the field of risk management expanded to encompass a wide range of disciplines, from financial risk management to operational, strategic, and enterprise risk management. Today, risk management is a fundamental aspect of decision-making in both public and

private sectors, with sophisticated methodologies and technologies continually evolving to better understand, assess, and mitigate risks in an ever-changing world. Risk management holds paramount importance in the finance sector, as it is the bedrock of stability, growth, and confidence in financial markets and institutions. Financial institutions, including banks, investment firms, and insurance companies, are entrusted with managing vast amounts of capital and assets on behalf of individuals, businesses, and governments. The financial sector's role as an intermediary between savers and borrowers underscores the necessity of effective risk management practices to ensure the security of investments and the stability of the broader economy [2].

One of the core functions of risk management in finance is to safeguard against adverse events that could jeopardize the solvency and reputation of financial institutions [3]. The 2008 global financial crisis serves as a stark reminder of what can happen when risk management practices fall short. Financial institutions employ risk management techniques such as stress testing, scenario analysis, and value-at-risk models to evaluate their exposure to various risks, including credit, market, liquidity, and operational risks. By identifying potential threats and implementing risk mitigation strategies, these institutions can protect themselves from catastrophic losses and maintain the trust of their clients and stakeholders [4].

Moreover, risk management plays a pivotal role in the allocation of capital and the decision-making process within the finance sector. Investment decisions, portfolio management, and lending activities are all influenced by risk considerations. Investors, whether individual or institutional, rely on risk assessments to make informed choices about where to allocate their funds. Effective risk management enables financial institutions to strike a balance between risk and return, ensuring that investments are made prudently and in line with their risk appetite. In essence, risk management is not merely a regulatory requirement but a strategic imperative in the finance sector, contributing to the overall stability, resilience, and long-term success of financial institutions and the global economy.

Risk management in the financial sector is indispensable due to the multitude of risks that financial institutions encounter. These risks can be classified into various types, each with its own unique characteristics and consequences. Credit risk is one of the most prominent, involving the potential for borrowers or counterparties to default on their financial obligations. Market risk, on the other hand, revolves around losses stemming from market price fluctuations in areas like interest rates and asset prices. Liquidity risk is another critical concern, arising when institutions struggle

to meet short-term financial obligations. Operational risk, encompassing internal processes and external events, poses threats from errors, fraud, or technology failures. Regulatory and compliance risk involves navigating a complex web of regulations, while reputation risk hinges on maintaining trust and ethical conduct. Lastly, strategic risk pertains to uncertainties around long-term goals and business strategies. Managing these diverse risks is essential to the financial sector's stability, regulatory compliance, and sustained success. It enables institutions to make informed decisions, protect their assets, and uphold the trust of clients and stakeholders, ultimately contributing to the sector's overall resilience.

The term "dashboard" originates from the automotive industry, referring initially to the panel placed at the front of a vehicle's interior, directly in front of the driver. Historically, in horse-drawn carriages, a dashboard was a wooden or leather board placed at the front to protect the driver from mud or other debris "dashed" up by the horses' hooves. As technology evolved, the automotive dashboard transformed into a display panel for various instruments and controls, crucial for monitoring the vehicle's performance and status. This concept of displaying critical information in a readily accessible and consolidated manner is what eventually transitioned into the realm of business and technology.

In the context of business and technology, a dashboard is a visual display of the most important information needed to achieve one or more objectives, consolidated and arranged on a single screen so the information can be monitored at a glance. The concept began to gain traction in the management information systems (MIS) field in the late 20th century, especially with the advent of computer technology. The idea was to provide executives and decision-makers with a quick and easy way to view their company's key performance indicators (KPIs), ranging from sales figures and production stats to financial metrics and customer satisfaction scores [5]. This need for an at-a-glance view of critical data was driven by the increasing complexity and pace of business operations, making it challenging to stay informed about all aspects of a company's performance [6].

As technology advanced, so did the capabilities and complexity of dashboards. From simple, static displays of data, they evolved into dynamic tools capable of pulling real-time data from various sources. The 1990s and early 2000s saw a significant transformation, as the proliferation of the internet and digital technologies enabled more sophisticated data integration and visualization techniques. This period marked the beginning of what we now consider modern dashboards, characterized by interactive elements such as drill-down features, real-time updates, and

customizable displays. The evolution of dashboards has been closely tied to advancements in data analytics and business intelligence (BI) technologies. As these technologies have become more powerful and accessible, dashboards have become more versatile and essential tools for businesses of all sizes, across various industries. The modern dashboard is not just a tool for displaying information but a critical component of a company's strategic planning and decision-making processes.

Role of dashboards in risk management and decision-making in finance

Data aggregation and visualization play a crucial role in modern business operations, particularly in the realm of finance. In today's data-driven world, organizations generate and collect massive volumes of financial data from various sources, including sales transactions, expense reports, market data, and more. Managing and making sense of this data can be a daunting task without the right tools. Dashboards serve as a powerful solution by efficiently aggregating data from diverse sources into a single, unified interface. This consolidation of information eliminates the need to sift through multiple spreadsheets or databases, saving time and reducing the risk of errors associated with manual data entry.

Furthermore, dashboards excel at visualizing financial data in a user-friendly manner. They leverage charts, graphs, and other visual elements to represent complex financial information in a comprehensible format. This visualization not only simplifies data interpretation but also aids in the identification of critical trends, outliers, and patterns. For instance, a financial dashboard may display a line chart illustrating revenue growth over time, helping finance professionals quickly assess the company's performance. Such real-time insights are invaluable for making informed decisions, as they allow stakeholders to react promptly to changing market conditions or financial challenges. In essence, dashboards empower organizations to harness the full potential of their financial data, transforming it from a mere collection of numbers into actionable insights [7].

One of the primary advantages of financial dashboards is their ability to provide real-time access to key financial metrics. These metrics can range from fundamental indicators like cash flow, revenue growth, and expense trends to more advanced metrics like profitability ratios and return on investment. The instantaneous availability of such critical information enables financial professionals to monitor the health of the organization continuously. For example, a CFO can quickly assess whether the company's cash flow is sufficient to cover upcoming expenses or if there are any unexpected deviations in revenue growth. With this information at their

fingertips, decision-makers can proactively address financial challenges and seize opportunities as they arise. Ultimately, financial dashboards not only enhance data-driven decision-making but also contribute to the overall financial health and success of an organization.

Risk identification and monitoring are fundamental components of effective risk management within any organization. Dashboards play a pivotal role in this process by providing a centralized platform for tracking and analyzing a wide range of risk indicators. These dashboards can be customized to focus on specific risk factors that are most relevant to the organization, such as credit risk, market volatility, or liquidity issues. By aggregating and visualizing these risk metrics, dashboards offer immediate visibility into the state of the organization's risk profile.

One of the key advantages of using dashboards for risk management is their ability to provide real-time updates on risk factors. This real-time monitoring enables risk managers and decision-makers to proactively address potential risks as they emerge, rather than reacting after the fact. For example, if a financial dashboard highlights a sudden increase in market volatility, the risk management team can quickly assess the situation and take appropriate measures to mitigate potential losses. This proactive approach to risk management is essential in today's fast-paced business environment, where risks can evolve rapidly.

Furthermore, dashboards enhance the transparency and communication of risk-related information within an organization. They offer a clear and concise way to present complex data to stakeholders, allowing for better-informed decision-making. Risk dashboards can be shared across departments and with executives, facilitating a common understanding of the organization's risk exposure. By promoting a culture of risk awareness and accountability, these dashboards contribute to a more robust risk management framework that helps safeguard the organization's financial stability and reputation. In summary, dashboards are indispensable tools in the realm of risk management, offering real-time insights, proactive risk mitigation, and improved communication to protect an organization from potential threats [8].

Performance metrics and key performance indicator (KPI) tracking are essential components of financial management and decision-making. Dashboards are instrumental in this regard, as they provide a dynamic platform for real-time monitoring and analysis of critical performance indicators. These dashboards are designed to display key financial metrics, such as revenue, profit margins, customer acquisition costs, and more, in a visually intuitive format. This real-time visibility

into performance metrics is invaluable for finance professionals, enabling them to assess the health and effectiveness of their strategies and operations.

One of the significant advantages of using dashboards for performance metrics tracking is the ability to compare current performance against predefined benchmarks or historical data. By setting benchmarks or using historical trends as reference points, finance professionals can gauge whether they are meeting their goals or falling short. For instance, a dashboard may include a bar chart illustrating monthly sales revenue compared to the target set for the year. If the actual performance consistently lags behind the target, it serves as an early warning sign that adjustments may be needed in sales strategies or resource allocation. This data-driven approach to performance assessment empowers finance professionals to make informed decisions aimed at improving outcomes.

Furthermore, dashboards enhance the efficiency and accuracy of performance monitoring and reporting. Instead of manually collecting and consolidating data from various sources, finance teams can rely on dashboards to automate these processes. This automation not only saves time but also reduces the risk of errors associated with manual data manipulation. Finance professionals can focus on analyzing the data presented by the dashboard and deriving actionable insights, rather than spending excessive time on data entry and consolidation tasks.

Enhanced decision-making efficiency is a critical benefit that dashboards bring to the field of finance. In the fast-paced world of finance, professionals often face the daunting task of processing and interpreting vast amounts of complex financial data to make timely and accurate decisions. Dashboards are indispensable tools in this context, as they transform intricate financial data into a simplified and easily accessible format. This simplification greatly reduces the time and effort required for data analysis and interpretation, allowing finance professionals to make decisions more efficiently and with greater precision.

One of the primary ways in which dashboards enhance decision-making efficiency is by presenting data through intuitive visualizations. Instead of poring over spreadsheets or databases filled with numbers, finance professionals can quickly grasp the key insights through charts, graphs, and other visual elements. For instance, a financial dashboard may display a pie chart illustrating the allocation of expenses, making it straightforward to identify areas where cost reductions may be necessary. This visual representation not only speeds up the decision-making process but also reduces the risk of misinterpretation [9].

Furthermore, dashboards enable real-time access to critical financial information. Finance professionals can monitor key metrics, such as cash flow, revenue, and expense trends, in real-time. This immediacy is essential in finance, where market conditions can change rapidly, and decisions need to be made swiftly to capitalize on opportunities or mitigate risks. With dashboards, decision-makers can access the most up-to-date data at any moment, facilitating quick and well-informed decision-making.

Customization and flexibility are key attributes of dashboards that make them indispensable tools in the world of finance. Financial institutions and professionals often have unique requirements when it comes to data presentation and analysis. Dashboards address this need by allowing for extensive customization, ensuring that they can be fine-tuned to align with specific objectives, decision-making processes, or risk management strategies.

One of the primary advantages of customizable dashboards is the ability to focus on the most relevant data for a particular role or task within the organization. For instance, a financial institution may have different departments, each with its own set of key performance indicators (KPIs) and metrics. With a customizable dashboard, each department can create a tailored view that highlights the data points most relevant to its objectives. This ensures that decision-makers have access to the precise information they need to make informed choices, whether they are involved in investment analysis, loan underwriting, or regulatory compliance.

Furthermore, the flexibility of dashboards extends beyond customization to adaptability. Financial environments are dynamic, and the data and metrics that matter can change over time. Dashboards can be adjusted and modified as needed to accommodate shifting priorities or evolving business strategies. This agility is crucial for finance professionals who must respond to changing market conditions, regulatory requirements, or internal goals [10].

The customization and flexibility of dashboards are essential features that empower financial institutions and professionals to tailor their data visualization and analysis tools to their specific needs. This adaptability ensures that dashboards remain valuable assets in the ever-evolving landscape of financial decision-making and risk management.

Trend analysis and forecasting capabilities embedded within advanced dashboards represent a game-changing feature for the finance industry. Beyond the ability to present current data, these dashboards incorporate analytical tools that leverage

historical data to predict future trends. In finance, where accurate predictions and proactive decision-making are paramount, this predictive capability is invaluable.

One of the primary benefits of trend analysis and forecasting within dashboards is the ability to anticipate market shifts and financial trends. By analyzing historical data patterns, these dashboards can identify recurring trends, seasonality, and anomalies. For instance, a financial institution can use trend analysis to predict customer demand for specific financial products during different times of the year, helping them optimize their marketing and sales strategies accordingly. Moreover, trend forecasting enables organizations to adjust their investment portfolios or risk management strategies in anticipation of potential market fluctuations.

Furthermore, these advanced dashboards enable finance professionals to make data-driven decisions based on future predictions rather than relying solely on historical data. For example, a corporate treasurer can use a dashboard's forecasting capabilities to estimate cash flow needs for the upcoming quarter, ensuring that the organization has the necessary liquidity to cover expenses and seize investment opportunities [11].

Trend analysis and forecasting within dashboards provide finance professionals with a proactive approach to decision-making. By leveraging historical data to predict future trends, these dashboards enable organizations to prepare for market shifts, identify growth opportunities, and mitigate risks effectively, ultimately contributing to more informed and successful financial strategies.

Increased transparency and accountability are core benefits of dashboards within the realm of financial management. Dashboards serve as powerful tools for providing a clear and comprehensive view of financial data and performance metrics, thereby fostering a culture of openness and responsibility within organizations.

One of the primary ways in which dashboards enhance transparency is by offering a centralized platform where financial data is aggregated and presented in a user-friendly format. Instead of sifting through multiple spreadsheets or databases, stakeholders can access a single dashboard to gain insights into financial performance, budgets, and other critical metrics. This accessibility to relevant information empowers individuals at all levels of an organization to make well-informed decisions that align with the organization's financial goals.

Moreover, dashboards contribute to accountability by making it easier to track and measure progress toward established objectives. For instance, if a department sets specific financial targets, a dashboard can display real-time performance against these targets, making it clear whether the team is meeting its goals or if corrective

actions are needed. This transparency in goal tracking encourages teams and individuals to take ownership of their responsibilities and work toward achieving the desired outcomes.

Dashboards promote increased transparency and accountability by providing a centralized and accessible view of financial data and performance metrics. This transparency empowers stakeholders to make informed decisions, while accountability is reinforced through real-time tracking of progress toward goals and objectives. Ultimately, these features contribute to the overall financial health and success of organizations in a transparent and responsible manner.

Collaboration and communication are pivotal aspects of effective financial management, and dashboards play a significant role in fostering these essential components within complex financial environments. In such intricate settings, decisions often hinge on insights and data that span multiple departments or require expertise from various specialists. Dashboards act as a unifying force by providing a centralized platform where team members can access, analyze, and discuss financial data, thereby enhancing collaboration and communication.

One of the primary ways in which dashboards facilitate collaboration is by offering a shared space for team members to access critical financial information. Instead of relying on separate spreadsheets or individual reports, stakeholders from different departments can access the same dashboard to gain a comprehensive view of the financial landscape. For instance, a finance team can collaborate with the sales department to assess the impact of pricing changes on revenue, with both teams viewing the same dashboard to make data-driven decisions.

Furthermore, dashboards promote real-time collaboration by allowing users to interact with the data and engage in discussions directly within the dashboard interface. Team members can annotate charts, leave comments, or share insights, fostering a collaborative environment where ideas can be exchanged, and decisions can be made collectively. This level of interactivity is particularly valuable in dynamic financial situations where quick and informed decisions are imperative [12].

Dashboards serve as catalysts for collaboration and communication within complex financial environments. By offering a shared platform for accessing and discussing financial data, they enable teams to work together more effectively, ensure that decisions are well-informed, and ultimately contribute to the success of financial operations in organizations.

Conclusion

Data Aggregation and Visualization play a pivotal role in modern financial management, offering a powerful tool for businesses to harness the vast amount of data generated from multiple sources. Dashboards serve as a central hub for gathering financial information, providing a comprehensive view of the organization's financial health. By presenting this data in an easily understandable format, they empower financial professionals to identify trends, outliers, and patterns with ease. For example, a well-designed dashboard can display critical financial metrics such as cash flow, revenue growth, and expense trends in real time, allowing decision-makers to stay informed and make swift, data-driven choices. The ability to aggregate and visualize data in this manner is particularly valuable for large enterprises dealing with complex financial ecosystems, helping them streamline operations and enhance strategic planning.

In the realm of Risk Identification and Monitoring, dashboards are indispensable tools for safeguarding an organization against potential threats. Financial institutions, for instance, heavily rely on dashboards to monitor various risk indicators such as credit risk, market volatility, or liquidity issues. These dashboards can be programmed to automatically flag abnormal patterns or deviations from predefined risk thresholds, providing immediate visibility into potential risks. Such proactive risk management is crucial in preventing crises and ensuring financial stability. By offering a clear and concise overview of risk factors, dashboards empower financial professionals to make informed decisions, allocate resources judiciously, and mitigate risks effectively.

Dashboards also excel in Performance Metrics and KPI Tracking, enabling finance professionals to measure and evaluate the organization's performance against key benchmarks and historical data. Real-time tracking of key performance indicators (KPIs) facilitates continuous improvement by allowing immediate adjustments to strategies and operations. This real-time visibility into KPIs like profitability, return on investment, or customer acquisition costs empowers financial decision-makers to make data-driven adjustments on the fly. By providing an accurate and up-to-date snapshot of performance, dashboards not only enhance decision-making but also facilitate communication within the organization, ensuring that everyone is aligned with the overarching financial goals and objectives. In summary, data aggregation and visualization through dashboards are indispensable in today's financial landscape, offering insights, risk management, and performance tracking that are essential for informed and effective financial decision-making [13].

Enhanced Decision-Making Efficiency is one of the most compelling advantages of utilizing dashboards in financial management. The financial landscape is characterized by its complexity, with data pouring in from various sources at a rapid pace. Dashboards simplify this complexity by presenting this data in a clear and accessible format. Finance professionals can quickly grasp the information they need without spending excessive time on data analysis. This efficiency is particularly crucial in finance, where timely and precise decisions are often imperative. Whether it's responding to market fluctuations, capital allocation, or investment strategies, dashboards enable faster and more informed decision-making, giving organizations a competitive edge in today's fast-paced financial world.

Customization and Flexibility are key features that make dashboards highly adaptable tools for financial institutions. Each organization and role within it may have unique data requirements and decision-making processes. Dashboards can be tailored to cater to these specific needs, allowing users to focus on the most relevant data for their particular responsibilities. This customization empowers finance professionals to create dashboards that align with their strategic objectives, ensuring that the right information is readily available. Whether it's a financial analyst tracking investment performance or a CFO monitoring cash flow, dashboards can be configured to suit individual preferences and requirements, enhancing their effectiveness in delivering actionable insights [14], [15].

Trend Analysis and Forecasting capabilities of advanced dashboards take financial management to the next level. These dashboards not only provide a snapshot of current financial data but also utilize analytical tools to forecast future trends based on historical data. This predictive capability is a game-changer in finance, enabling organizations to proactively prepare for potential market shifts and mitigate risks. Whether it is predicting customer demand, identifying investment opportunities, or anticipating regulatory changes, dashboards equipped with trend analysis and forecasting tools provide finance professionals with invaluable insights. This foresight empowers them to make well-informed decisions, optimize resource allocation, and stay ahead in an ever-evolving financial landscape.

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