

# Enhancing Power BI with QlikView's Alternate State: Challenges and Solutions

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## Abstract:

In the contemporary digital landscape, Business Intelligence (BI) tools are critical for organizations harnessing data-driven strategic decision-making. Among these tools, QlikView and Power BI are distinguished for their unique capabilities, especially in facilitating comparative analysis—a crucial aspect of enhancing business insights and decision-making processes. This paper focuses on the challenges and potential solutions in implementing QlikView's notable Alternate State feature within Power BI, a functionality absent in the latter yet pivotal for intricate comparative analyses. Through a comprehensive examination, we identify the technical and functional hurdles in emulating QlikView's Alternate State in Power BI, discussing viable workarounds such as custom development, utilizing third-party tools, and leveraging Power BI community solutions. The discussion extends to the implications of these challenges and solutions on users and organizations, highlighting the necessity for improved interoperability and functionality among leading BI tools. Our findings aim to contribute to the broader discourse on optimizing BI tools for more nuanced and informed decision-making, underscoring the importance of addressing the gap in comparative analysis capabilities between QlikView and Power BI.

**Keywords — Data Visualization, Power BI, QlikView, Alternate State, Comparative Analysis, Data Analysis, DAX (Data Analysis Expressions), BI tools Interoperability.**

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## I. INTRODUCTION

In the rapidly evolving digital era, Business Intelligence (BI) tools have become indispensable for organizations seeking to leverage data for strategic decision-making. BI tools are sophisticated software applications designed to analyze and manage business data, enabling organizations to gain insights, identify trends, and make informed decisions. Among the plethora of BI tools available, QlikView and Power BI stand out due to their unique features, user-friendly interfaces, and robust data processing capabilities.

Comparative analysis within BI tools plays a pivotal role in harnessing the full potential of data

analytics. It allows businesses to juxtapose different data sets, assess performance metrics across various parameters, and derive actionable insights. This comparative approach is fundamental for enhancing business strategies and critical in selecting the right BI tool that aligns with an organization's specific needs.

QlikView, developed by QlikTech, offers a distinctive feature known as the Alternate State, which enables users to perform comparative analysis by creating multiple selection states within a single application. This feature allows for intricate data comparison and analysis, enhancing the tool's analytical depth. On the other hand, Power BI, a dynamic BI tool from Microsoft, has been celebrated for its integration capabilities, intuitive

design, and extensive visualization options. Despite its robustness, Power BI lacks a native equivalent to QlikView's Alternate State feature, presenting a notable challenge for users transitioning between these platforms or those seeking to replicate QlikView's comparative analysis functionalities within Power BI.

This paper explores the challenges of implementing QlikView's Alternate State feature in Power BI. It explores the technical and functional hurdles encountered, proposes viable solutions and workarounds, and discusses the implications of these challenges on users and organizations. By examining this issue, we seek to contribute to the broader discourse on enhancing interoperability and functionality among leading BI tools, ultimately aiding businesses in making more nuanced and informed decisions based on comprehensive comparative analyses.

## **II. BACKGROUND**

### *A. Overview of QlikView*

QlikView is a powerful Business Intelligence (BI) tool for data visualization, dashboard development, and reporting. Developed by QlikTech, it stands out for its in-memory data processing, which significantly speeds up the analysis and delivers real-time insights. One of the cornerstone features of QlikView is its associative data model, allowing users to intuitively explore connections across diverse datasets [1]. This model encourages an exploratory approach to data analysis, where each selection instantaneously updates all visualizations with relevant data, highlighting associations and revealing hidden trends.

Among its myriad features, the Alternate State stands as a unique functionality. This feature enables users to create multiple independent selection states within the same application. Doing so facilitates side-by-side comparative analysis within a single document without the need to duplicate data or visualizations. Analysts can compare different subsets of data, such as time periods, product lines, or geographic regions, in parallel, enhancing the depth and flexibility of analysis.

The Alternate State feature is particularly beneficial in scenarios requiring detailed comparative analysis. For instance, businesses can use it to compare sales performance across different quarters, analyze market trends in various regions, or evaluate the impact of marketing campaigns on different product lines. This functionality not only simplifies complex analyses but also enriches the decision-making process with nuanced insights that would be cumbersome to obtain otherwise.

### *B. Overview of Power BI*

Power BI, a suite of business analytics tools from Microsoft, offers comprehensive capabilities for data analysis and reporting. Launched as part of the Microsoft Power Platform, it excels in data connectivity, visualization, and sharing [2]. Power BI's strengths lie in its ability to integrate seamlessly with a wide range of data sources, its user-friendly interface, and its extensive collection of visualization options. It is designed to empower users at all levels of an organization to create and share insights based on their data.

While Power BI shares many functionalities with QlikView, such as data visualization, reporting, and dashboarding, it distinguishes itself through deep integration with other Microsoft products and services, such as Excel, Azure, and SharePoint. This integration facilitates a streamlined workflow for users entrenched in the Microsoft ecosystem. Additionally, Power BI's emphasis on cloud services enhances its collaborative capabilities, allowing for easy sharing and access of reports and dashboards across devices.

Despite its robust feature set, Power BI does not natively support an equivalent to QlikView's Alternate State feature. This absence poses challenges for analysts seeking to perform detailed comparative analyses similar to those facilitated by QlikView. While Power BI users can employ workarounds to mimic this functionality, such as using bookmarks or creating separate pages for comparative views, these methods do not offer the same level of intuitiveness and integration within a single report. This limitation underscores a gap in Power BI's offering, impacting users who require sophisticated comparative analysis capabilities.

### **III. TECHNICAL COMPARISON**

The technical comparison between QlikView and Power BI reveals distinct approaches to business intelligence, each with its strengths and tailored to different user needs. This section explores these differences, with a particular emphasis on the Alternate State feature in QlikView and how Power BI's capabilities measure up against this specific functionality.

#### **A. Detailed Comparison of QlikView and Power BI Functionalities**

QlikView is renowned for its in-memory processing and associative data model [1]. This unique combination allows for rapid, on-the-fly data analysis and visualization, enabling users to explore data interactively. The associative model in QlikView illuminates data relationships that might not be immediately apparent, offering insights through data discovery. Furthermore, QlikView's scripting language offers a high degree of customization and flexibility, allowing for complex data transformation and manipulation directly within the tool.

Power BI, on the other hand, emphasizes user-friendly data analysis with robust data connectivity options. It supports real-time data processing, with the ability to pull data from a wide variety of sources, including cloud-based services, databases, and Excel files. Power BI's integration with Azure and AI capabilities enables advanced data analytics, such as predictive modeling and automation. Its interface is designed to be accessible for users of all levels, with drag-and-drop functionalities and a wide array of visualization options that facilitate the creation of comprehensive dashboards and reports.

#### **B. Specifics of the Alternate State Feature in QlikView**

The Alternate State feature in QlikView stands out as a sophisticated tool for comparative analysis [3]. It allows users to create multiple selection states or "scopes" within the same dimension, enabling the comparison of different data segments side by side [4]. For example, a user could set up one state to analyze sales data from one fiscal year and another state for a different year, comparing the two directly within the same chart or table. This feature is particularly useful for nuanced

analyses that require the examination of data under varying conditions or assumptions.

#### **C. Analysis of Power BI's Capabilities and Limitations in Mimicking the Alternate State Feature**

While Power BI offers extensive functionalities for data analysis and visualization, it lacks a direct equivalent to QlikView's Alternate State feature. Power BI users can partially replicate this functionality using bookmarks, which save the current state of a report page, including filters and slicers. Bookmarks can be used to switch between different views or scenarios, somewhat mimicking the comparative analysis enabled by QlikView's Alternate States. However, this workaround does not offer the same seamless experience or the level of detail and flexibility found in QlikView. Each bookmark in Power BI is essentially a static snapshot, lacking the dynamic interactivity of QlikView's Alternate States.

Additionally, Power BI's use of DAX (Data Analysis Expressions) provides powerful data modeling and calculation capabilities, but creating comparative analyses similar to QlikView's Alternate State requires complex DAX expressions and careful data model design. This complexity can introduce a barrier for users not well-versed in DAX or those seeking quick, intuitive comparative analysis functionalities.

This comparison underscores the distinct technical paths QlikView and Power BI have taken to address business intelligence needs. While both tools offer robust capabilities, the specifics of QlikView's Alternate State feature and the challenges in mimicking this functionality in Power BI highlight the nuanced considerations businesses must navigate when choosing a BI tool.

### **IV. CHALLENGES IN IMPLEMENTING ALTERNATE STATE IN POWER BI**

Implementing QlikView's Alternate State feature in Power BI presents several challenges that stem from fundamental differences in how each tool approaches data analysis and user interaction. The challenges can be broadly grouped into three categories: technical, functional, and organizational.

#### **A. Technical Challenges**

**1) Lack of Native Support:** Power BI does not have a built-in feature directly comparable to QlikView's Alternate State. This absence means that any attempt to replicate the functionality requires creative but complex workarounds. These workarounds often involve advanced data modeling techniques, custom DAX expressions, or the use of bookmarks to simulate different analysis states, none of which are straightforward or intuitive for all users.

**2) Complexity in Simulating Alternate State through Workarounds:** To mimic the Alternate State feature, Power BI users might need to create multiple versions of the same visualizations or utilize bookmarks to manage different data views. This approach not only increases the complexity of report design but also the time and effort required to maintain and update these reports. Additionally, these methods lack the dynamic interactivity offered by QlikView's Alternate State, making it difficult to achieve a seamless comparative analysis experience.

### **B. Functional Challenges**

**3) Limitations in Data Segmentation and Comparative Analysis:** One of the core functionalities of the Alternate State feature in QlikView is the ability to segment data for comparative analysis effortlessly. Power BI's approach to data segmentation and filtering does not inherently support simultaneous, independent comparisons within the same visualization or report page, limiting the depth and flexibility of analyses that can be performed without resorting to complex workarounds.

**4) User Experience and Interactivity Issues:** The workarounds required to approximate QlikView's Alternate State in Power BI can lead to a less intuitive user experience. For instance, toggling between different bookmarks to view comparative analyses is not as user-friendly or interactive as switching between Alternate States in QlikView. This discrepancy can frustrate users accustomed to the more dynamic and straightforward functionality of QlikView.

### **C. Organizational Challenges**

**Training and Adaptation for Users Familiar with QlikView:** Users who are familiar with and have come to rely on QlikView's Alternate State feature may find the transition to Power BI challenging. The need to understand and apply complex workarounds for comparative analysis requires additional training and adaptation, which can be a significant hurdle for organizations looking to switch to or integrate Power BI into their existing BI solutions.

### **D. Integration with Existing BI Infrastructure**

Organizations that have invested heavily in QlikView's infrastructure might find it challenging to integrate Power BI in a way that fully replicates

the Alternate State functionality. The technical and functional limitations of Power BI in this regard necessitate not only technical workarounds but also a reconsideration of how data analysis processes are structured and executed within the organization.

## **V. POSSIBLE SOLUTIONS AND WORKAROUNDS**

To address the challenges of implementing QlikView's Alternate State feature in Power BI, several solutions and workarounds have been proposed. Each of these offers a unique approach to bridging the functionality gap, with varying degrees of feasibility, cost implications, and efficiency.

### **A. Custom Development**

**1) Prepare your Data: Start by compiling all necessary data, ensuring it's ideally consolidated within a single or logically connected data source. This simplification aids in the analysis, potentially involving merging data from various projects into a single dataset or establishing relationships among several tables. It's crucial, especially for categorical comparisons (e.g., comparing different regions), to have these categories well-defined within your data framework.**

**5) Import Data into Power BI:** Proceed to import your compiled data into Power BI. This data can originate from diverse sources such as Excel sheets, databases, or other external data systems. Upon importing, ensure the data model within Power BI is accurately structured, highlighting defined relationships between tables when utilizing multiple data sources to facilitate seamless analysis.

**6) Create Disconnected Tables or a Placeholder for Selected Values:** To enhance dynamic reporting capabilities, consider creating disconnected tables or reference tables [5]. This disconnected table will contain identical data as a dimension table. These tables will allow users to select categories or projects from dropdown menus, enabling comparative analysis without directly filtering the primary dataset. Depending on the complexity of your required analysis (i.e., the number of alternate states needed), you may create multiple disconnected tables or placeholders to store selected values for comparison. For instance, if your report requires comparing customer categories over time, ensure there's a categories table connected to factual tables (like sales

orders) and an equivalent disconnected table for alternate state comparisons. In scenarios requiring two alternate states, use Power BI's "New Table" feature to create distinct tables for each selection, populated with category names via the VALUES DAX function, and ensure these tables remain unlinked from the main data model.

**7) Use DAX for Calculations and Comparisons:** Utilize DAX (Data Analysis Expressions) for crafting measures that compute totals, averages, or other relevant metrics for your comparative analysis. DAX's power enables the application of conditional logic for dynamic comparisons based on user selections or predefined criteria. For each alternate state, create custom measures that disregard existing data filters and apply new filters based on the alternate dimension table selections.

**8) Configuring Slicers and Creating Measures for Filtered Comparisons:** Transition your report's category slicer to one derived from the First Selection table, setting it for single selections. Duplicate this slicer for the Second Selection table to facilitate comparative analysis. Introduce a measure, such as "Category Selection Filter," employing an IF statement to differentiate selections between the first and second slicers, applying this logic to restrict slicer options and ensure distinct selections across comparisons. Employ measures crafted with DAX's CALCULATE function to aggregate data like total sales, filtering these calculations to include only categories chosen in either slicer for dynamic visual representation.

**9) Visualization and Reporting:** Select appropriate visualizations, like bar, column, or line charts, to effectively showcase the comparative analysis. Incorporate slicers connected to your disconnected tables, offering a dynamic and interactive reporting experience. Moreover, consider the implementation of detailed drill-through pages for in-depth exploration of specific projects or categories, enriching the analytical depth of your reports.

Through this structured approach to custom development, leveraging Power BI's capabilities to mimic the Alternate State feature of QlikView involves a series of deliberate steps—from data preparation and importation to advanced DAX calculations and dynamic visualizations—each playing a critical role in achieving a comparable, highly functional, and interactive analytical environment.

### **B. Third-party Plugins or Tools**

Another approach is leveraging third-party plugins or tools that integrate with Power BI, offering extended functionalities similar to QlikView's Alternate State. These tools can fill the gap in Power BI's native capabilities, providing additional visualization and data modeling options

without the need for extensive custom development. The feasibility of this solution depends on the compatibility and integration capabilities of these third-party offerings with Power BI. Costs can vary widely based on the tool or service selected but generally offer a more cost-effective solution compared to custom development. The efficiency of third-party plugins or tools also depends on their ability to seamlessly integrate with Power BI and the ease of use for end-users.

PBIVizEdit represents one such solution among many, providing a custom visual option that aids in crafting Comparative Analysis Visuals for Power BI [6]. The PBIVizEdit website lays out a detailed tutorial that delineates a step-by-step methodology for this process [6]. Initiating with registering for PBIVizEdit, it guides users through creating sample data in a CSV format and progresses through modifying and exporting the visual to be utilized within Power BI dashboards. This procedure entails uploading and mapping the data, fine-tuning visual attributes like bar colors and bubble sizes, and finally, exporting the customized visual for Power BI. Highlighting the significance of tailoring visual properties and formatting; the tutorial aims to equip users with the capability to perform an impactful comparative analysis through these customized visuals, thereby enriching the analytical power of their Power BI dashboards.

### **C. Power BI Updates and Community Solutions**

Microsoft regularly updates Power BI, introducing new features and capabilities that could potentially address the gap left by the absence of the Alternate State feature. Staying informed about these updates and actively participating in the Power BI community can provide insights into upcoming features or community-developed workarounds. Community solutions, such as shared templates or custom visualizations, can offer innovative ways to replicate QlikView's functionality within Power BI. For example, Jean Hayes' article discusses a technique for metric comparison across various values within the same dimension, utilizing reference tables, dynamic DAX calculations, and advanced visualizations to facilitate user interaction without modifying the dataset's structure [7]. These solutions are often

cost-effective, as they leverage the collective knowledge and efforts of the Power BI user community. However, their feasibility and efficiency can vary, depending on the complexity of the needs they aim to meet and the level of community support available.

## **VI. LIMITATIONS**

Implementing QlikView's Alternate State feature in Power BI through various proposed solutions and workarounds presents a multifaceted set of limitations that span technical, functional, and organizational dimensions. On the technical front, the complexity and usability challenges of custom development are significant. Crafting solutions that mimic the Alternate State feature requires a deep understanding of Power BI's functionalities and DAX programming, which may not be intuitive for all users. These workarounds, such as creating disconnected tables or leveraging complex DAX expressions, add layers of complexity and can become cumbersome to maintain, particularly as the scope of reports expands or as new data sources are integrated. The reliance on third-party plugins or tools also introduces an external dependency, with potential issues around compatibility, ongoing costs, and the sustainability of support.

Functionally, the limitations are evident in the aspects of data segmentation and comparative analysis. Despite the ingenuity behind the workarounds, achieving the same level of dynamic interactivity and ease of use as QlikView's Alternate State is challenging. This limitation could restrict the analytical depth and flexibility, impacting the quality of insights. Moreover, the user experience suffers as the intuitive and straightforward interaction offered by QlikView is replaced by more cumbersome processes in Power BI, such as toggling between bookmarks or managing multiple slicers for comparative analysis.

From an organizational perspective, the transition to employing these workarounds in Power BI can be steep for users accustomed to QlikView. Training and adapting to these complex solutions require time and resources, potentially hindering adoption rates and leading to increased costs for organizations. Additionally, integrating Power BI in a manner that seamlessly replicates the Alternate

State functionality, especially for businesses deeply invested in QlikView's infrastructure, poses its own set of challenges. Ensuring analytical depth and operational efficiency remain intact during this transition requires careful planning and execution.

Financially, the cost implications of custom development and third-party tools are not trivial. Beyond the initial expenditure, there are considerations around maintenance, support, and, potentially, the need for continuous updates or purchases to keep up with evolving requirements. This financial outlay is coupled with the need for specialized knowledge, necessitating the allocation of skilled personnel to develop, implement, and maintain these solutions—a resource that could be strategically utilized elsewhere within the organization.

## **VII. CONCLUSION**

In addressing the challenge of integrating QlikView's Alternate State feature into Power BI, this paper navigates the complexities of employing advanced comparative analysis within two leading Business Intelligence (BI) tools. QlikView offers a unique capability for side-by-side data comparison that is not natively available in Power BI, underscoring the importance of this functionality for in-depth analytics and strategic decision-making. The exploration of technical workarounds, third-party plugins, and community-driven solutions reveals a landscape where innovation and adaptability are crucial to bridging functionality gaps.

Despite the ingenuity of these solutions, they come with their own set of challenges, including increased complexity, potential costs, and the need for specialized knowledge. This highlights a broader theme within the BI community: the continuous pursuit of tool interoperability and enhanced analytical capabilities to meet evolving business needs. As the BI landscape advances, fostering collaboration among users, developers, and organizations will be crucial in developing seamless, intuitive tools that empower users to unlock comprehensive insights from their data.

Ultimately, the endeavor to replicate QlikView's Alternate State in Power BI reflects a commitment to expanding the boundaries of what is possible

within BI tools. It underscores the necessity for ongoing innovation, community engagement, and skill development to leverage the full potential of BI technologies in supporting informed, data-driven decision-making.

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