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**BUSA8031: BUSINESS ANALYTICS PROJECT**  
**ASSESSMENT 2: CLIENT BRIEFING REPORT**

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## Executive Summary

The report deeply analysed the core features of the four platforms to evaluate them based on criteria including ease of use, integration capabilities, scalability, customization, and available training resources. These current findings show how effective the features and functions of platforms are in representing the collected large amount of data from customers and products of Best Bike Ever company.

Among the four platforms used to visualize data in reports, Qlik Sense stands out as the outstanding performer with easy drag-and-drop functionality even for beginners as well as high customization capabilities. . The ability to seamlessly integrate charts within the platform further solidifies its position as the preferred choice for businesses. Power BI also offers easy-to-use features, especially the ability to integrate into the Microsoft ecosystem such as Microsoft Excel. Meanwhile, Tableau and R, although they have the potential to visualize data, catered more to specific requirements.

The report indicates recommendations with support for the adoption of Qlik Sense as the primary tool for data visualization, backed by its unmatched balance of features, aesthetics, and scalability. However, Power BI is also highlighted as a viable alternative, especially for businesses deeply integrated with Microsoft products.

Emphasizing the importance of choosing a platform for data visualization that helps address current business needs but also being equipped to handle future challenges. Through this exploration, the company is equipped with the knowledge to make an informed decision, ensuring that its data visualization efforts are efficient.

## Introduction

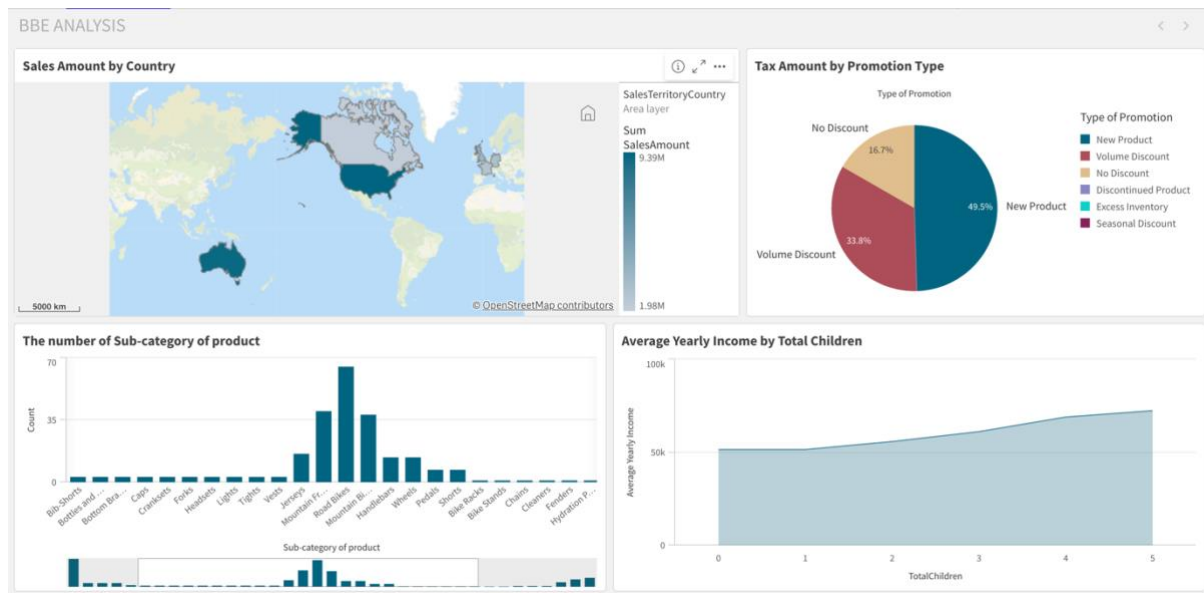
In the ever-evolving business environment, the pivotal role of data and business analytics cannot be overstated. Regardless of their size or field, organizations rely significantly on analytical frameworks and tools to extract useful information from big data. Best Bike Ever (BBE), a trailblazing firm with a rich history spanning more than four decades, aspires to embrace the revolutionary potential of data-driven decision-making within this framework. Given its extensive activities, which include a broad range of goods and a diversified client base, a powerful analytical tool that not only gathers its numerous data streams but also presents them in a digestible, accessible way is an absolute must. Dashboard solutions might be useful in this situation.

With its interactive and visual features, dashboard solutions operate as a crucial link between unprocessed data and strategic decision-making. They make it possible for businesses like BBE to go through enormous amounts of data, find patterns, see trends, and make connections. Such solutions abound on the market, each boasting features, integrations, and capabilities. The difficulty, though, is in figuring out which approach best fits BBE's corporate values, operational requirements, and long-term goals.

This report endeavours to demystify this complex landscape by conducting a rigorous evaluation of four leading dashboard solutions: Qlik Sense, Power BI, Tableau, and an in-house development using R. Through a balanced critique based on a well-defined set of criteria, the report aims to provide BBE with a clear roadmap, guiding its journey towards becoming a truly data-driven enterprise. In the intricate landscape of technology solutions, the recommendations will not only shape BBE's analytics strategy but also exemplify the true essence of a solution architect's role in solving complex problems with innovative and pragmatic technological solutions.

# Dashboard Solution Analysis

## Qlik Sense



**Figure 1: BBE Visualization Analysis by using Qlik Sense**

The “BBE Analysis” dashboard crafted using Qlik Sense, offers a professional representation of BBE’s operational metrics across four distinct visualizations: “Sales Amount by Country”, “Tax Amount by Promotion Type”, “Average Yearly Income by Total Children” and “The number of Sub-category of Product”.

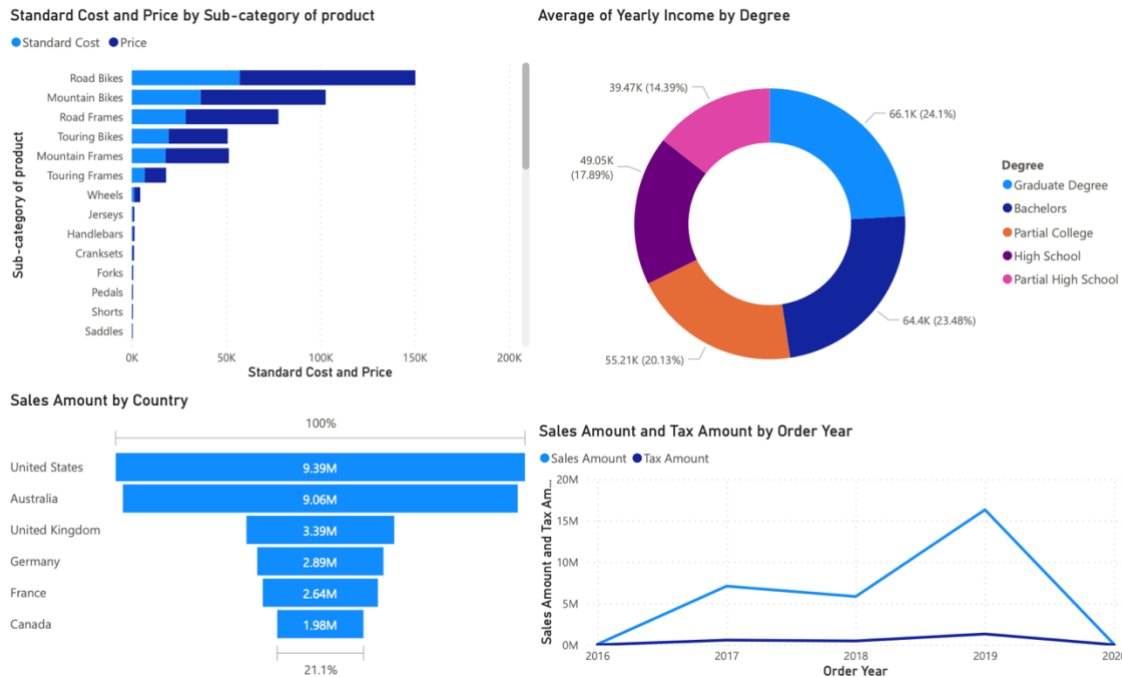
Overall, the dashboard provides clarity in visualizing the relationship of data collected from products as well as customers. Each graph is labelled, helping viewers clearly understand the purpose of using data. The judicious selection of visualization types - geographical heat map, pie chart, line graph, and bar graph - augments comprehension and facilitates quick data interpretation. Data relevance and the foundation of effective dashboard design ensure clear alignment with business interests and needs in analysing the depth of business data (Sedrakyan et al., 2019). In this context, given BBE's aim to understand sales distribution, the effect of promotions, income patterns concerning family size, and product preferences, the dashboard's metrics are undeniably pertinent.

However, integral to this discussion is the assumption of data integrity. The authenticity and reliability of the data sources underscore the dashboard's efficacy. The dashboard embodies a sophisticated design philosophy with its uncluttered layout, strategic spacing, and harmonized colour palette, aspects that not only enhance its visual allure but also optimize user experience.

Modern analytics tools, including Qlik Sense, often embed interactive features enabling users to delve into specific data segments. While the presented snapshot does not validate this attribute, Qlik Sense's inherent capabilities suggest potential interactive avenues, especially within the geographical visualization (Lavanya et al., 2023). A potential enhancement area is the provision of context. For instance, the graph showcasing “Yearly Income by Total Children” indicates a nuanced correlation between income and family size. However, without supplementary narratives or annotations, the underlying factors remain speculative. If the objective is broad trend recognition, the "BBE Analysis" dashboard excels. However, for a more granular analysis, actionable insights derived from the depicted trends would accentuate its value proposition.

The special point when using Qlik Sense is the convenience in data manipulation, especially in selecting specific data points in any chart and being able to see how they affect the remaining charts through the link of the common data group. The “BBE Analysis” dashboard in Qlik Sense, while encapsulating several quintessential elements of effective data visualization, could be further enhanced by integrating deeper contextual insights, augmented interactivity, and data-driven recommendations.

## Power BI



**Figure 2: BBE Visualization Analysis by using Power BI**

The Power BI-derived "BBE Analysis" dashboard presents an expansive overview of BBE's multifaceted business dynamics, specifically focusing on four key visuals: 'Standard Cost and Price by Sub-category of Product', 'Average of Yearly Income by Degree', 'Sales Amount by Country', and 'Sales Amount and Tax Amount by Order Year'.

Initiating the evaluation with clarity, the Power BI dashboard stands out with its conspicuous detailing. The visual elements, each meticulously labelled and annotated, ensure that the data's crux is immediately discernible. The diverse choice of visualizations including stacked bars, doughnut charts, and line graphs are strategically tailored to represent the inherent nature of each data set, which amplifies comprehension and promotes data interpretability. For relevance, the dashboard's metrics resonate deeply, shedding light on product pricing, demographic income trends, sales distributions, and financial trends over time.

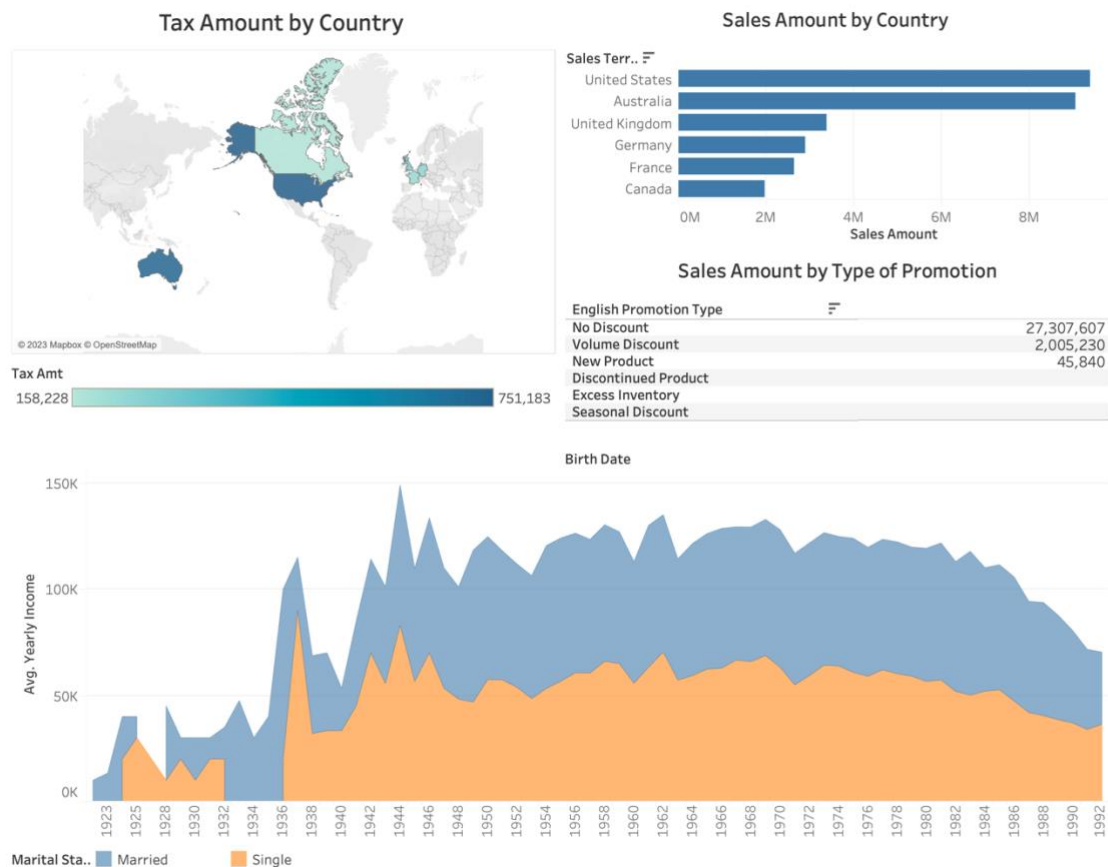
An indispensable facet to consider is data veracity. The efficacy of this dashboard hinges on the robustness of the data sources, ensuring that the visual assertions are backed by genuine insights. From a design perspective, the dashboard's aesthetic is reflective of Power BI's emphasis on crisp visualization, cohesive colour schemes, and structured layout, which echoes the findings by Becker and Gould (2019). Moreover, by taking data from Microsoft Excel, Power BI maximizes the flexibility of use across the Microsoft ecosystem.

A hallmark of modern analytical tools, particularly Power BI, is the emphasis on interactivity. While the provided illustration limits the understanding of its interactive potential, Power BI's inherent capabilities intimate a rich, interactive experience for the end-user. An area that could benefit from augmentation is contextual elaboration. For instance, understanding the declining trend of 'Sales Amount and Tax Amount by Order Year' would benefit immensely from integrated narratives, helping stakeholders grasp the underlying factors.

The "BBE Analysis" dashboard used in Power BI seamlessly amalgamates key tenets of effective data visualization, especially in the Microsoft ecosystem. To elevate its utility, the dashboard could intertwine deeper contextual explanations and spotlight actionable insights, which would bolster its strategic impact.



## Tableau



**Figure 3: BBE Visualization Analysis by using Tableau**

The "BBE Analysis" dashboard developed using Tableau paints a vivid picture of BBE's operational insights across four discerning visual representations: "Tax Amount by Country", "Sales Amount by Country", "Sales Amount by Type of Promotion", and "Average Yearly Income by Marital Status over Birth Years".

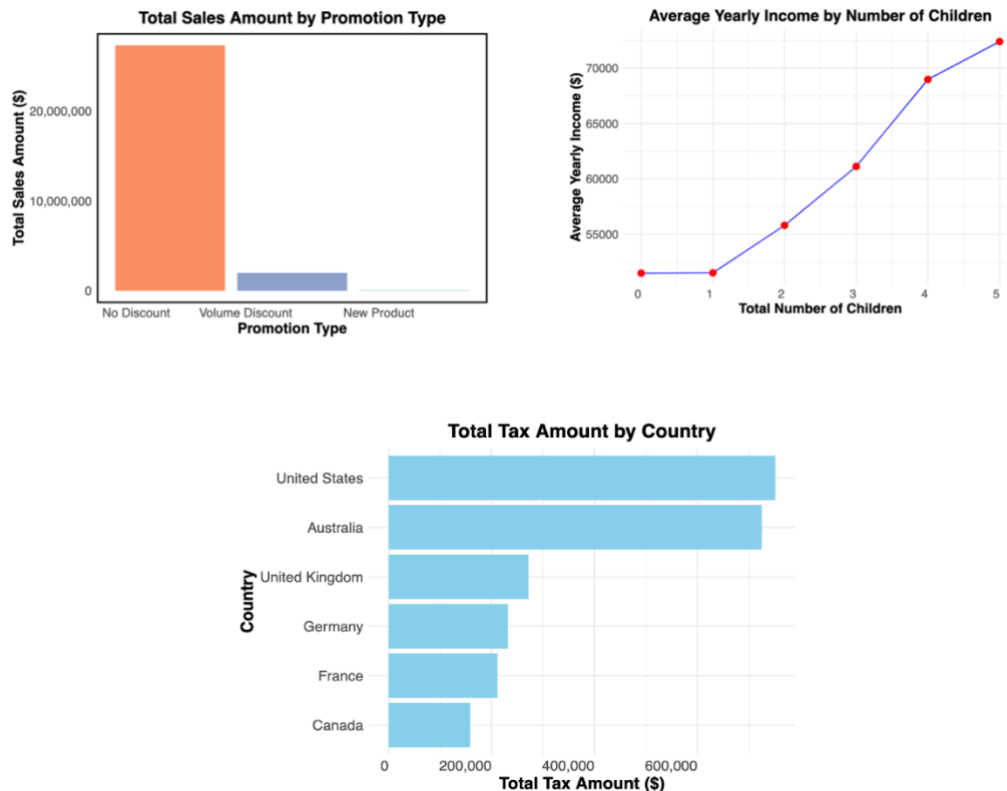
Commencing with clarity, this Tableau dashboard exhibits a marked focus on lucid data representation. Each chart and map are meticulously labelled and detailed, ensuring that viewers can instantly fathom the significance of the data being presented. The deliberate choice of visualizations is a geographical heat map, a bar graph, or a segmented area chart strategically chosen to amplify comprehension and promote intuitive data assimilation. Concerning relevance, given BBE's emphasis on understanding tax distributions, sales trends, promotional impacts, and demographic income patterns, the dashboard's visual metrics resonate strongly with the intended audience's objectives.

However, any discussion on dashboard potency is moot without addressing data integrity. The foundational strength of the data sources and methodologies employed is instrumental in validating the dashboard's assertions. From an aesthetic standpoint, the dashboard exudes a sophisticated design ethos, characterized by its streamlined layout, coordinated colour schemes, and meticulous spacing, echoing sentiments on design paradigms.

Contemporary analytics platforms, Tableau being a prime exemplar, are renowned for their interactive capabilities. Although the furnished screenshot is a static representation, Tableau's native attributes suggest rich interactive potential, especially within the geographical visualization, a facet emphasized by Hoelscher and Mortimer (2018). A potential avenue for enrichment is bolstering contextual insights. For instance, while “Sales Amount by Type of Promotion” provides a quantified breakdown, accompanying narratives elucidating the business implications of these trends would be invaluable.

The "BBE Analysis" dashboard created by Tableau encompasses several benchmarks of competent data visualization. However, by intertwining deeper contextual narratives, enhancing interactivity, and elucidating actionable strategies, its applicability could be substantially augmented.

## In-house Development (R)



**Figure 4: BBE Visualization Analysis by using R**

The visual representation provided has been sculpted through in-house development, leveraging the robust capabilities of the R programming language. The primary foci of these visualizations encompass “Total Sales Amount by Promotion Type”, “Average Yearly Income by Number of Children”, and “Total Tax Amount by Country”.

Compared to other platforms, visualizing data on R yields simple charts. Each data representation, be it bar graphs or line charts, ensures an unambiguous, intuitive user journey. The visualizations are direct and cater effectively to the analytical imperative:

uncomplicated data understanding. A distinct advantage of R visualizations, particularly evident here, is the absence of extraneous elements, pushing the data to the forefront.

Relevance remains a central benchmark. Each visualization choice seems surgically selected to correspond with the underlying data's nuance. The bar graph for “Sales Amount by Promotion Type”, for instance, offers an uncluttered overview of the dominating promotion strategy. Similarly, the upward trajectory in the 'Average Yearly Income by Number of Children' line chart offers intriguing insights. For these visuals to retain their impact, the sanctity of the data source and its processing in R remains non-negotiable.

From a design standpoint, R's minimalist aesthetic is evident. The colours, scaling, and layout choices strike a balance between sophistication and simplicity, resonating with observations. While the potential for interactivity is not overtly showcased, R's Shiny package could amplify this dashboard's dynamic aspects.

However, in-house R visualizations could benefit from more extensive contextual narratives. For example, understanding the causal relationship between the number of children and yearly income would be enriched with integrated explanations or supplementary data. Such narratives would bridge the gap between data representation and interpretation ( Ihaka & Gentleman, 1996).

The in-house R visualization showcases the language's capacity to produce insightful, unembellished visuals. However, visualizing in R takes a long time to manually select and process data and can cause overlaps in data and graphs. For an enhanced user experience, the melding of interactivity and context, underpinned by a rigorous data foundation, is indispensable.

## **Recommendation**

After exhaustive analysis and comparison of the four data visualization platforms: Qlik Sense, Tableau, Power BI, and R, it is evident that each tool brings forth unique capabilities and strengths. However, for the specified requirements and objectives, Qlik Sense and Power BI are superior. These platforms have showcased exceptional capabilities across key evaluation dimensions, from data clarity and aesthetic sophistication to user interactivity and data source integration.

Qlik Sense stands out for its drag-and-drop functionalities, making it extremely user-friendly and suitable for both novice and experienced users. Its highly customizable capabilities allow businesses to tailor dashboards to specific needs. Furthermore, Qlik Sense's seamless integration with multiple data sources is indispensable in today's data-rich business environment. The scalability it offers ensures that as a business grows and its data visualization needs become more complex, Qlik Sense can meet those evolving requirements. In terms of cost, its pricing model is competitive, making it an affordable solution without compromising on features. Additionally, Qlik Sense's robust security features and extensive training resources further tilt the balance in its favour.

On the other hand, Power BI is also commendable. It presents a visually appealing interface and provides superior data representation. Its integration with Microsoft's suite of products gives it an edge, especially for businesses entrenched in the Microsoft ecosystem. However, when placed next to Qlik Sense, certain functional and aesthetic nuances make Qlik the more favourable choice.

Based on detailed analysis, it is recommended to use Qlik Sense as the primary data visualization platform. This proposition is based on comprehensive features, user experience, and scalability, making it a great investment for long-term data visualization and business intelligence needs.

## Conclusion

In today's data-driven landscape, choosing the right data visualization platform is paramount. Through this assignment, we have journeyed across four diverse platforms, each with its inherent strengths and limitations. From the versatile drag-and-drop functionalities of Qlik Sense to the minimalist yet powerful visuals of in-house R development, the landscape of data visualization tools is vast and varied.

While each platform has its merits, Qlik Sense emerged as the most balanced and comprehensive tool for the task at hand. Its amalgamation of user-friendliness, customizability, and robustness positions it as a premier choice for businesses seeking actionable insights from their data. Power BI, with its robust feature set, closely followed Qlik Sense, with Tableau and R catering to niche requirements.

In conclusion, the heart of effective data visualization lies in translating complex datasets into clear, actionable insights. The tools we choose play a pivotal role in this report. Through a careful analysis of requirements, features, and long-term goals, businesses can make informed choices that not only address current needs but also pave the way for future growth.

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