| **RESEARCH ARTICLE**

The Role of Data Visualization in Modern Intelligence

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| **ABSTRACT**

Data visualization is a growing tool for so many applications in different industries that it can be applied to have. Data visualization, in simple terms, brings the picture from the many words, which makes it easier with the rise of big data influencing everything. Being able to handle the various types of big data that can be sourced in this era of data, it becomes a good idea to have data visualization to make everything easier for use in terms of sifting and handling the large volumes of data sourced.

1. Introduction

Data visualization can be said to be a tool within business intelligence as it would offer more options in terms of capability for advanced analytics to take that next step to make everything better. It takes advantage of visual understanding to make everything work for analyzing data and ultimately making the right decision (Shao et al., 2022).

Learning about data visualization as integrated within the other business intelligence tools would make everything work in making sense of all the data as visual understanding becomes easier than just words and speaking for most people to comprehend.

Data visualizations are common and so many applications that they bring which exists in modern intelligence contexts. The paper is detailed about the role of data visualization with the impact that it would have in intelligence.

2. Data Visualization Role in Modern Business Intelligence For Effective Decision-Making

Business intelligence starts from the collection of data and making better use of data to work within the actionable information to show how a better decision-making process can be induced in an organization with better ways of making sure that objectives are met. Business intelligence alone would work hard in terms of offering a better understanding of data, which is important when it comes to showing that the information can work to the extended value that data visualization can ultimately offer to an organization based on how these tools can be integrated (Munagandla et al., 2022).

Visualization in this context starts with the transformation of data when collected to make sure that the data is represented in the best possible ways, given that decisions are made from data, which makes the role of data visualization so important to have within an organization. It all stems from enabling an understanding of data based on business metrics and performance to show how decisions can be made at the best possible terms and that the full potential of data is realized to make the best decisions better. Its role is so undoubted with the rise of big data, which can make a mess of how business intelligence is growing but makes the best of use of available data (Phillips-Wren et al., 2021).

For business intelligence to thrive, there should be more emphasis on visualization reporting, which can make it easier to show how data visualization can be the better thing to increase business intelligence capabilities. Using performance indicators makes it easier to interact with the business needs, metrics, and deliverables that are needed in order to make the right decisions to show what is required to make data visualization a success as business intelligence would greatly appreciate the use of data visualization in knowing what would work in order to make the best steps.

3. Data Visualization Types That Are In BI Tools

Making use of data visualization starts with understanding the forms of data visualization to work in terms of visualizing complex data sets. That starts with making sure that data visualization works to what is required, along with showing how data can be represented. Selecting the right tools in the said context is so important in terms of making that data analysis work and showing how data can work with respect to business intelligence capabilities.

1. A bar chart is one of the most suitable forms of data visualization that offers a comparison of business metrics or even products to what is required to be a function and necessity. It can also include a comparison of different times or sales that a business would work to meet the business metrics (Maaitah, 2023).
2. An area chart can also work in terms of business intelligence to show markets or sales over time regions, or even prediction means to what can work or would be a problem to handle and what next decisions would entail.

4. Role of Visualization in Business Intelligence for Better Decision-making

1. Data visualization starts with enhancing the different data analysis capabilities of business intelligence tools. Unlocking the full details of data makes the best use of visual representations, which would be a good addition to have. It would make it easier for business decision-makers to use this data to optimize business metrics and improve decisions from the data. When managers make this step in terms of pinpointing different areas that require data emphasis, it makes the best steps to handling different areas faster and easier.
2. With data visualization, it simplifies different forms of complex data. It all makes good use of complicated data types that would have been a big problem for business decision-makers to make use of data. Visualization comes into this situation to extract the different forms of deeper insights within the big data sets that are complicated, then makes steps to show the different patterns or anomalies within the data, which can analyze large forms of data to be handled in the best possible ways. This capability adds relevance that it would add from large data sets to make sure that better decisions are made, including improving data literacy from sourced forms.
3. Data visualization offers more exploration of different data types; this adds more ways of offering advanced data analytics for better decisions. Sometimes, data can come from different forms of data based on parameters that are different, which makes a huge case in terms of improving experience with this form of data, which can add a new layer of understanding as data can make sense with data visualization. A deeper analysis of data would work, so it is easier to make sure that every data sourced is verified and analyzed to make better use of it.
4. Without effective data visualization, real-time monitoring of the data that comes in would be a big issue to handle and make use of. Visualization can offer more functionalities in terms of ways to handle and measure the real-time data updates that are happening to make sure that actions and decisions can be made in real-time, enabling the proactiveness of the decision to influence where they are needed. Real-time monitoring is an effective way of making decisions in that time to influence everything else.
5. Visualization would offer more ways of making use of opportunities and risks that can creep up within the different forms of data if data visualization was not the tool used. Being able to jump on this data is an effective way of pushing data to be a key addition to handling what would happen in an organization, starting with proactive decision-making. Data visualization would also add to the risk management abilities when it comes to seeing various risks and threats that can arise at any moment.
6. Business data visualization would add everything down with predictive analysis. With proactive data visualization options on big data when collecting the real-time sourcing of data, it adds more capabilities of visualization to help in decisions in terms of trends and historical data to push for predictive analytics. This would add everything to work down with anticipation of what is happening in different markets, which would form active decisions as to what is needed to work.

5. Examples Of Data Visualization For Better Decisions In Business Intelligence

1. Dashboard analytics is a good example of how data visualization works in terms of business intelligence. Dashboard analytics offers insights and an overview of how data visualization is being added to analyze how decisions could be made with the representation of different data types to make everything functional and make real-time decisions as to what is happening at the time.

2. Another one would be heat maps. Heat maps are a powerful tool that can be applied to analyze and visualize large data sets, which is a good step for business intelligence. Heat maps can offer data on market segmentation and even customer behavior, which can add more ways to make better decisions about what is happening on the ground.

6. Conclusion

In order for data visualization to be an effective method within business intelligence, it starts with choosing the right data visualization tool to make sure that it is effective in what it is required to meet. With statistics on the importance that data visualization would offer, more than 90% percent of all information transmitted to the brain is visual; the role of data visualization would be a good option in terms of handling the big data age, which is here (Aldoseri et al., 2023).

More data is now formatted to meet data visualization options; it adds more options to understand and leverage data visualization for business decision-makers to do their part to make sure that BI is improved and better for effective decision-making. Ultimately, data visualization adds more functionality to business intelligence to make the best decisions for a business setting. Data presented visually is a good approach to making data effective to use and improve communication, which can add to its role in making informed decisions (Hosen et al., 2024).

Conflicts of Interest: The authors declare no conflict of interest.
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