RESEARCH ARTICLE   **Open Access**

Data Visualization of Kemplang Sales Using Looker Studio at Arion Souvenir Shop

Yuda Restu Fauzi *

Informatics Engineering Study Program, Faculty of Business Technology and Science, Universitas Dharma Wacana, Metro City, Lampung Province, Indonesia.
Corresponding Email: yudarestu013@gmail.com.

Budi Sutomo

Informatics Engineering Study Program, Faculty of Business Technology and Science, Universitas Dharma Wacana, Metro City, Lampung Province, Indonesia.
Email: budi.atmel@gmail.com.

Abstract: Arion Souvenir Shop, located in Metro City, offers grilled kemplang snacks, a traditional Indonesian delicacy. The shop encounters several challenges, including the difficulty in revealing actual monthly sales trends, identifying the most popular kemplang variants, and detecting the annual sales cycle. Grilled kemplang is available in three variants: jumbo, medium, and small. To address these challenges, this study visualizes kemplang sales data for the years 2022–2024 using Google Looker Studio. The visualization includes various graphical formats such as bar charts, pie charts, pivot tables, and line charts. The results of the analysis show that sales were consistently highest in January across the three years, indicating a strong seasonal trend. Additionally, the small kemplang variant emerged as the most popular choice, consistently outperforming the other variants in monthly sales. The study also observed a slight decline in overall sales over the three-year period. This research contributes significantly to the analysis of local product sales data by leveraging Looker Studio for interactive trend visualization. It provides practical recommendations for local business owners and empirical evidence on the application of data visualization tools in strategic decision-making. The insights gained from this study can help businesses optimize their sales strategies, improve inventory management, and enhance customer engagement.

Keywords: Arion Souvenir Shop; Looker Studio; Data Visualization; Kemplang Sales Data; Dashboard.

1. Introduction

Metro City, located in the Lampung Province of Indonesia, is an urban area undergoing significant development in various sectors. As the second-largest city in the province after Bandar Lampung, it holds economic and cultural importance. Officially recognized as a city under Law Number 12 of 1999, Metro City has become a well-known culinary destination, attracting tourists from different regions. One of its unique products is roasted kemplang, a traditional snack that has become a popular choice among visitors. The stable influx of tourists in the region underscores the high potential for kemplang sales as a souvenir item [1][2]. Roasted kemplang is produced in three sizes—jumbo, medium, and small—and enjoys considerable demand due to its association with local heritage. Despite its market potential, sellers face challenges in understanding monthly sales patterns and identifying the most preferred product variants. These obstacles hinder strategic decision-making, particularly in optimizing sales and addressing seasonal fluctuations. As such, an effective data analysis method is necessary to evaluate trends and provide actionable insights for improving sales performance [3][4].

Advancements in data visualization tools, such as Google Looker Studio, have facilitated the process of transforming raw sales data into visual formats that are easier to interpret. Looker Studio is widely recognized for its versatility in analyzing and presenting data from various fields. Past applications include analyzing seasonal trends in commodity prices [5], visualizing student enrollment data [6], and enhancing retail marketing strategies [7]. The application of Looker Studio in the retail context has been particularly effective for identifying trends, optimizing operations, and informing strategic decisions [8]. However, its use for analyzing the sales performance of local products, such as roasted kemplang, remains relatively unexplored.

The Arion Souvenir Shop in Metro City serves as a practical example for analyzing sales trends. This shop has faced challenges in tracking sales performance across months and understanding customer preferences for different product variants. The use of data visualization tools such as Looker Studio offers a solution by enabling businesses to analyze sales patterns and seasonal trends. This approach is expected to provide a clearer understanding of consumer behavior and facilitate improvements in operational strategies [9][10]. The objective of this study is to evaluate sales data from 2022 to 2024 to identify monthly trends, product preferences, and sales dynamics at the Arion Souvenir Shop. The analysis focuses on providing tools that support strategic decisions for improving sales. By visualizing the data through Looker Studio, stakeholders can identify patterns and make data-driven decisions more effectively. The analysis also serves as a resource for business owners seeking to align their strategies with consumer demands while addressing inefficiencies in their sales approach [11][12].

The data used in this research was collected from official transaction records at Arion Souvenir Shop. The period of analysis (2022–2024) ensures the use of up-to-date and relevant information. Data cleaning processes, including the removal of incomplete or anomalous entries, were applied to enhance accuracy. The cleaned data, comprising monthly sales figures and product variant details, was formatted into a structured dataset for visualization using Looker Studio [13]. This research demonstrates how businesses can optimize their sales performance by adopting modern data visualization tools. By leveraging Looker Studio, it becomes possible to monitor seasonal trends, track the popularity of specific products, and address operational inefficiencies. For example, identifying peak sales months and preferred product variants allows businesses to target their marketing efforts and adjust production levels accordingly. The analysis conducted in this study highlights the potential for data visualization to support decision-making processes, particularly for small and medium-sized enterprises [14][15]. The study examines sales data from 2022 to 2024 to address operational challenges faced by the Arion Souvenir Shop. The approach utilizes Looker Studio for data visualization, which offers practical insights for optimizing sales. The outcomes are expected to assist not only the Arion Souvenir Shop but also other businesses in similar contexts in achieving better sales performance and customer alignment.

2. Related Work

Data visualization tools have been widely applied across various domains, demonstrating their effectiveness in simplifying data analysis, supporting decision-making, and improving operational efficiency. Fitri Ariani *et al.* (2024) analyzed seasonal trends in commodity prices using Looker Studio, highlighting that visualization tools can simplify complex data sets, enabling stakeholders to identify patterns and make informed decisions effectively. These findings underscore the role of visualization in improving market forecasting and resource allocation [1]. Similarly, Rika Widianita (2023) utilized Looker Studio to visualize new student enrollment data, demonstrating its ability to present educational data to facilitate institutional planning and strategy development [6].

Perdana *et al.* (2024) applied Looker Studio to analyze fixed asset data for a private company, revealing how visualization tools can enhance operational efficiency by providing clear insights into resource utilization and management [3]. This aligns with the current study's approach of using Looker Studio to monitor kemplang sales and gain actionable business insights. Putri and Vaoutama (2024) highlighted the utility of Looker Studio in a retail environment, especially for small and medium enterprises (SMEs). They demonstrated how visualization tools can help identify peak sales periods, understand consumer preferences, and optimize marketing strategies, thereby improving decision-making in the retail industry [5]. Irmayani (2021) combined data mining classification techniques with visualization tools to interpret customer behavior and present data in an easily accessible format, particularly for businesses aiming to optimize sales and engage customers effectively [2]. Additionally, Yanto *et al.* (2023) explored the use of Looker Studio in analyzing waste production volumes, showcasing its adaptability to a variety of datasets and operational needs [14].

Looker Studio has also been applied in environmental and social research. Refianti (2024) used it to visualize climate patterns in Indonesia, highlighting the tool's flexibility in combining Python with a dashboard for environmental data analysis [16]. Similarly, Goncharov (2024) utilized Looker Studio to visualize inclusivity index data, demonstrating its applicability in social impact studies [18]. The flexibility of Looker Studio is further illustrated by Sukmo and Ghani (2024), who developed an Android-based system that integrates Looker Studio for waste bank management. This study emphasizes the role of visualization in creating an intuitive user interface for operational systems [10]. Dutra (2024) explored its application in environmental data analysis for research management, underlining its adaptability across sectors [11]. Padmamma and M. (2023) used Looker Studio to visualize e-journal collections in libraries for data-driven library management [12]. This was further applied by Puspa *et al.* (2024), who highlighted the usefulness of Looker Studio in training programs for data literacy and digital skills, further confirming its value in education and capacity building [13]. From a performance management perspective, Florencondia *et al.* (2024) applied Looker Studio to improve the Key Performance Indicator (KPI) system in an offshore team, demonstrating its effectiveness in enhancing operational metrics and transparency [15]. Oktafialfa and Wahyu (2024) used it for business intelligence in pharmaceutical sales, combining exploratory data analysis with visualization to support sales strategies [19], as well as in inventory information systems [20].

These findings are consistent with previous studies that emphasize the flexibility of Looker Studio in analyzing trends and supporting decision-making. For instance, Fitri Ariani *et al.* (2024) noted that Looker Studio simplifies data visualization, allowing users to identify seasonal trends and optimize resource allocation [1]. This is in line with the identification of peak kemplang sales during January in the current study, which illustrates the potential of Looker Studio to identify critical time frames for business optimization. Similarly, Perdana *et al.* (2024) highlighted the use of Looker Studio in improving operational efficiency, particularly through its ability to visualize fixed asset utilization [3]. Putri and Vaoutama (2024) emphasized the relevance of Looker Studio in retail, showing how it can be used to understand customer preferences and refine marketing strategies [5]. While many previous studies have focused on broader applications of Looker Studio, such as environmental research (Refianti, 2024; Goncharov, 2024) [16][18], this study narrows its scope to small business operations, specifically analyzing kemplang sales data. In contrast to studies such as Yanto *et al.* (2023), which applied Looker Studio to waste production analysis [14], this study emphasizes the importance of understanding consumer behavior and optimizing seasonal sales. Additionally, the focus on local products (roasted kemplang) and their variants provides a unique perspective compared to other studies that apply Looker Studio to institutional data (Widianita, 2023) or environmental data [6]. Refianti (2024) visualized climate data but did not discuss consumer behavior or retail strategies, thus differentiating the objectives of this study [16].

The main similarity between the studies is the shared conclusion that Looker Studio facilitates decision-making through intuitive data visualization. However, the different focus on small business sales trends and product-specific analysis in this study provides new insights in this area. Identifying peak sales periods (January) and the most popular variants (small kemplang) offers actionable strategies to optimize operations and marketing. The results of this study build on existing literature by applying Looker Studio in a unique case—analyzing sales trends of a specific local product. Similar to other studies, this study confirms the efficacy of data visualization in identifying trends and supporting decision-making. However, its focus on consumer preferences, seasonal variations, and product-specific strategies sets it apart from broader applications in environmental and institutional data. Thus, Looker Studio can be used to support small businesses, and the results can be utilized by the Arion Souvenir Shop to refine its strategy, align with consumer demand, optimize resource allocation during high-demand months, and improve product offerings.

3. Research Method

3.1 Looker Studio Tool

This study uses Looker Studio to provide concise, detailed, and clear insights into kemplang sales data. Data visualization using Looker Studio allows business owners to easily understand sales trends, ensuring accuracy and effectiveness in decision making. This tool is very useful for identifying seasonal patterns and supporting strategic decisions for Arion Souvenir Shop. To achieve the research objectives, data was collected from relevant sources covering the years 2019 to 2024. The research framework for using Looker Studio is composed of the stages of Integrating sales data into a format compatible with Looker Studio, Cleaning data to ensure accuracy and reliability in analysis, creating visualizations that include bar charts, pie charts, pivot tables, and line charts. The process of compiling the Looker Studio Tool research framework is followed by the following steps
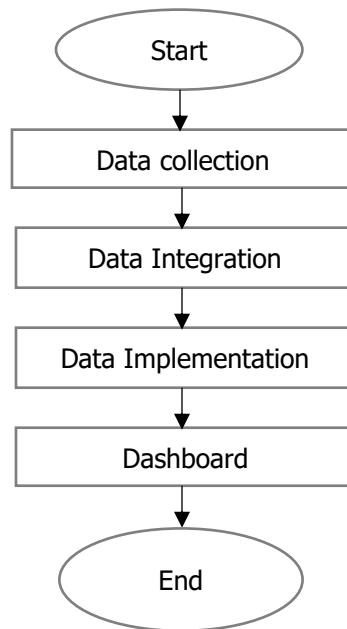
Figure 1. Looker Studio Tool Research Framework Development Process

3.2 Data Collection

The validity of the data used in this study is ensured by sourcing official sales records from the management system of the Arion Souvenir Shop. Data reliability was verified by cross-checking daily transaction records with monthly reports. The time frame of 2022–2024 was selected as it includes the most recent and relevant data for analyzing seasonal and yearly sales trends. Incomplete or anomalous data entries were removed during the data cleaning process to maintain accuracy. The dataset includes three main columns: (1) month, (2) kemplang variants, and (3) total sales. This structure supports the analysis of sales trends, enabling the identification of peak sales periods, preferred product variants, and overall sales performance. These findings serve as a foundation for strategic decision-making by the business owner.

3.3 Data Integration

Make a table about data or information on kemplang sales with columns consisting of month, kemplang variants and total number of kemplang. And save the file using CSV so that it can be connected to looker studio and the data is clean. Then open gmail and select the bar in the upper right corner and select google spreadsheet then upload your CSV file to google spreadsheet, and when your google spreadsheet has been saved, then select upload and select connect and after that click create report and your data appears and your data is connected to looker studio then you can start to create graphs in looker studio.

3.4 Data Implementation

Data implementation includes development visualization, model analysis, and reporting based on insights gained through data analysis. This step aims to create a visual representation of sales trends in formats such as bar charts, pie charts, pivot tables, and line charts. Visualizations are designed to ensure visibility and accessibility, so that technical and non-technical users can interpret the results effectively.
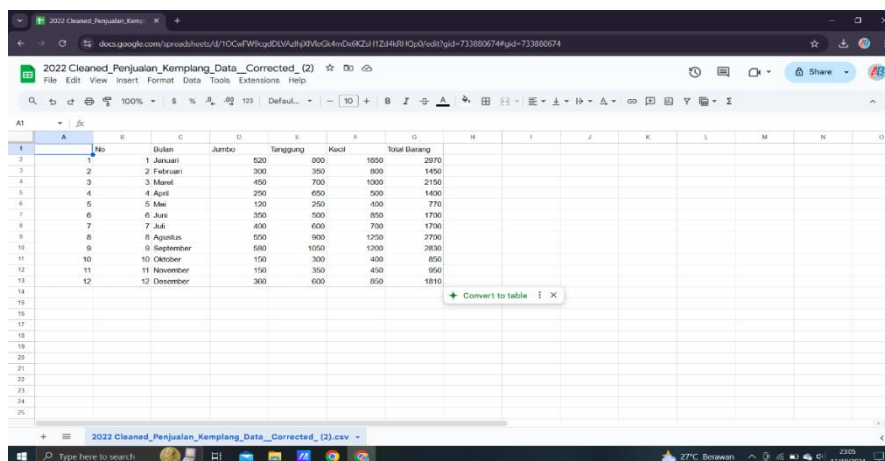
3.5 Dashboard

The dashboard created in this study serves as an information system application that summarizes sales performance through visual graphics. Key components of the dashboard include widgets displaying bar charts, pie charts, pivot tables, and line charts. These visualizations enable business owners to understand sales trends without requiring advanced technical expertise. The dashboard provides a comprehensive view of monthly sales patterns, product variant preferences, and total sales figures. By using this tool, business owners can make informed decisions to optimize operational efficiency and marketing strategies.

4. Result and Discussion

4.1 Results

4.1.1 Data Processing Stages

The data processing stage began with the dataset in Excel format. The data was cleaned by removing unnecessary components to focus on the primary objectives: identifying monthly sales trends, analyzing the most popular kemplang variants, and determining the total sales volume for 2022–2024. The dataset consists of 13 rows and 5 columns, including information on months, kemplang variants, and total sales figures. After cleaning, the data was uploaded to Google Spreadsheets for further integration into Looker Studio.

Figure 2. Upload Excel to Google Spreadsheets

Figure 2 shows the process of uploading an Excel file to Google Spreadsheets. The dataset is then saved in Google Spreadsheets format, to ensure compatibility with Looker Studio. This structured dataset serves as the source for creating the dashboard.

4.1.2 Data Execution Stages

The data execution phase was carried out using Google Looker Studio to generate visualizations of the kemplang sales data. This phase involved several systematic steps to ensure accurate integration and effective representation of the data in visual formats. The process begins with accessing the Google Looker Studio platform, which features an initial interface displaying menus such as "Report," "Data Source," and "Explore," as shown in Figure 3. These options provide users with tools for managing and visualizing data. The first step was to select the "Create" menu and click on "Data Source" to initiate the creation of a new report. This action opens a workspace where the necessary settings and configurations for data visualization can be prepared, as depicted in Figure 4.
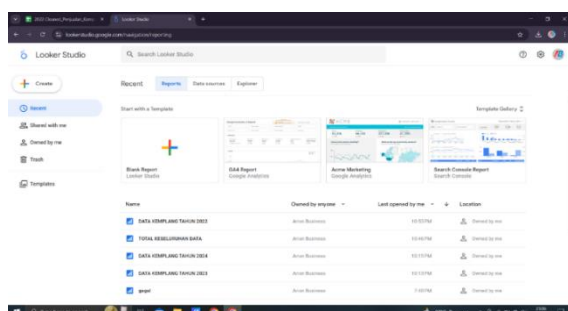

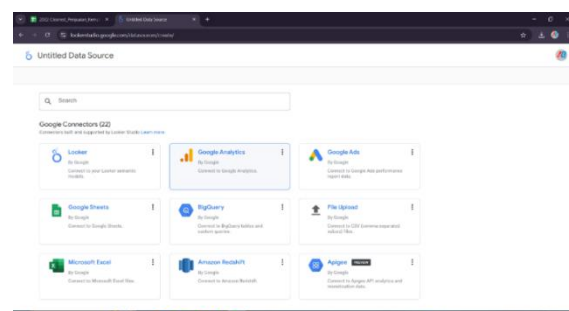Figure 3. Initial View of Google Looker Studio

Figure 4. Data Addition View

The next step involved connecting the data to Google Looker Studio. The sales data, initially organized in Excel format, was converted into Google Spreadsheets to ensure compatibility with Looker Studio. The converted file was saved on Google Drive, making it easily accessible. Users then selected the relevant Google Sheets file and clicked "Connect" to establish a link between the data source and Looker Studio, as shown in Gambar 5. This connection process ensured seamless integration of the dataset into Looker Studio. Once the connection was successful, the "Create Report" option was selected, generating a new report page where the data could be visualized, as illustrated in Gambar 6. This step allowed for customization of the visualizations to suit the research objectives. The successful execution of these steps ensured that the dataset was ready for further analysis and visualization within Google Looker Studio. Through this methodical process, the foundation for creating clear and actionable visual insights was established, supporting the goals of the research.
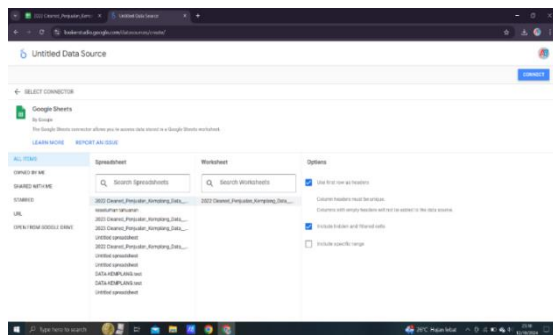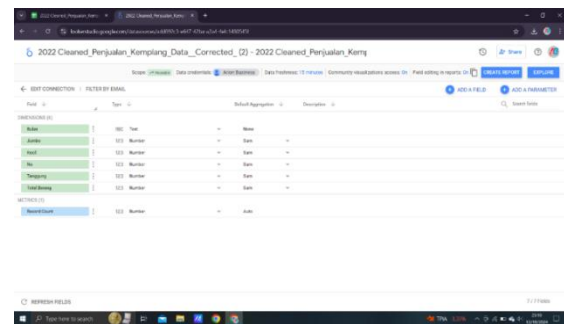

Figure 5. File Selection View

Figure 6. Display After Connect Appears Edit Connection

4.1.3 Visualization of Kemplang Sales Data

The visualization of kemplang sales data from 2022 to 2024 was conducted using a dashboard created with Google Looker Studio. The dashboard provided clear and interactive visual representations of sales data through various graphical formats, including bar charts, pie charts, pivot tables, and line charts. These visual tools were designed to facilitate an in-depth understanding of sales trends, product preferences, and seasonal patterns.

1) Monthly Sales Trend Diagram

The bar chart feature in Looker Studio is used to depict monthly sales trends from 2022 to 2024. By selecting "Add Chart" and configuring "Month" as the dimension and "Total Sales" as the metric, the data is sorted by date to reveal patterns over time. Figure 7, Figure 8, and Figure 9 show sales trends for 2022, 2023, and 2024. The visualization starts from January as the peak month for kemplang sales in all three years, indicating a recurring seasonal trend.
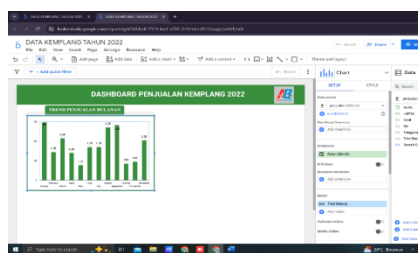

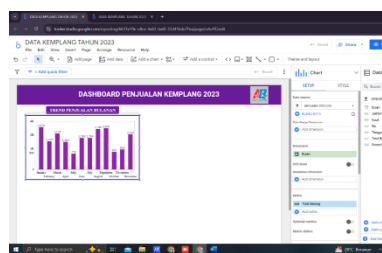Figure 7. Monthly Sales Pattern Trend Diagram for 2022

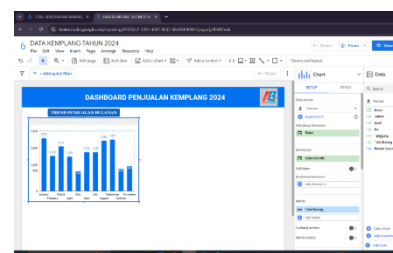Figure 8. Monthly Sales Pattern Trend Diagram for 2023

Figure 9. Monthly Sales Pattern Trend Diagram for 2024

For January 2022, sales data shows: Jumbo Kemplang 520 pcs, Medium Kemplang 800 pcs, and Small Kemplang 1,650 pcs. Total sales in January 2022 reached 2,970 pcs. This trend is in line with the increase in seasonal demand that usually occurs after the year-end holidays. A similar pattern was also seen in January 2023 and 2024, emphasizing the importance of capitalizing on this seasonal spike through targeted marketing strategies.

2) Most Popular Kemplang Variant Diagram

A line chart is used to analyze the popularity of different kemplang variants over the analyzed period. The chart is created by setting "Month" as the dimension and including metrics for the sales volume of jumbo, medium, and small variants. The results are illustrated in Figure 10, Figure 11, and Figure 12 for the years 2022, 2023, and 2024, respectively.
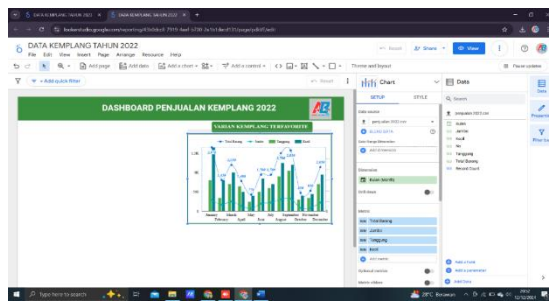
Figure 10. Diagram of the Most Favorite
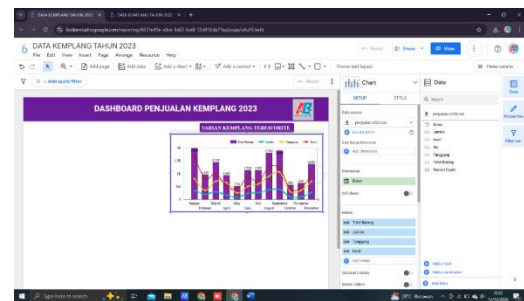Kemplang Variants in 2022

Figure 11. Diagram of the Most Favorite
Kemplang Variants in 2023

The visualization in Figure 10 shows that the most favorite kemplang variant in 2022 is the small kemplang variant with a total sale in 2022 of 10,050 pcs. Because the price is more economical, it can be used as a souvenir. The visualization in Figure 11 shows that the most favorite kemplang variant in 2023 is the small kemplang variant with a total sale in 2023 of 10,150 pcs. Because the price is more economical, it can be used as a souvenir.
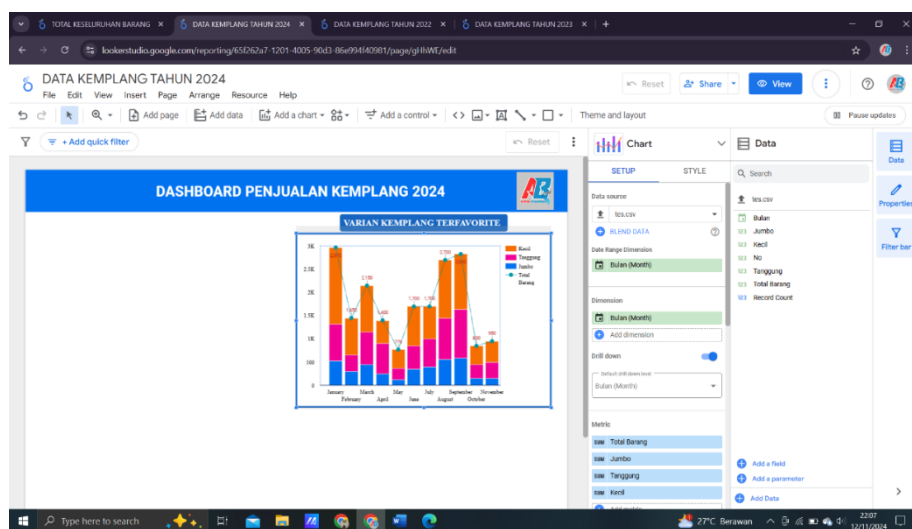

Figure 12. Diagram of the Most Favorite Kemplang Variants in 2024

Visualization in Figure 12 shows that the most favorite kemplang variant in 2024 is the small kemplang variant with a total sale in 2024 of 9,200 pcs. Because the price is more economical, it can be used as a souvenir. The results reveal that small kemplang consistently emerged as the most preferred variant over the three years. The total sales for the small kemplang variant were 10,050 pcs in 2022, 10,150 pcs in 2023, and 9,200 pcs in 2024. The affordability of the small variant makes it an attractive choice for consumers, especially as a gift option. This insight highlights the need for businesses to focus on optimizing production and marketing efforts for this variant.

3) Table Diagram for Kemplang Sales
The table diagram was created using a pivot table in Google Looker Studio, offering a detailed representation of kemplang sales data across different months and product variants. This visualization method provides granular insights into monthly sales trends, variant-specific performance, and total sales volumes over the analyzed years. To generate the pivot table, users start by selecting "Add Chart" in the Looker Studio menu and choosing the pivot table option. The configuration involved setting "Month" as the row dimension under "Date Range," while the metrics included total sales and the sales figures for each kemplang variant: jumbo, medium, and small. The table was then sorted by the "Month" dimension to maintain chronological order and facilitate trend analysis.
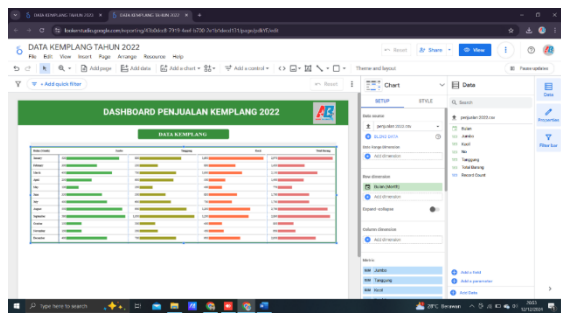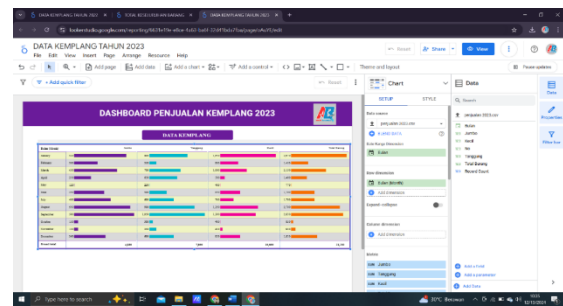
Figure 13. Kemplang Data Diagram for 2022

Figure 14. Kemplang data diagram for 2023

As shown in Figure 13, the pivot table for 2022 illustrates the distribution of monthly sales, breaking down the data by variant. This format allows users to identify not only the total sales per month but also the specific contribution of each variant. For example, the small kemplang consistently accounts for the majority of sales due to its affordability and popularity as a souvenir item. Figure 14 presents the pivot table for 2023, maintaining a similar structure. The table highlights both the consistency and fluctuations in sales volumes across the months. Observing changes in variant performance helps pinpoint periods where demand for certain variants may have shifted, guiding inventory adjustments and targeted marketing.
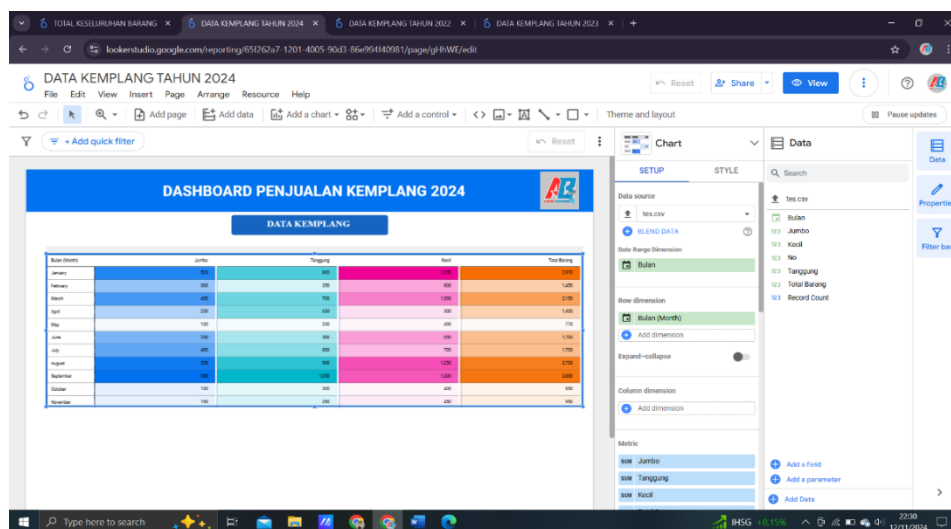

Figure 15. Kemplang Data Diagram for 2024

Figure 15 displays the pivot table for 2024, providing a continuation of the trend analysis. This data reveals patterns in total sales, monthly performance, and variant-specific demand, offering actionable insights into sales dynamics as consumer preferences and economic conditions evolve. The table chart is used to provide an overview of kemplang sales over the years. It facilitates comparisons between months and variants, helping stakeholders make informed decisions regarding production planning, inventory management, and marketing strategies. The ability to visualize and analyze data at this level of detail ensures that businesses can effectively respond to emerging trends and optimize their operations for sustainable growth.

4) Kemplang Sales Dashboard
The kemplang sales dashboard provides a visual representation of sales data from 2022 to 2024 through various graphical formats such as bar charts, pie charts, pivot tables, and line charts. This dashboard allows users to quickly and intuitively grasp key sales information, offering a clear overview of trends and performance metrics. The dashboard's design ensures that stakeholders, including non-technical users, can easily interpret the data to inform business decisions.

Figure 16. Kemplang Sales Dashboard 2022

As shown in Figure 16, the 2022 dashboard provides a comprehensive overview of kemplang sales performance this year. It includes monthly sales patterns, sales distribution by variant, and overall total sales. The dashboard link provides direct access for further exploration and real-time updates. The dashboard for viewing live can be accessed via the following link https://lookerstudio.google.com/reporting/43b0dcc8-7919-4eef-b700-2e1b1decd131/page/pdkYE/edit.

Figure 17. Kemplang Sales Dashboard in 2023

Figure 17 illustrates the dashboard for 2023, which follows a similar structure to that of 2022. It highlights shifts in sales patterns and product performance, providing valuable insights into any changes in consumer preferences or external factors affecting sales. The dashboard for viewing live can be accessed via the following link https://lookerstudio.google.com/reporting/6631e19e-e8ce-4a63-ba6f-32d41bda7fba/page/oAuYE/edit
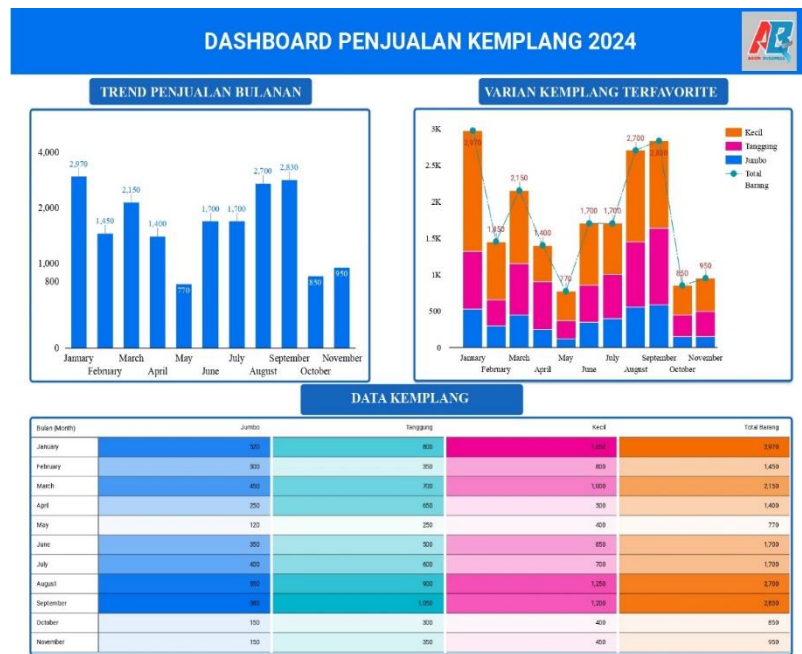
Figure 18. Kemplang Sales Dashboard in 2024

The 2024 dashboard, as seen in Gambar 18, continues to provide detailed insights into sales trends. It reflects evolving market dynamics, including a slight decline in total sales compared to previous years. Users can access the live dashboard for 2024 via the following link https://lookerstudio.google.com/reporting/65f262a7-1201-4005-90d3-86e994f40981/page/gHhWE/edit
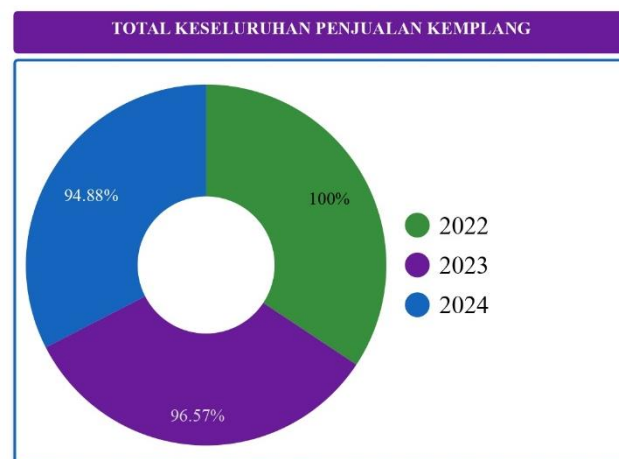

Figure 19. Total Sales of Kemplang from 2022 to 2024

The visualization in Figure 19 is a pie chart of the Total Overall Sales of Kemplang from 2022 to 2024. In 2022 there was 100% with total sales of kemplang reaching 21,520 pcs, for 2023 there was 96.57% with total sales of kemplang reaching 21,280 pcs and in 2024 there was 94.88% with total sales of kemplang reaching 19,470 pcs. The dashboard to see live can be accessed via the following link https://lookerstudio.google.com/reporting/e1c333fa-e8e8-40d7-a769-1a8f6e069577/page/7pvYE/edit.

4.2 Discussion

Analysis of kemplang sales from 2022 to 2024 shows significant patterns and trends that can help in formulating business strategies for Toko Oleh-Oleh Arion. A gradual decline in sales was found, with sales figures dropping from 21,520 pcs in 2022 to 19,470 pcs in 2024. This trend could be due to seasonal variations, changes in consumer preferences, and broader economic conditions. These findings highlight the importance of having the right strategies to overcome these challenges and sustain growth [1][5]. January has consistently been the highest-selling month for the past three years. This peak in sales can be attributed to increased consumer activity following the year-end holiday season. Maintaining this seasonal demand is critical to maximizing revenue. Effective resource allocation, such as ensuring sufficient stock and increasing promotional efforts during this period, can significantly improve performance [2][3]. The small kemplang variant was the most popular choice among consumers during the study period. Its affordability and appeal as a souvenir

made it a consistent best seller. Prioritizing the production and marketing of these variants can result in better sales results. Additionally, expanding product offerings by introducing new flavors or complementary items can attract more customers and stimulate demand [4][6]. A steady decline in sales outside of the January peak indicates an opportunity for improvement. Targeted marketing efforts during the low-selling months can help stabilize performance. Campaigns that include discounts, bundled offers, or loyalty programs can attract new and existing customers. Leveraging digital platforms to reach more customers and increase engagement can also contribute to more consistent sales [7][8]. The Looker Studio dashboard provides valuable insights by visualizing sales data through bar graphs, line graphs, pivot tables, and pie charts. These tools enable trend identification, support decision-making, and operational planning. The accessibility of the dashboard ensures that users with different levels of technical expertise can interpret the data effectively, supporting strategic adjustments in real time [9][10]. By implementing these strategies and leveraging insights from the Looker Studio dashboard, Toko Oleh-Oleh Arion was able to overcome the sales decline and maintain sustainable growth.

5. Conclusion and Recommendations

The research was conducted using Google Looker Studio to visualize kemplang sales data from 2022 to 2024. The results of the study provide a clear picture of sales trends based on time and product variant preferences. The developed dashboard helps Arion Souvenir Shop business owners monitor sales patterns, make it easier to identify increases and decreases in sales, and design more effective marketing strategies. This data-driven solution is an important tool for optimizing business management. Total kemplang sales in 2022 reached 21,520 units, with January recording the highest sales of 2,970 units. The small kemplang variant is the most popular product, with total sales reaching 10,050 units. In 2023, total sales decreased slightly to 21,280 units, while January remained the month with the highest sales, at 2,970 units, and the small kemplang variant remained the main choice with total sales of 10,150 units. In 2024, total sales declined further to 19,470 units, with January still recording the highest sales of 2,970 units, and the small kemplang variant recording sales of 9,200 units. The analysis of the results shows that the small kemplang variant is the main choice of customers for three consecutive years. The decline in total sales from year to year could be due to external factors such as changes in consumer behavior or economic conditions. However, the significant increase in January every year indicates a strategic opportunity to optimize sales. Therefore, business owners are advised to take advantage of this seasonal trend by launching special promotions in January. In addition, adding new variants or supporting products can help attract more customers and increase market share. For the next step, further research can be focused on the influence of external factors on sales, such as tourist visit patterns and changes in economic conditions in the related region. Integration of predictive analytics techniques can provide additional benefits in understanding potential future sales trends. In addition, consider more dynamic visualization methods to improve the quality of the data generated and support more effective business strategies. By implementing these recommendations, Arion Souvenir Shop business owners can be more effective in managing and developing their business.

References

[1] Ariani, F., Aulia, K., & Ahmad Arafat, L. O. (2024). Pengembangan dashboard interaktif menggunakan Looker Studio untuk visualisasi dan prediksi harga komoditas cabe di Jawa Timur. *JATI (Jurnal Mahasiswa Teknik Informatika), 8*(4), 8067–8074. https://doi.org/10.36040/jati.v8i4.10616

[2] Irmayani, W. (2021). Visualisasi data pada data mining menggunakan metode klasifikasi. *Jurnal Khatulistiwa Informatika, IX*(I), 68–72. https://doi.org/10.31294/jki.v9i1.9593

[3] Perdana, C., Usep Abdul Rosid, & Bian Austin Okto. (2024). Visualisasi data aset tidak bergerak menggunakan Looker Studio pada PT XYZ. *Jurnal Informatika, 3*(1), 37–44. https://doi.org/10.57094/ji.v3i1.1607

[4] Pratomo, A., Soedwiwahjono, S., & Miladan, N. (2019). Kualitas taman kota sebagai ruang publik di Kota Surakarta berdasarkan persepsi dan preferensi pengguna. *Desa-Kota, 1*(1), 84–95. https://doi.org/10.20961/desa-kota.v1i1.12494.84-95

[5]   Putri, M., & Vaoutama, A. (2024). Analisis dan visualisasi data untuk meningkatkan penjualan menggunakan exploratory data analysis dan Looker Studio (Studi kasus: Nies Collection). *12*(4), 2654–5101.

[6]   Rika Widianita, D. (2023). Visualisasi data mahasiswa baru tahun 2022 di Institut Agama Islam Negeri Metro menggunakan Google Looker Studio. *AT-TAWASSUTH: Jurnal Ekonomi Islam, VIII*(I), 1–19. https://doi.org/10.32409/jikstik.22.4.3492

[7]   Asher, J., & Rachmawati, E. P. (2024). Visualisasi data operasi SAR BASARNAS di Indonesia menggunakan Google Looker Studio. *Indonesian Journal of Computer Science*. https://doi.org/10.33022/ijcs.v13i2.3672

[8]   Siregar, N. a. A., Citra, N., Nadiah, N. K., Syahputra, N. H., & Rahmadani, N. F. (2024). Optimalisasi dashboard pemesanan makanan online menggunakan Looker dan JavaScript. *Economic Reviews Journal*. https://doi.org/10.56709/mrj.v3i3.322

[9]   Firdaus, R., Tazaroh, N., Surendra, O., Prasetyo, E., & Adriyanto, R. (2024). TIDAL HARMONIC ANALYSIS AND PREDICTION TO SUPPORT EARLY WARNING FOR COASTAL FLOODING. *BULLETIN OF THE MARINE GEOLOGY*. https://doi.org/10.32693/bomg.39.1.2024.863

[10]   Sukmo, G., & Ghani, S. R. W. (2024). Creating Android-based system aiding Tebuireng waste bank management using Looker Studio. *SISTEMASI, 1114*. https://doi.org/10.32520/stmsi.v13i3.3960

[11]   Dutra, R. D. (2024). Penerapan alat Google Looker Studio untuk menganalisis dan memvisualisasikan data dari sistem manajemen penelitian lingkungan. *Derbyana, 45*. https://doi.org/10.69469/derb.v45.825

[12]   Padmamma, S., & M, G. (2023). Visualisasi data koleksi e-journal Perpustakaan Universitas Kuvempu menggunakan Google Looker Studio. *Gerbang Penelitian*. https://www.researchgate.net/publication/375799707_Data_Visualization_of_E-journal_Collection_of_Kuvempu_University_Library_Using_Google%27s_Looker_Studio

[13]   Puspa, S. D., Riyono, J., Pujiastuti, C. E., & Puspitasari, F. (2024). Pelatihan pembuatan dashboard dan visualisasi data dengan Looker Studio untuk penguatan literasi data dan digital. *Deleted Journal, 3*(2), 78–85. https://doi.org/10.31284/j.adipati.2024.v3i2.6272

[14]   Yanto, B., Sudaryanto, A., & Pratiwi, N. H. A. (2023). Visualisasi data analisis volume produksi sampah di setiap kecamatan di Kabupaten Tangerang tahun 2021 menggunakan platform Looker Studio dan Big Query. *JURNAL APLIKASI DAN SISTEM TIK, 2*(1), 35–40. https://doi.org/10.56313/jictas.v2i1.239

[15]   Florencondia, N. T., Ladignon, C. M., & Muldong, R. M. C. (2024). Meningkatkan metrik kinerja: Pendekatan Google Looker Studio terhadap sistem manajemen indikator kinerja utama (KPI) untuk tim Penyusunan Lepas Pantai HomeCorp. *Jurnal Teknik dan Teknologi, 09*(05). https://doi.org/10.47191/etj/v9i05.25

[16]   Refianti, R. (2024). Visualisasi data pola iklim di Indonesia menggunakan Python dan Looker Studio Dashboard: pendekatan Visual Data mining. *Jurnal Ilmu Data Terapan, 5*(4), 2054–2066. https://doi.org/10.47738/jads.v5i4.420

[17]   Wicaksono, S. R. (2024). Visualisasi data dan storytelling: Looker Studio. *ResearchGate*. https://doi.org/10.5281/zenodo.13704114

[18]   Goncharov, V. (2024). Visualisasi "Indeks Inklusivitas" (Kotak Ajaib Transformasi Hebat) menggunakan Looker Studio. *Gerbang Penelitian*. https://www.researchgate.net/publication/377586731_Visualization_of_the_Inclusivity_Index_Magical _Square_of_the_Great_Transformation_Using_Looker_Studio

[19]   Oktafialfa, G., & Wahyu, A. P. (2024). Implementasi intelijen bisnis untuk analisis data penjualan obat menggunakan analisis data eksplorasi (EDA) dan visualisasi data menggunakan Looker Studio. *Sintaks Literasi Jurnal Ilmiah Indonesia, 9*(10), 5794–5802. https://doi.org/10.36418/syntax-literate.v9i10.51669

[20]   Ramdhany, A., & Irawan, D. (2021). Perancangan sistem informasi inventory dan penjualan menggunakan Visual Studio. *Syntax Literate Jurnal Ilmiah Indonesia, 6*(7), 3168. https://doi.org/10.36418/syntax-literate.v6i7.3518.