



Assessing BI Maturity and Developing a BI Dashboard For a Small and Medium Enterprise (SME) In Nairobi: Case of Keswick Books and Gifts

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1.1. Executive Summary

This project, undertaken as part of the DSA 3050 course at USIU-A, aimed to evaluate and enhance the Business Intelligence (BI) capabilities of Keswick Books and Gifts Ltd., a Christian bookstore based in Nairobi, Kenya. The key objectives included assessing the current state of the company's BI practices, developing a BI dashboard to visualize important operational and business metrics, and offering actionable recommendations to improve the company's decision-making processes. Keswick Books and Gifts Ltd. is a leading retailer in Nairobi, focusing on Christian literature and religious products. Their product range includes a wide variety of Bibles, Christian books on topics such as theology, spirituality, Christian living, and devotionals, as well as educational books for children and young readers. The store also offers church supplies and faith-based gifts. The mission of the company is to provide products that inspire, educate, and foster the spiritual growth of individuals and families.

During our evaluation of Keswick's business intelligence (BI) maturity, we identified that the company is currently positioned in the managed stage of the Capability Maturity Model Integration (CMMI) framework. This suggests that Keswick's projects are effectively planned, executed, measured, and controlled. Our analysis and recommendations were aimed at guiding Keswick towards a higher level of BI maturity. Key recommendations included the implementation of advanced BI tools to foster data-driven decision-making with measurable performance improvement objectives that align with the needs of both internal and external stakeholders. The project resulted in a comprehensive BI report, the creation of an interactive BI dashboard for real-time insights, and a user manual to ensure the sustainability and proper use of the BI tools. These efforts are designed to equip Keswick Books and Gifts Ltd. with the necessary resources to leverage data more effectively, thereby improving operational efficiency and supporting informed decision-making in the future.

1.2. Introduction

Keswick Books and Gifts Ltd., located on Kindaruma Road in Nairobi, Kenya, is a well-established Christian bookstore offering a diverse range of religious and spiritual products. These include various Bible translations (such as NKJV, NLT, and NIV), Christian literature on topics like theology, Christian living, devotionals, and educational materials for children. Additionally, the store provides church supplies, faith-based gifts, and same-day delivery services within Nairobi. The company's mission is to inspire, educate, and nurture the spiritual lives of its customers through its carefully curated selection of products.

In the competitive retail environment, Keswick Books and Gifts Ltd. faces a need to enhance its data-driven decision-making capabilities to improve operational efficiency and customer satisfaction. To address this, our project focused on evaluating the company's current Business Intelligence (BI) maturity and providing actionable recommendations to improve their BI practices. The project's goal was to assess the company's existing BI infrastructure, develop tools to help visualize key business metrics, and create a framework for leveraging data to drive better business decisions.

The BI maturity of Keswick Books was assessed using the Capability Maturity Model Integration (CMMI) framework, which helps evaluate the sophistication of BI practices across an organization. Our analysis revealed that the company's BI practices are currently in the **Managed** stage, characterized by Project planning, performance measurement, and controlling. To help the company advance in BI maturity, our project aimed to provide recommendations that would move them toward a more structured and optimized approach to business intelligence.

Through the course of the project, we focused on several key deliverables designed to improve Keswick Books' BI capabilities and decision-making processes including;

a) **First Communication and Project Kickoff**

The project commenced with initial communications with Keswick Books and Gifts Ltd. The team contacted the organization through an array of emails and phone calls to introduce themselves and lay out the project objectives. This was soon followed by a face-to-face meeting where the team discussed project scope, aligned expectations, and identified the company's stakeholders who would be involved in the process.

b) **Data Gathering and Stakeholder Interviews**

Post-initial contact, we began the collection of vital data to understand business operations and process levels. These included sales figures, operational performance metrics, and existing BI reports so as to shed light on current data practices within the company. In addition, interviews

were conducted with significant stakeholders, including heads of departments and managers, regarding their views on business processes, pain points, and long-term objectives. Information from these interviews provided great direction towards recommendations.

c) BI Maturity Survey Design and Distribution

To assess the maturity level of the BI system of Keswick Books, a full-fledged survey was prepared. It assessed key areas around data management, ranging from data usage in decision-making to employees' awareness and usage of BI tools. This survey was meant to spread to staff of different departments for a more comprehensive array of perspectives. The results gave us crucial insight into the strengths and weaknesses of the incumbent BI practices of the company.

d) BI Maturity Analysis and Reporting

After the survey, benchmark data was analyzed to evaluate the present maturity of BI within Keswick Books. This was to ascertain how proficient the company is in data management and utilization, how effective its existing BI solutions are, and how far along it has developed a data-driven culture in the organization. Unable to find one's way, these explanations led to a thorough report on the strengths and weaknesses of the company and opportunities.

e) Creation of A Tailor-Made BI Report

Alongside the dashboard, we produced a thorough BI report targeted at Keswick Books and Gifts Ltd. It offered a thorough review of the contemporary BI practices being applied by the business, pointing out the strengths and areas for improvement. It showed how Keswick could leverage its data for improved decision-making, streamlined processes, and increased customer value.

f) Presentation of Findings and Strategic Recommendations

Once the analysis and tools had been developed, we presented our findings to the executive team at Keswick. In the course of this presentation, we presented the results of the BI maturity assessment, demonstrated the interactive dashboard and laid out our recommendations for adopting and implementing the proposed BI strategies. It was an interactive session with the stakeholders questioning us, seeking clarifications, and asking for next steps.

g) Development of BI Documentation and User Manual

In order to ensure that the BI tools that we had put forward could be utilized in the long run, we prepared detailed documentation for the Power BI dashboards. The documentation entailed instructions on how to interpret visualizations and how to utilize features on the dashboards. Furthermore, we developed a user manual, written in a clear and accessible manner, for use by

employees in operating the BI tools. The manual encompassed step-by-step procedures meant to ensure that employees with very little experience with accessing data through modern technology could do so easily.

h) PPT Presentation to Class

Finally, the entire project would be summarized in the PowerPoint presentation: objectives, methodology, key findings, and recommendations. The purpose of our presentation was to provide a brief overview of the work so far, indicating how our recommendations could impact BI practices and decision-making in Keswick Books and Gifts Ltd. We also stressed the practical advantages such recommendations would create, enabling the business to attain its objectives through better data use.

The key deliverables of this project included:

- i. **A Comprehensive BI Report** – Detailing the findings from the BI maturity assessment, data analysis, and recommendations for improvement.
- ii. **An Interactive BI Dashboard** – Displaying key business metrics and providing real-time insights into company performance.
- iii. **A User Manual** – Offering clear guidance on how to use the BI dashboard and integrate the recommended BI practices into daily operations.

1.3. Selection of the SME

Keswick Books and Gifts Ltd is a well-established business based in Nairobi, Kenya. The company operates multiple branches across the country, including locations in Nairobi's CBD, Sarit Centre, Prestige Plaza, and Kilimani, as well as a branch in Mombasa. Keswick Books and Gifts Ltd specializes in a wide range of religious products, including Bibles, Christian literature, and various gift items suitable for different occasions.

Founded to serve the needs of the Christian community, Keswick Books and Gifts Ltd has grown to become a trusted source for high-quality religious materials. They offer products that nurture, motivate, and teach the word of God, catering to both individual customers and churches¹. The company distinguishes itself by providing a diverse selection of items, from devotional books and children's literature to church ware and special gifts.

Keswick Books and Gifts Ltd markets its products through various channels, including their physical stores, social media platforms, and their website. They ensure accessibility and convenience for their customers by offering delivery services within Nairobi and beyond². The company prides itself on its commitment to quality and customer satisfaction, making it a preferred choice for many.

Operating within the retail sector, Keswick Books and Gifts Ltd contributes to the local economy by sourcing products and materials locally whenever possible. The retail sector is a significant part of Kenya's economic landscape, providing employment opportunities and supporting local businesses¹. Keswick Books and Gifts Ltd plays a role in this ecosystem by offering products that meet the spiritual and practical needs of their customers.

The target market for Keswick Books and Gifts Ltd includes individuals of all ages who seek religious and inspirational products. Their extensive range of offerings ensures that there is something for everyone, whether it's a Bible for personal study, a devotional book for daily inspiration, or a special gift for a loved one.

We contacted the owner through Ashley and Nikki, two of the group members to get a more rich understanding of the company. After various engagements, we formally expressed our interest in their business processes, data, and BI maturity levels by sending an official letter from our school. This letter outlined our project objectives and the potential benefits for Keswick Books and Gifts Ltd.

To gather comprehensive information, we engaged in multiple communication methods, including phone calls, emails, and text messages. These interactions allowed us to delve into the business's history, operational workflows, challenges, and strategic goals. Our aim was to build a thorough understanding of their current state and future aspirations.

In addition to these discussions, we designed and distributed a detailed questionnaire to key stakeholders within the company. This survey was intended to assess their BI maturity level by exploring their current data management practices, analytical capabilities, and decision-making processes. To supplement the survey data, we conducted an in-depth phone interview with the owner, which provided further insights into their BI infrastructure and needs.

Keswick Books and Gifts Ltd also shared an Excel file containing their sales records. This dataset was crucial for our analysis, as it enabled us to perform a detailed examination of their sales trends, customer behaviour, and overall business performance. By analysing this data, we aimed to identify areas for improvement and opportunities for leveraging BI tools to enhance their operations.

This comprehensive approach ensured that we had a well-rounded understanding of Keswick Books and Gifts Ltd, allowing us to provide tailored recommendations and solutions to support their growth and efficiency.

1.4. BI Maturity Assessment

1.4.1 Definition of Terms

Understanding the basic principles of BI was crucial to assess the overall current condition of the company and possible strategies to improve it. At the very heart of it, business intelligence refers to the technologies, processes, and systems used by organizations to collect, store, analyze, and disseminate data to support decision-making. BI features a vast range of analytical tools, from big data technologies to advanced analytics. It bridges the gap between data and its use in informing strategic decisions and improving business operations (Hashem, Yaqoob, Anwar, et al., 2015).

In case of Keswick Books, BI is well-suited to optimize decision-making as regards various aspects of the business, from sales tracking to inventory management. Many small- to medium-sized businesses fall prey to the same problem of not being able to leverage their data into more strategic functions. Traditionally decisions were based on anecdotal reports and by manually aggregating all data, blocking such companies from acting quickly upon emerging trends or optimizing performance.

As part of our project, we would like to see Keswick Books transition toward a data-driven culture, with accurate, timely, and actionable information fostering and guiding decision-making, building on operational efficiency and propelling strategic foresight. The scope of BI has evolved considerably over the years since its inception, to become basic reporting tools until recently integrated with more sophisticated systems using artificial intelligence (AI), and machine learning (ML), to help gain deeper insights.

While Keswick Books and Gifts Ltd.'s attempts to take strides toward adopting technology in their business were noteworthy, the level of maturity in the company's Business Intelligence (BI) capabilities had not yet reached an optimal stage. The company has moved past basic manual methods like paper-based sales logs but has opted to use mainly simple toolset methods like Excel spreadsheets for data gathering and reporting. While it gave a glimpse of data analysis, it offered no sophistication or automation for any later analytical requirements or real-time workings with data.

1.4.2 The Capability Maturity Model Integration (CMMI)

In our selection of a suitable framework-of assessing the BI maturity in the company, we chose the **Capability Maturity Model Integration (CMMI)** because it employs a well-structured and coherent manner of making assessments regarding business processes and consequently deserves respect for its contributions toward process improvement. CMMI is a widely acknowledged process evaluation tool in improving an organization's capability and flexibility which suited it very appropriately to measure the BI maturity level of Keswick Books and Gifts.

First, CMMI's focus on process maturity applied closely to our aim of gauging the effectiveness of the BI practices that Keswick Books's existing processes were subject to. The BI processes had not moved much farther than their mid stages and were heavily reliant on few individuals and hence not companywide. As we applied CMMI on an approach basis, we would identify specific areas that were weak and inefficient with how data across the different departments were handled. For example, reporting although centralized and often lacked consistency, complicating management's process of making data-driven decisions. The five levels of maturity as set forth in CMMI presented a very understandable structured way to evaluate where the company currently stood in terms of BI capabilities and to determine the steps toward improvement.

Another prime reason for choosing CMMI is its emphasis on data-driven decision-making: within the project, we had been looking to create Business Intelligence (BI) dashboards that work for tracking and centralizing KPIs and other business metrics in support of better decision-making. CMMI's focus on measuring and managing business processes, particularly at the managed and measurable stage, aligns well with our objective to make BI a part of the company's decision-making process. By adopting CMMI, we could push Keswick Books to a more systematic data-informed approach from reactive decision-making to proactive and strategic use of BI.

The **standardization of processes** promoted by CMMI also resonated with our project objectives. Keswick Books had various independent practices for tracking sales, inventory, and customer data across departments. By applying CMMI, we were able to recommend steps toward standardizing these processes, ensuring that data was collected and analyzed in a consistent and reliable manner. This not only improved the accuracy of the data but also made it easier for different departments to collaborate and share insights.

Moreover, **CMMI's focus on continuous improvement and risk management** aligned with the long-term vision of the project. While the immediate goal was to assess and improve the BI capabilities, we also aimed to ensure that Keswick Books had a sustainable framework in place for continuous development. By incorporating risk management practices into the BI processes, we were able to help the company identify potential issues with data integrity, security, and reliability, ensuring that future BI efforts would be resilient to challenges.

Finally, the **CMMI model's scalability** was a key factor in our decision to use it. As Keswick Books grows, its BI needs will evolve, and CMMI's flexible stages of maturity allow for scalable improvements that can be applied incrementally. The framework's focus on improving processes over time means that as Keswick Books progresses in its BI journey, the company can continue to enhance its data capabilities and gradually integrate more advanced technologies, such as **predictive analytics** or **real-time reporting**, without overwhelming the current infrastructure.

1.4.3 Assessment of Keswick Books and Gifts Ltd

For this project, we evaluated Keswick Books and Gifts Ltd. across six key areas of Business Intelligence (BI) practices. These included BI Reporting and Insights, BI Products, Services, and Technologies, BI Practice Performance Measurement, Stakeholder Engagement and Collaboration in BI, BI Decision Rights and Authority, and BI Program Value Streams. Our team developed a comprehensive set of assessment questions for each of these categories, which were compiled in a shared Google Sheets document. Each question was rated on a scale of 1 to 5, following the CMMI model's maturity scale, ranging from Initial/Ad-hoc to Optimizing.

To gather data on Keswick Books' current BI practices, we designed a simplified BI Maturity Assessment Questionnaire. This questionnaire was aimed at collecting feedback from the management team on how they currently handle BI processes. Based on their responses, we assigned a maturity rating to each question in the workbook, reflecting the company's current level of BI maturity. In addition, we identified a target rating for each area, outlining the level of maturity Keswick Books could aspire to achieve in the future, given the tools and strategies we introduced throughout the project

BI reporting and Insights Assessment

The first category, **BI Reporting and Insights**, looks at how well the company uses reporting tools and data analysis to support decision-making. Reports are regular updates in tables or charts, while insights are useful conclusions from the data.

We asked thirteen questions to evaluate how the company collects business requirements, manages data, uses reports and dashboards, applies analytical tools, and controls data security. The results showed that the company has defined business needs and uses reports or dashboards and has some standards for data quality or documentation. They however do not use statistical analytical models to get deeper insights from the data.

The company scored 2.08, indicating they are at the **managed** level. With a target score of 3, they should work towards the **Developing** stage. They need to establish robust standards for data documentation, quality, and management.

BI Products, Services and Technologies Assessment

The second category, **BI Products, Services, and Technologies**, looks at the tools and technologies the company uses for BI activities. We asked five questions about how the company uses BI tools to generate insights.

The results showed that the company uses BI tools but doesn't fully utilize them. They don't use analytical models for deeper insights

With a score of 2, they are at the **Managed** level, with a target score of 3. They need to develop a BI maturity framework, which has already begun with a BI assessment sheet and fully intergrate dashboards using visualization tools. They already have a centralized system but they need to fully utilize this for enhanced decision-making.

BI Practice Performance Measurement

The third category, **BI Practice Performance Measurement**, looks at how the company tracks the effectiveness of its BI practices. This included seven questions about BI adoption and cost management.

The results showed the company measures BI tool performance and has allocated a budget for BI, but its departmental and not in the entire organization. They scored 3, placing them at the **defined**, with a target score of 4. To improve, they should aim to manage processes quantitatively to ensure consistent performance.

1.4.4 Stakeholder Engagement and Collaboration in BI

The fourth category, **Stakeholder Engagement and Collaboration in BI**, looks at how well key stakeholders engage with BI. This section included nine questions about executive support and stakeholder involvement in BI.

The company doesn't have an executive sponsor or a defined stakeholder map for BI. They scored 1, indicating they are at the **managed** level, with a target score of 3. To improve, they need to ensure that processes are well-characterized and understood, and are described in standards, procedures, tools, and methods.

1.4.5 BI Decision Rights and Authority

The fifth category, **BI Decision Rights and Authority**, examines who has the authority to make decisions based on BI insights and who can access BI tools. We asked five questions about defining roles, governance, and risk management.

The company doesn't have clear roles, objectives, or governance for BI. They scored 3, which means they are at the **Defined** stage, with a target score of 3 (Quantitatively managed). To improve, they need to clearly define roles and utilize governance for their BI program while also manage processes quantitatively to ensure consistent performance.

1.4.6 BI Program Value Streams

The last category, **BI Program Value Streams**, looks at how the BI program adds value to the company. This section included six questions about defining value streams and measuring BI's impact.

The company recognizes BI as a key asset. However they have not truly embraced its capabilities especially in terms of real time analytics. Keswick are in need of also employing capabilities of cloud

infrastructure, given that they are handling a lot of sales. Procurement data for different locations. They scored 2, placing them at the **Managed** level, with a target score of 3. They should focus on measuring the return on investment (ROI) from their BI activities especially for Cloud solutions.

1.4.7 Overall Current and Target Assessment Scores

Overall, the company scored a 3, meaning their BI capabilities are at the **Managed** level. With a target score of 3, they should focus on improving their BI practices to reach the **Defined** level by implementing the recommended actions.

1.5. Data Identification and Analysis

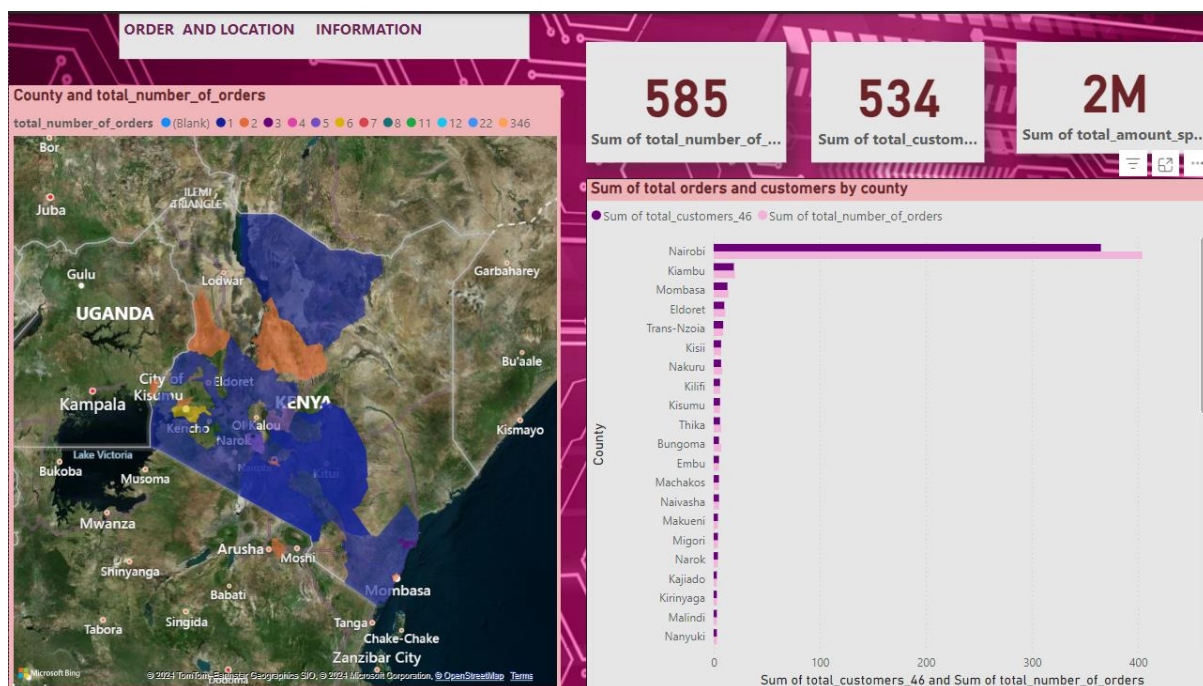
1.5.1 Identification of Relevant Data Sources

For the analysis of social media and digital marketing performance, sales impact, and revenue trends, key data sources were identified. The main data sources include:

- ❖ **Social Media Metrics:** Engagement rates, customer feedback, and platform-specific data provide insights into the effectiveness of marketing campaigns across different social channels (Facebook, Instagram, Twitter, and LinkedIn).
- ❖ **Sales Records:** Information on sales impact by campaign and platform helps assess which campaigns contribute most to revenue generation.
- ❖ **Customer Feedback Data:** Feedback from customers is aggregated to identify sentiment and satisfaction levels, which are essential for evaluating campaign success.
- ❖ **Import and Revenue Data:** Data on import costs, supplier performance, and revenue by product categories is crucial for understanding the cost structure and overall financial health.
- ❖ **Website Analytics:** Metrics on online activity, such as visitor sessions, cart actions, and checkout behavior, reveal user engagement and online sales performance.

1.5.2 Data Exploration and Analysis

ANALYSIS OF ORDERS AND CUSTOMERS BY COUNTY



Overview

The visualization provides an insightful representation of the distribution of orders and customers across various counties in Kenya. It integrates geographic and statistical data to analyze the performance and engagement levels across the regions. The dashboard highlights key metrics such as the total number of orders, total customers, and total expenditure, helping identify regional patterns and trends.

Key Findings

1. Total Metrics:

- ❖ **Total Orders:** 585 orders were recorded across all counties.
- ❖ **Total Customers:** 534 unique customers placed orders.
- ❖ **Total Amount Spent:** The total expenditure reached an impressive 2 million.

2. Regional Distribution:

- ❖ The map provides a color-coded breakdown of the total number of orders per county. Counties like Nairobi and Mombasa lead with the highest activity, as indicated by darker shading on the map.
- ❖ Other counties with significant engagement include Kiambu, Eldoret, and Nakuru, while regions like Turkana and the northern parts of the map report little to no activity.

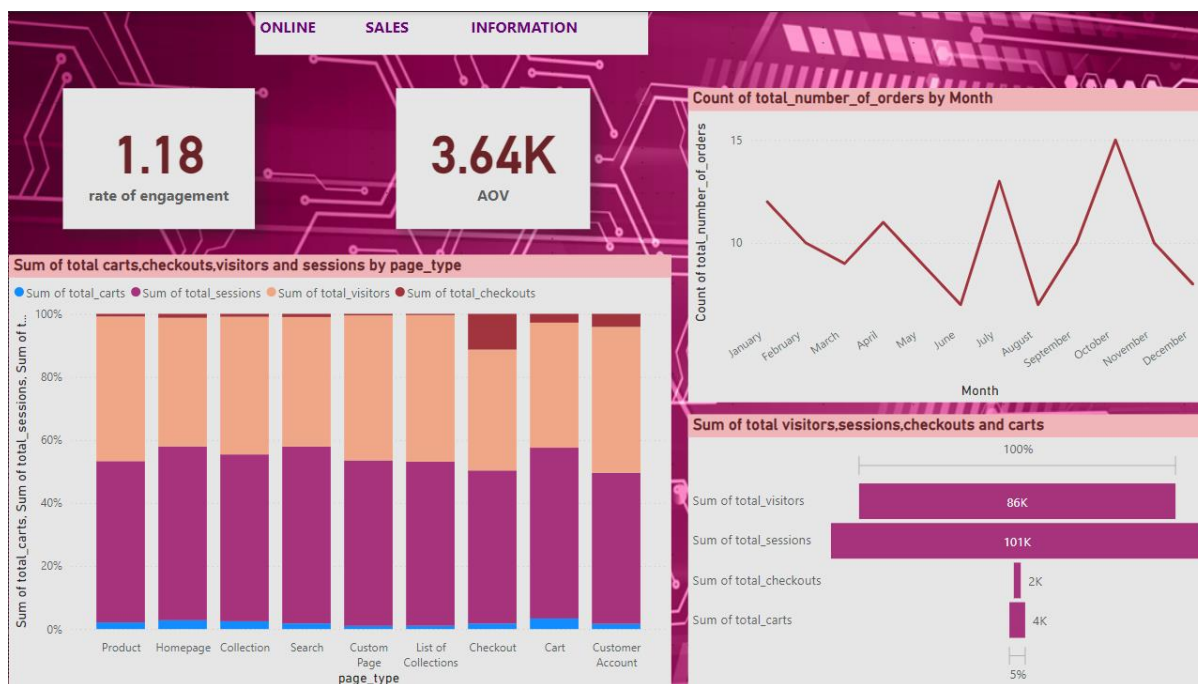
3. County-Specific Analysis:

- ❖ **Nairobi** emerges as the highest-performing county in both total customers and orders, demonstrating its central role in economic and commercial activities.
- ❖ Counties such as Kiambu and Mombasa also show substantial contributions but lag behind Nairobi.
- ❖ Rural areas like Kisumu and Bungoma have lower engagement, indicating potential for growth in these markets.

4. Bar Chart Insights:

- ❖ The accompanying bar chart visually compares the number of customers (dark purple) and total orders (pink) across counties. The chart reinforces Nairobi's dominance and highlights disparities between urban and rural regions.

ANALYSIS OF ONLINE SALES INFORMATION



Overview

This visualization presents a comprehensive analysis of online sales performance metrics, including engagement rates, average order value (AOV), and user activity across different page types. Additionally, it provides insights into order trends by month and aggregated data on visitor behavior, highlighting areas for potential optimization in the customer journey.

Key Findings

1. Engagement and Revenue Metrics:

- ❖ **Rate of Engagement:** 1.18, indicating moderate customer interaction with the online platform.
- ❖ **Average Order Value (AOV):** 3.64K, showcasing the average revenue generated per order.

2. Customer Journey Breakdown:

- ❖ The bar chart highlights the distribution of total carts, checkouts, sessions, and visitors across different page types:
 - **Product and Homepage Pages:** These pages receive the highest engagement, contributing significantly to total sessions.
 - **Checkout and Cart Pages:** Although fewer users reach these stages, they demonstrate higher checkout rates relative to other pages.

- **Search and Collection Pages:** Moderate activity is observed, suggesting room for improvement in guiding users toward these pages.

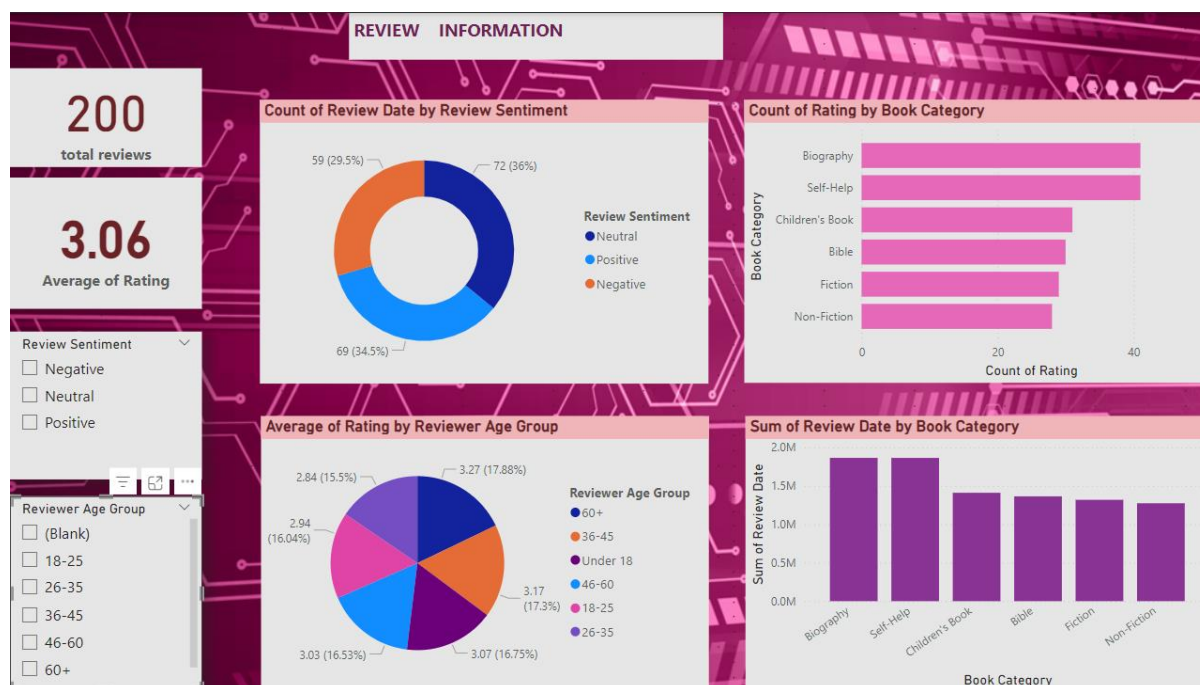
3. Monthly Order Trends:

- ❖ The line chart reveals fluctuations in the total number of orders throughout the year:
 - **Peaks:** Significant spikes in activity occur in July, September, and October.
 - **Lows:** Order counts drop notably in February and June, suggesting potential gaps in customer engagement or outreach.

4. Aggregate Visitor Data:

- ❖ **Total Visitors:** 86K, indicating a strong online presence and consistent traffic.
- ❖ **Total Sessions:** 101K, showcasing frequent visitor interaction, although the session-to-conversion rate could be optimized.
- ❖ **Total Carts and Checkouts:**
 - **Carts:** 4K, with only a small portion progressing to checkouts.
 - **Checkouts:** 2K, reflecting a notable drop-off rate from cart to checkout.

ANALYSIS OF REVIEW INFORMATION



This dashboard presents a comprehensive analysis of book reviews, showcasing various aspects such as total review count, average rating, review sentiment, age group distribution, and book category breakdown. Below is a summary report detailing the insights derived from each visual component:

Overview and Key Metrics

The dashboard indicates a **total of 200 reviews** with an **average rating of 3.06** out of 5. This suggests a mixed reception among reviewers, with room for improvement in satisfaction levels.

Review Sentiment Analysis

The pie chart titled "Count of Review Date by Review Sentiment" categorizes reviews based on sentiment—positive, neutral, and negative. Out of the 200 reviews, **36% are neutral (72 reviews)**, **34.5% are negative (69 reviews)**, and the remaining portion consists of positive reviews. This distribution implies that the sentiment is somewhat polarized, with a slight skew towards neutral and negative opinions.

Rating Distribution by Book Category

The bar chart "Count of Rating by Book Category" reveals the distribution of ratings across different book categories. **Biographies and Self-Help books receive the highest counts of ratings**, suggesting a higher level of interest or popularity in these genres. Other categories like Children's Books, Bible, Fiction, and Non-Fiction have comparatively fewer reviews, indicating that these may appeal to a smaller audience.

Age Group and Rating Correlation

The "Average of Rating by Reviewer Age Group" pie chart provides insights into how different age groups rate books. The **60+ age group has the highest average rating (3.27)**, followed by the **36-45 age group at 3.17**. Younger audiences (under 18 and 18-25 age groups) tend to give slightly lower ratings. This could indicate differing expectations or preferences across age demographics, with older audiences being more favourable in their reviews.

Review Volume by Book Category

The bar chart "Sum of Review Date by Book Category" compares the volume of reviews by category. **Biography and Self-Help categories lead in review volume**, while Fiction and Non-Fiction categories lag. This insight aligns with the earlier observation of higher rating counts in Biography and Self-Help, reinforcing the popularity of these genres among reviewers.

ANALYSIS OF BRANCH DASHBOARD BREAKDOWN

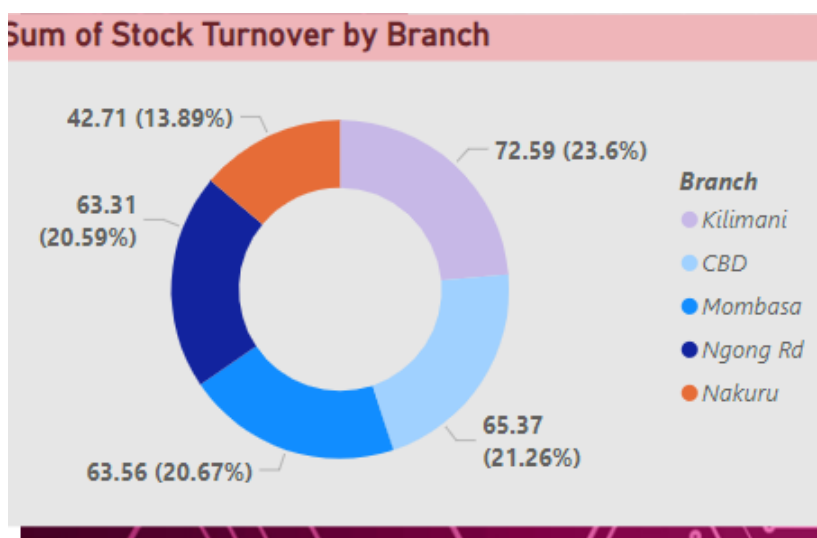
Overview

Below we have four charts on our Branch Dashboard. We compare the Stock Turnover, Revenue per Bible Category, Profit, and the Expenses per branch and henceforth, discuss the key insights derived from each chart, how it helps in attaining the business' ultimate goal (growth), and give ways in which they could tweak their strategy to grow one step closer to their goal.

Donut chart on Stock Turnover per branch

From the Keswick data, below are some *insights* that were gathered from the following *Donut Chart Visualization*:

- The **Kilimani branch** should continue to be prioritized in inventory management to maintain its top performance. Keeping their stock high will ensure no gaps in product availability and in turn guarantee a happy, loyal, and retained customer-base.



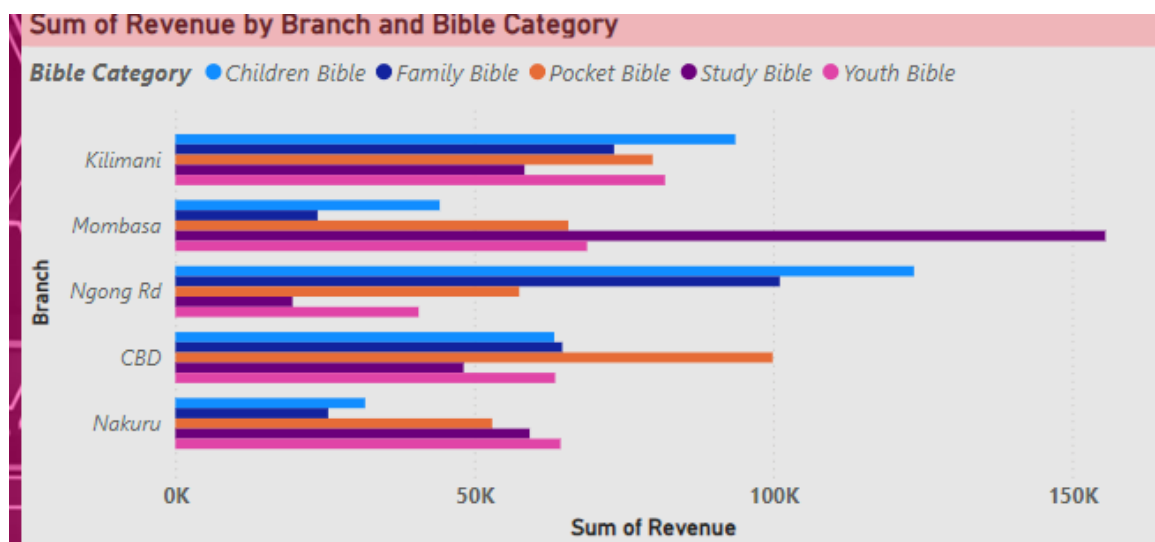
- For **Nakuru's low turnover (13.89%)**, further follow-up should be done to see why the turnover is as low as it is; maybe marketing efforts are poor, or customer engagement is not high for this specific location. Understanding and addressing this would ultimately help them re-strategize and eventually grow their customer-base.

- Ensuring stock allocation reflects the demand at **Ngong Road, Mombasa, and CBD** to sustain their contributions would help the business sustain their current customer base by essentially making sure that stock is never low on high-demand Bibles.

Clustered Bar Chart on Revenue per Bible Category per Branch

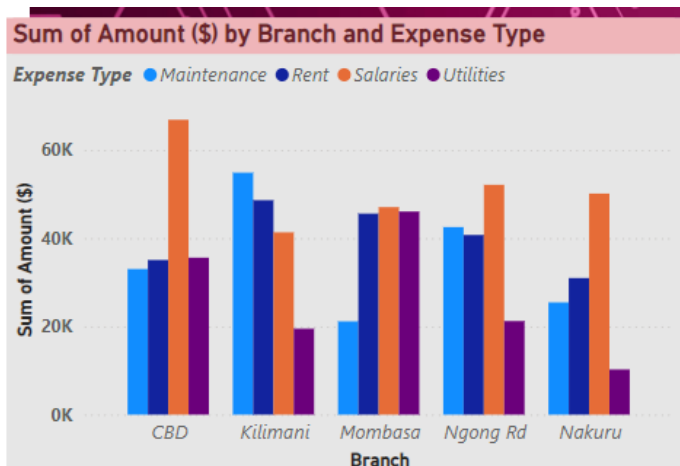
In this section, we get into comparing the revenue generated per book category in each branch. This is helpful in the various ways listed below:

- Ensuring Mombasa has ample supply of Study Bibles will ensure *sustenance of its strong performance*, ensuring a steady growth rate.
- **Focusing on Branch-Specific Needs** by increasing stock for *Children's Bibles* at Ngong Road and *Pocket Bibles* at the CBD to match demand patterns keeps a happy, returning customer base and could potentially lead to growth due to clear evidence of a reliable business, attentive to their customers' needs.
- In tandem with *enhancing marketing efforts*, assessing local demand for Children and Family Bibles to boost overall performance in this branch.
- Developing *category-specific promotions* whereby popular features of Study and Pocket Bibles would be highlighted to drive sales across branches.



Clustered column chart on expense amount per Expense Type & Branch

Here, we get into the breakdown of Keswick's expenditure across its branches per expense type (Salaries, rent, utilities and maintenance). Analysing these helps us find out which areas the business can cut back costs on and reinvest that money into someplace else.



- **CBD** spends the most on salaries, **Kilimani** on maintenance, whereas **Mombasa** and **Ngong Rd** have a more balanced expenditure but focus on salaries. **Nakuru** spends a lot on salaries but the least on utilities.

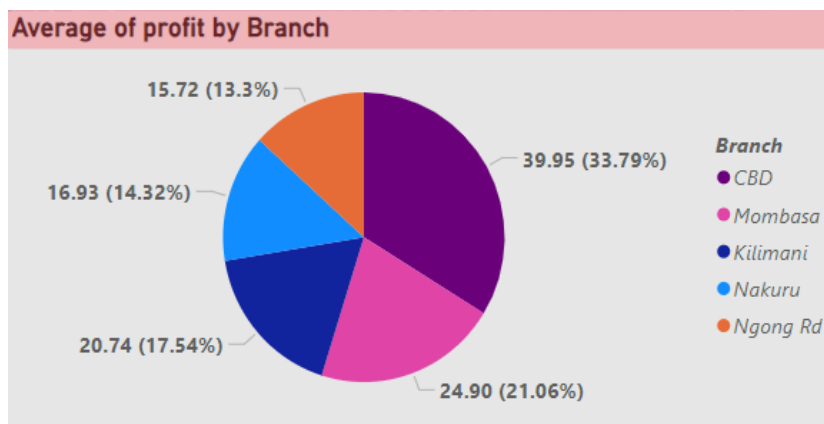
- What can help to **reduce certain expenditures**, take rent as an example, is perhaps exploring opportunities to renegotiate their rent contracts or assessing whether their

current branch locations are cost-effective. Furthermore, for salaries, analysing whether staffing levels align with each branch's performance and adjust accordingly to balance costs, and productivity could prove to be useful.

- At high-expense branches (**Kilimani and CBD**), **increasing sales** would be beneficial to the business to offset their higher operational costs (salaries, maintenance, etc.). This can be achieved by **running targeted ads** to drive up more customer traffic.

Pie Chart on Profit per Branch

Lastly, we have our profit comparison chart showcasing the performance of each branch in terms of the profit they bring in for the business.



CBD contributes the highest average profit (33.79%), making it the most lucrative branch. This means it has strong customer engagement and effective stock or marketing strategies.

- **Mombasa** (21.06%) and **Kilimani** (17.54%) are the next most

profitable branches, showing moderate profitability with room for growth.

- **Nakuru** (14.32%) and **Ngong Rd** (13.3%) are the least profitable, suggesting challenges in these locations, maybe due to lower sales or higher operational inefficiencies.

Advice:

- Invest more in high-performing branches like Mombasa while addressing operational inefficiencies in lower-performing locations.
- Organize in-branch events, such as Bible study sessions or community discussions, to drive foot traffic and loyalty.

ANALYSIS OF CLV DASHBOARD BREAKDOWN

The CLV (Customer Lifetime Value) dashboard contains purely the customer lifetime Matrix that allows us to draw insights on Keswick's customer retention rates.

CUSTOMER LIFETIME VALUE														
Acquisition_Qtr_Year	0	1	10	11	2	3	4	5	6	7	8	9	First order	
Q4 2023	1	\$30,597	\$12,260	\$	\$	\$11,435	\$8,930	\$	\$1,640	\$	\$1,245	\$700	\$	\$302,009
Q1 2024	1											\$		
Q2 2024	1							\$						
Q3 2024	1				\$									

▪ As can be seen, the data mostly concentrates on customer orders of the last quarter of the year 2023. Here, we see that **First Orders** wrack up the highest amount in orders at over \$300K.

▪ However, as time goes on, returning customers dwindle,

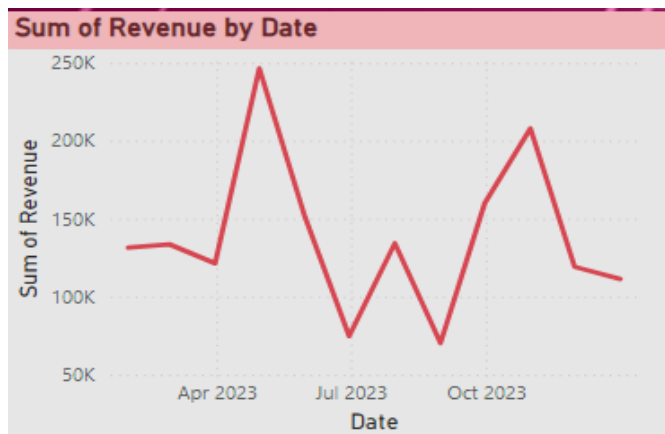
leaving the highest return period at 8 times since the first order, indicating a worrying trend; lack of customer retention. This may need some brainstorming from managers of the business.

- Our take on the matter would be to:
 - ❖ **Increase their product range**, i.e., perhaps to Christian fictional Literature (e-books, physical books, audiobooks, bookmarks, etc.), if the business is very firm about staying a strictly Christian brand, otherwise, perhaps venturing into selling non-Christian fictional literature (contemporary romance, Sci-fi, etc.) may help them reach a wider audience.
 - ❖ As mentioned previously, **organizing events**, like Bible study sessions or community discussions, would drive foot traffic and definitely help increase customer loyalty and retention as the business would create a unique bond with its customer base in this special way.

2. Enhanced Sales and Revenue Analysis Report

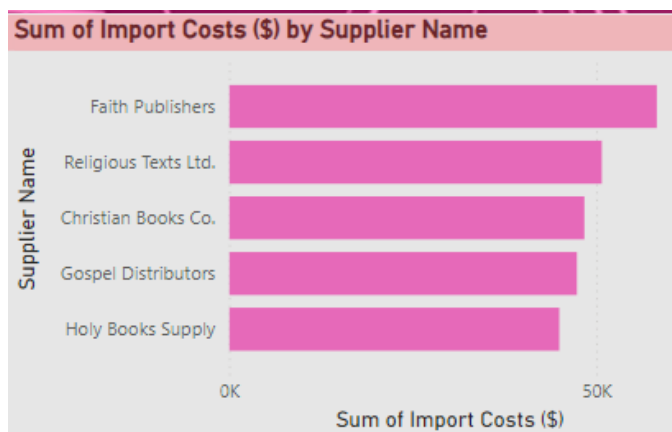
2.1. 1. Sum of Revenue by Date

This line chart presents the monthly revenue trends over the year. The peaks in revenue can signify periods of increased sales activity, such as promotional campaigns or seasonal demand. Understanding these fluctuations can guide strategic planning for maximizing sales during high-demand periods.



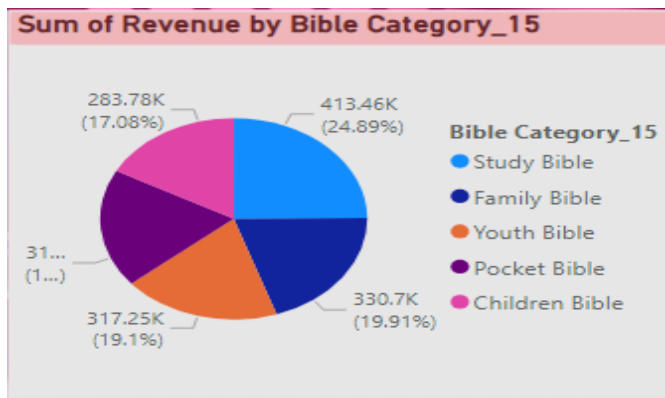
2.2. 2. Sum of Import Costs by Supplier Name

The bar chart compares the import costs across different suppliers. Faith Publishers incurs the highest costs, indicating their dominance in supply volume or higher pricing. Analyzing such data helps identify cost-effective suppliers and streamline procurement strategies.



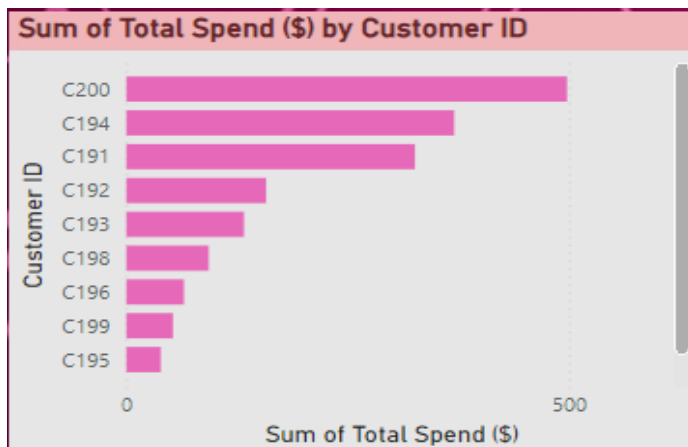
2.3. 3. Sum of Revenue by Bible Category

The pie chart illustrates the revenue contribution of each Bible category. Family Bibles dominate the revenue share, highlighting their popularity among customers. Smaller categories, like Children Bibles, present opportunities for targeted promotions to increase sales.



2.4. 4. Sum of Total Spend by Customer ID

This bar chart ranks customers by their total spending. Customer C200 leads as the highest spender, emphasizing their value to the business. Such insights help in designing loyalty programs for top customers to enhance retention.



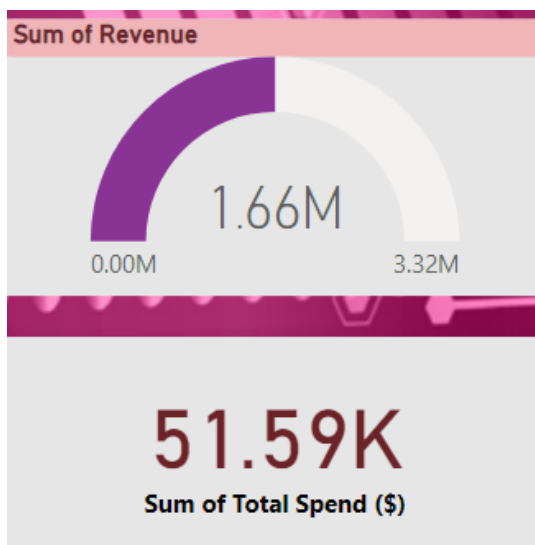
2.5. 5. Sum of Stock Level by Bible Category

The bar chart shows the stock levels for various Bible categories. High stock levels in categories like Pocket Bibles and Family Bibles ensure supply meets demand, while low stocks in Children Bibles may require replenishment. This visualization aids in inventory management.

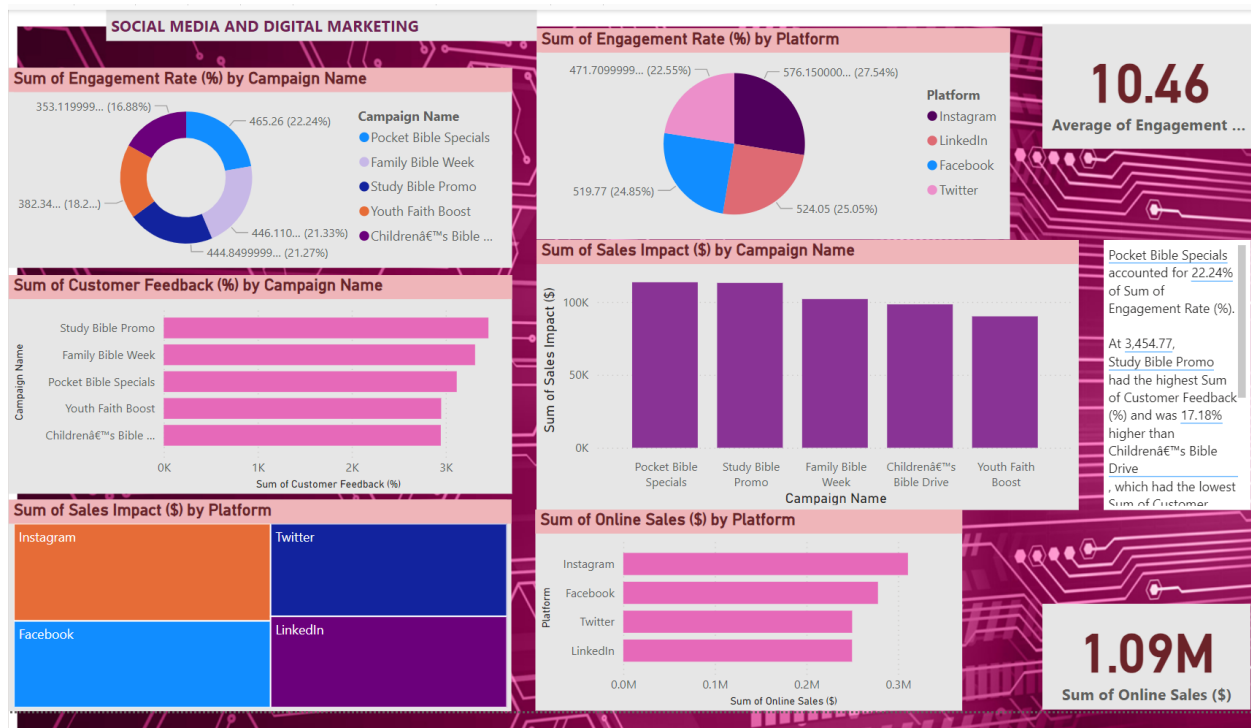


2.6. 6. Total Revenue Summary

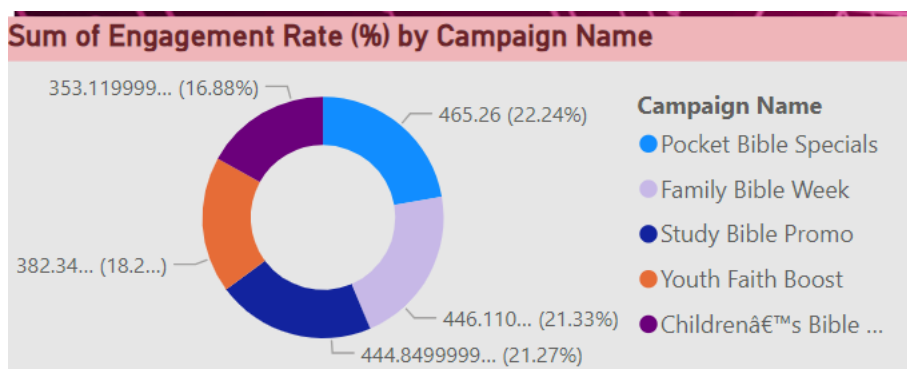
The summary section provides a clear overview of total revenue and spending. With a total revenue of \$1.66 million and total spend at \$51.59K, it highlights profitability and spending efficiency.



ANALYSIS OF SOCIAL MEDIA AND DIGITAL MARKETING

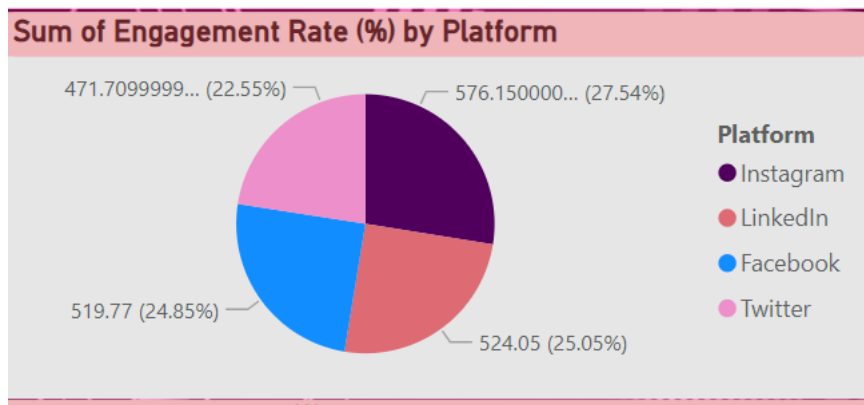


1. Donut Chart: Sum of Engagement Rate (%) by Campaign Name



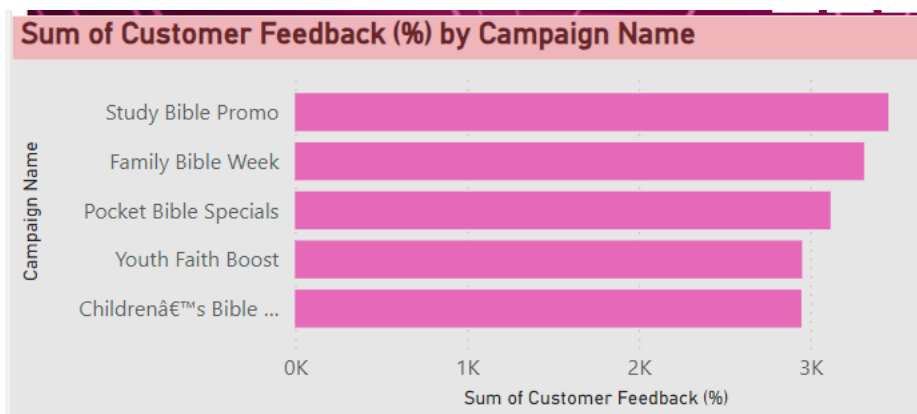
- **Purpose:** Displays the percentage share of the engagement rate contributed by each campaign.
- **Insights:**
 - Campaigns such as "Pocket Bible specials" (22.24%) and "Family bible week" (21.33%) are among the top contributors.
 - "Childrens bible" has the lowest engagement rate percentage at 16.89%.
- **Interpretation:** Allows stakeholders to see which campaigns resonate most with audiences in terms of engagement.

2. Pie Chart: Sum of Engagement Rate (%) by Platform



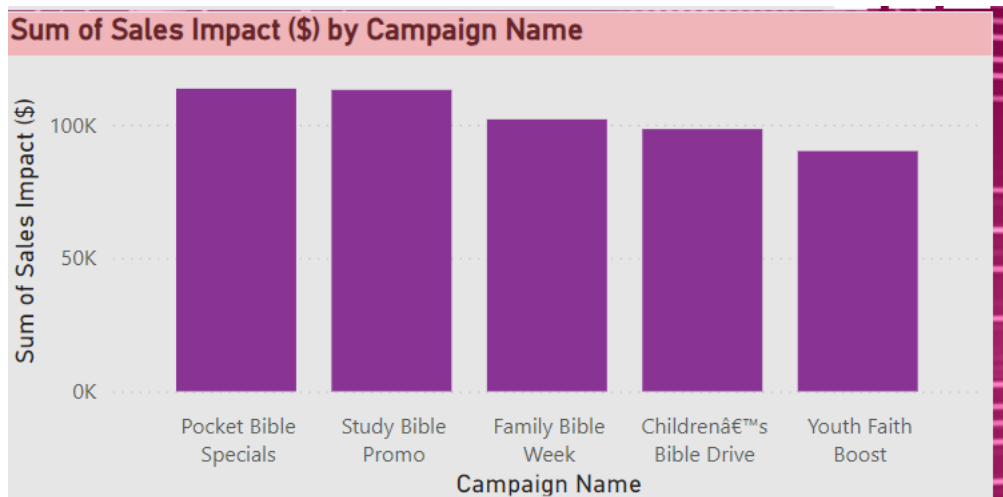
- **Purpose:** Shows how engagement is distributed across social media platforms.
- **Insights:**
 - Instagram leads in engagement at 27.54%, followed by LinkedIn(25.05%).
 - Facebook and twitter collectively account for less than 50% of the engagement.
- **Interpretation:** Helps in determining the most effective platform for engagement.

3. Column Chart: Sum of Customer Feedback (%) by Campaign Name



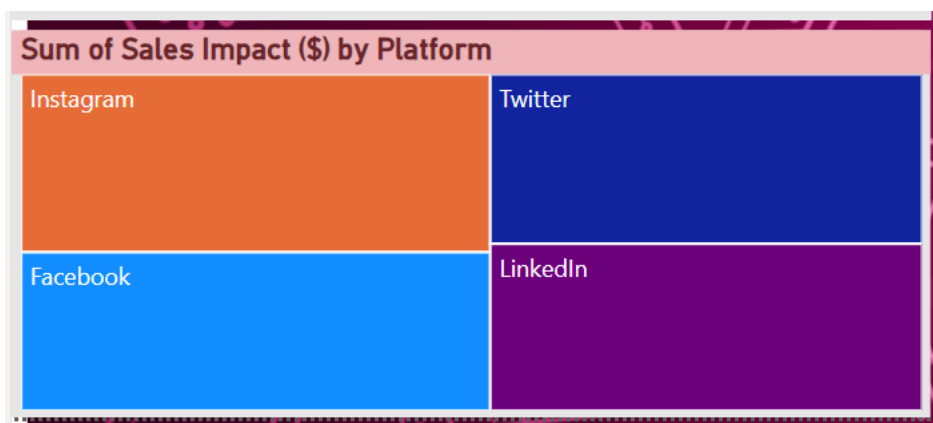
- **Purpose:** Displays the total customer feedback score for each campaign.
- **Insights:**
 - "Study Bible Promo" has the highest feedback score, indicating its strong resonance with customers.
 - "Children's Bible Drive" has the lowest feedback score, suggesting it could require improvement.
- **Interpretation:** Useful for assessing campaign effectiveness from a customer satisfaction perspective.

4. Bar Chart: Sum of Sales Impact (\$) by Campaign Name



- **Purpose:** Highlights the monetary impact of each campaign on overall sales.
- **Insights:**
 - Campaigns such as "Study Bible Promo" and "Pocket Bible Specials" generated the highest sales impact.
 - Campaigns like "Children's Bible Drive" and "Youth Faith Boost" have lower sales impact.
- **Interpretation:** Identifies the campaigns with the strongest ROI (Return on Investment).

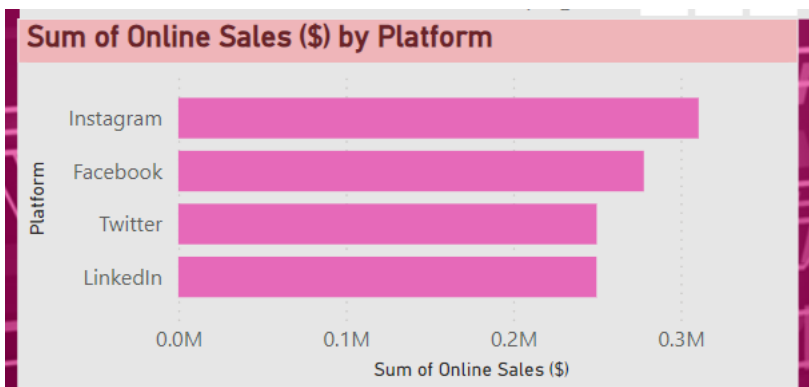
5. Treemap: Sum of Sales Impact (\$) by Platform



- **Purpose:** Represents the contribution of each platform to total sales impact.
- **Insights:**

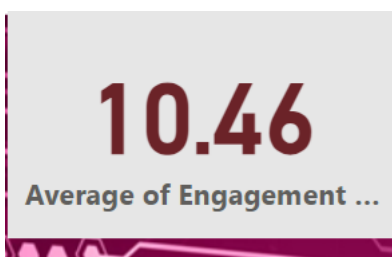
- Platforms such as Twitter and Facebook dominate in sales impact.
- Instagram and LinkedIn contribute less but still hold significant portions.
- **Interpretation:** Helps allocate resources to platforms yielding the most sales

6. Column Chart: Sum of Online Sales (\$) by Platform



- Purpose: Highlights platform performance in generating online sales revenue.
- Insights:
 - Instagram leads in online sales, closely followed by Facebook.
 - Twitter and LinkedIn contribute a smaller share.
- Interpretation: Useful for identifying the platforms driving e-commerce success.

7. KPI Box: Average Engagement Rate



- **Purpose:** Displays the average engagement rate across all campaigns and platforms.
- **Value:** 10.46%
- **Interpretation:** A benchmark figure for evaluating overall engagement effectiveness.

8. KPI Box: Sum of Online Sales



- **Purpose:** Represents the total online sales revenue across all campaigns and platforms.
- **Value:** \$1.09M
- **Interpretation:** Indicates the overall financial success of digital marketing efforts.

1.5.3 Recommendations

Based on the analysis, the following strategies are recommended:

- ❖ **Campaign Optimization:** Focus on successful campaigns like to maintain and increase engagement and sales impact.
- ❖ **Platform Strategy:** Allocate more resources to Instagram and LinkedIn, given their high engagement and conversion potential.
- ❖ **Customer Feedback Utilization:** Leverage positive customer feedback to refine product offerings and enhance campaign messaging.
- ❖ **Supplier Evaluation:** Conduct a review of supplier performance to manage import costs effectively, potentially renegotiating terms with high-cost suppliers.
- ❖ **Enhance Checkout Experience:** Improve the user journey on the checkout page to increase conversion rates and reduce cart abandonment.
- ❖ **Seasonal Promotions:** Plan major sales and promotional activities around peak revenue months like April and October to capitalize on increased customer activity.

1.6 BI Report and Dashboard Design

Definition of Terms

BI reporting is the application of BI tools in collecting, analyzing, and sharing data insights for business decision-making. Applications such as Microsoft Power BI, Tableau, Google Sheets, among others, offer users data visualization and interpretations to help translate the meaning for better understanding and subsequent actions. BI dashboards are defined as interactive data visualization platforms for combining different sources of data into one platform that is coherent and user-friendly.

They generally contain charts, graphs, and tables, through which users can view performance measures and trends in the data easily, therefore making tracing KPIs easier, measuring progress, and pinpointing areas for improvement. Some of the benefits associated with BI dashboards include enhancement in the areas of data-driven decision-making, streamlined reporting, and increased transparency in business processes.

1.6.1 Solutions Used for Dashboard Reporting

Google Sheets for BI Maturity Dashboard

Google Sheets was chosen as the Business Intelligence Maturity Dashboard because it is affordable, user-friendly, and allows for real-time collaboration. On this platform, Keswick Bookshop's team may maintain a dynamic dashboard where changes made to any data become instantly viewable by all other users. In addition, the system has a simple sharing and access option for data, hence becoming suitable for a small team with different levels of technical competencies. The dashboard is based on a cloud platform, ensuring its real-time update and ease of integration with multiple sources of data. Its simple design encourages quick adaptation by the team, ensuring that the dashboard remains a useful tool for ongoing business intelligence analysis and improvement

Power BI for BI Dashboard

The reason for choosing Microsoft Power BI for the BI Dashboard is its superior functionality in data visualization, integration, and real-time analytics. It offers an interactive environment with plenty of customization options; using Power BI, Keswick Bookshop is able to present complex data in ways that are easy to understand and act upon. The software provides seamless integration with various sources of data, such as Excel, cloud services, and databases, hence allowing a holistic view of key business metrics. This platform also supports the building of customized visualizations and interactive reports, which will enable users to interact with data dynamically. The advanced features of Power BI, such as machine learning, will empower Keswick Bookshop with deeper insights into its business performance, thus better informing data-driven decision-making across its operations.

1.6.2 Functionality of the BI Maturity Dashboard

The BI Maturity Dashboard is designed in Google Sheets to assess, visualize, and lead the way for Keswick Bookshop toward better BI maturity. The dashboard is broken down into the following main components:

Component 1: Suppliers and Import Information

The Suppliers and Import Information component focuses on managing the supply chain, tracking suppliers, import volumes, lead times, and costs. It integrates data from supplier databases and presents key metrics in a visual format, highlighting changes in costs and levels of stock. Using bar charts and line graphs, the dashboard allows Keswick Bookshop to monitor supplier performance and the impact that the imports have on inventory levels and cost structures.

This capability brings increased planning and forecasting capabilities, ensuring that the levels of inventory are optimal and that the suppliers adhere to their contractual commitments.

Component 2: Social Media Engagement and Sales Impact

This section covers the performance of sales with regard to social media engagement. The key performance indicators tracked are followers, likes, shares, and comments across Facebook, Instagram, and Twitter, among other platforms. The data collected is then compared against sales figures to determine to what extent social media interactions impact customer behavior and their purchasing decisions. Visual representations, including scatter plots and trend lines, illustrate the influence of marketing campaigns on sales data, thereby assisting Keswick Bookshop in evaluating the efficacy of its marketing strategies. This analysis informs decisions regarding the allocation of marketing resources and the customization of subsequent campaigns to optimize outreach and conversion rates.

Component 3: Customer Reviews and Feedback

Customer reviews and feedback are very important in improving customer satisfaction and business performance. This module accumulates feedback from different sources, such as online reviews, survey responses, and in-store comment cards. Sentiment analysis is performed to classify the feedback into positive, negative, and neutral, which is further visualized using pie charts and sentiment trend graphs.

The dashboard additionally monitors prevalent themes within customer feedback, emphasizing aspects that require enhancement, including customer service, product quality, or the atmosphere of the store. By associating this information with sales performance, Keswick Bookshop can ascertain the relationship between customer sentiment and overall business success, thereby enabling proactive measures to improve the customer experience.

Component 4: Stock Inventory

The Stock Inventory component allows the user to have instant visibility of the inventory level across all locations of Keswick Bookshop. It tracks stock levels, inventory turnover, and the flow of goods, highlighting products that are overstocked or out of stock. This component will use both bar and line charts to visualize trends in product availability, hence making the team easily identify when to restock or phase out any product. The alerts and notifications are placed whenever the inventory level falls below a set threshold, ensuring that the stock level is always commensurate with the demand of consumers. Keswick Bookshop can enhance its stock management approach, reduction of wastes, and efficiency of operations through tracing of inventory in multiple locations.

1.6.3 Overall Functionality

The Business Intelligence Dashboard is an all-inclusive tool that gives Keswick Bookshop a holistic view of the key business functions. Providing real-time information about the branches, suppliers, social media interactions, customer feedback, and inventory oversight, the dashboard supports informed decision-making, continual improvement, and strategic growth. Every aspect is designed with the intention of ensuring that the team has the necessary insights to fine-tune the operations, bring up the level of customer experience, and drive business growth.

1.7 **Describe the Implementation Strategy**

The "Keswick Bookshop Kilimani" would like to enhance operations by offering actionable insight from data through a BI dashboard. Keswick Bookshop can increase the selling of Bibles, Christian literature, and presents by forecasting demand, managing the stock levels, and implementing decisions based on facts available through the analysis of sales, inventory, and customer trends.

From goal setting to staff training and monitoring the ongoing use, this process identifies the necessary steps in implementing BI dashboard successfully from the plan.

1.7.1 A Bookshop's BI Dashboard Implementation Steps

Specify the goals and parameters

- ❖ **Set Objectives:** This is the declaration of objectives. Keswick Bookshop could decide to increase sales over major seasons such as holidays, or an objective to increase sales of the Bible by 20% in the next half year. Other objectives may be identifying fast-moving products to focus promotions on and improving stock control methods so that stock does not run out.
- ❖ **Scope of Deployment:** To manage its impact, this deployment of BI will initially focus on sales and inventories. It can later expand over time to seasonal trends, consumers' purchase patterns, and marketing effectiveness.
- ❖ **Form a Team:** A implementation team for Keswick Bookshop's BI implementation should consist of at least one project manager, one data analyst, and perhaps one BI developer, as noted. The project manager can ensure that deadlines and milestones are met, whereas the data analyst will focus on analyzing sales data and monitoring KPIs. Support staff, including IT, may be used as additional resources to solve technical problems and integrate systems.

Assess Current Data Infrastructure

- ❖ **Data Inventory:** It ensures all forms of data sources, inclusive of the POS system, sales records, and customer data, are accounted for. Keswick Bookshop should also document data types and systems as well as update frequency in order to foresee compatibility problems or integration.
- ❖ **Data Quality:** It forms the basic foundation of generating meaningful insights. It will handle problems of duplicates or inconsistencies with processes for data cleansing, and transformations such as standardizing product names ensure consistency. A standard set for quality of data improves inventory and sales projection accuracies.

Pick the Right BI Tools

- ❖ **Tool Selection:** The tool selected should fit the specific needs of Keswick Bookshop and within budget. For their strong capabilities of visualization, user-friendliness, and integration with a wide variety of data sources, tools like Power BI or Tableau might be perfect. These tools provide for visual formats, such as bar charts or line graphs, for the purpose of Bible sales and other key metrics analysis.
- ❖ **Customization:** With customization of the BI solution, Keswick Bookshop can fulfill its reporting needs, including visual representations of sales KPI for Bibles and other Christian books. The dashboard should track the progress towards the growth goals, highlight low inventory, and bright objects for high items.

1.7.2 Create the BI Dashboard

- ❖ **Dashboard Design:** The design should be simple and emphasize inventory and sales information, such as KPIs like inventory turnover and monthly sales. The layout should allow employees to track daily and weekly trends for fast decision-making.
- ❖ **Integration:** Real-time dashboard updates for thorough insights are made possible by connecting data streams, such as inventory and point-of-sale systems.
- ❖ **Testing:** To guarantee accuracy, usability, and functionality, Keswick Bookshop should test the dashboard with sample data. Testing with a variety of users helps ensure that the dashboard satisfies the requirements of different business roles.

Deploy the BI Dashboard

- ❖ **Pilot Deployment:** To gather preliminary feedback, the dashboard may be rolled out to a small group of people such as sales managers or certain staff members. These people can evaluate how well the dashboard can serve to track Bible and gift sales and what responsibility it holds in fulfilling the sales growth goals.
- ❖ **Complete Deployment:** The dashboard can be made available to all interested users after ironing out any bugs. In the first months after deployment, its effect on inventory management and sales will either prove or disprove whether it meets organizational goals.

1.7.3 Staff Training and Assistance

Educational Programs

- ❖ **Initial Training:** The training given to employees in Keswick Bookshop will introduce them to the BI dashboard functionality, such as data visualization and report generation capabilities. This

will achieve the resultant ability for staff to analyze data—by way of example, sales success by book category.

- ❖ **Role-Based Training:** All team members receive relevant competencies through training that is, as a rule, specifically molded to their job tasks. For instance, whereas inventory managers are interested in the levels of supply, the salespeople may pay more attention to sales figures.

Documentation

- ❖ **User-Manuals:** These detailed guides, including screenshots and step-by-step instructions, are greatly beneficial to the employees.
- ❖ **Web-Based Resources:** Self-paced learning is accommodated by making online courses, video tutorials, or an internal knowledge base available. For example, a short training in generating sales reports will allow staff to train themselves.

1.7.4 Ongoing Support

- ❖ **Help Desk:** Establishing a help desk or support channel will ensure that employees are able to swiftly address inquiries or technical issues. This may encompass designated support hours or an email hotline.
- ❖ **Refresher Sessions:** The staff will also be updated with new functions or enhancements by conducting refresher or update sessions regularly.

Suggestions for Continued Use and Upkeep

Frequent Data Updates

- ❖ **Data Refresh:** To give real insight, the BI dashboard requires its data to be refreshed periodically. Depending on the nature of the dashboard, Keswick Bookshop should refresh the data either daily or weekly.
- ❖ **Automated Process:** Through the automation of data loading and extraction processes, accuracy in near real-time is preserved, thereby facilitating timely decisions, such as restocking popular Bible editions ahead of peak demand periods.

Monitoring Performance

- ❖ **KPIs:** The dashboard should monitor the KPIs like the growth in Bible sales, monthly sales, and inventory turnover rates. This will help Keswick Bookshop to know whether the BI dashboard is aligned with the primary business objective by tracking these metrics.
- ❖ **Feedback Mechanism:** Encourage the users of this dashboard to give their inputs on the problems and betterment. Regular inputs will keep the dashboard relevant and useful.

Ongoing Enhancement

- ❖ **Review and Revise:** Keswick Bookshop can monitor the effectiveness of the dashboard through periodic review. Examples of changes include adding new data fields or improving key performance indicators to meet the changing market forces or organizational needs.
- ❖ **Training Updates:** In the context of continuous improvement, training resources are revised to incorporate any newly introduced functionalities, thereby ensuring that employees remain well-informed and enhance the utility of the dashboard's features.

1.8 User Documentation/Manual

The purpose of this material is to assist "Keswick Bookshop Kilimani" in making the most of the Sales BI Dashboard and the BI Maturity Assessment Tool in order to enhance decision-making and streamline business operations.

Definition of Terms

A user manual is a document provided to a user that helps in using a particular system, product, or service seamlessly." The "Keswick Bookshop Kilimani" user manual will facilitate the use of the Sales BI Dashboard and the BI Maturity Assessment Tool, which are tools designed to evaluate business intelligence (BI) processes and offer real-time sales insights. This guide provides a thorough knowledge, navigation, and troubleshooting guide for several BI products.

1.8.1 Documentation for BI Maturity Assessment Tool

Google Sheets, an easily navigable platform, hosts the BI Maturity Assessment Tool, which allows "Keswick Bookshop Kilimani" to assess and track its BI maturity in a number of categories.

System Requirements

Users should fulfill the following system prerequisites in order to access the Google Sheets BI Maturity Assessment Tool and guarantee seamless operation:

- ❖ **Operating System:** For Windows, use Windows 7 and above; for Mac, use OS X 10.10 and above.
- ❖ **Web Browsers:** Latest versions of Google Chrome, Mozilla Firefox, Microsoft Edge, or Safari are recommended.
- ❖ **Internet Connection:** A minimum speed of 1 Mbps and a stable connection to avoid disruptions.
- ❖ **Hardware:** A computer capable of handling Google Sheets efficiently.
- ❖ **Additional:** A Google Account is required for access.

Access and Download

To access the BI Maturity Assessment Tool, users will receive an email with a link to the Google Sheets workbook. Follow these steps:

- i. **Launching Google Sheets:** To access the assessment tool in Google Sheets, click the following link. Verify that you are signed into the appropriate Google account.
- ii. **Downloading:** Choose your desired format (such as Excel, PDF, etc.) under File > Download. If you need offline access, you can choose this format.

Overview of the User Interface

The BI Maturity Assessment Tool consists of three sheets within the workbook:

- i. **Description Sheet:** Gives a summary of the dashboard's features, data sources, and assessment goal.
- ii. **BI Assessment Sheet:** This self-assessment tool uses a number of BI maturity dimensions to analyze "Keswick Bookshop Kilimani's" BI activities.
- iii. **Dashboard Sheet:** Visually represents the organization's BI maturity level, featuring charts and graphs that summarize key insights.

Features

Through a number of features, the tool lets users evaluate BI maturity and monitor their progress:

- ❖ **Editable Columns:** For a comprehensive BI self-assessment, users can insert data into columns like Current State, Target State, and Comments.
- ❖ **Automated Calculations:** Averages of the Current and Target State columns are automatically calculated.
- ❖ **Visual Feedback:** The Dashboard Sheet converts data entries into visual charts, such as maturity scores and gap analyses.

Troubleshooting

Below are common issues and suggested solutions:

- ❖ **Sheets Not Loading Properly:** Ensure a stable internet connection, refresh the browser, or clear your cache and cookies.
- ❖ **Access Issues:** Verify Google account permissions and ensure sharing settings allow necessary access.
- ❖ **Export Errors:** Ensure sufficient device storage; try a different format if needed.
- ❖ **Formula Errors:** Check cell references and data integrity, and consult Google Sheets documentation if needed.
- ❖ **Visualization Issues:** Ensure data entries are correctly formatted.
- ❖ **Slow Performance:** Close unused browser extensions and tabs for improved speed.
- ❖ **Collaboration Conflicts:** Use the "Version history" feature to restore previous versions if needed.

- ❖ **Data Loss or Corruption:** Regularly back up data and use Google Sheets' "Version history" to restore lost data.

For additional support, users can refer to the Google Sheets Help Center.

1.8.2 Documentation for the Sales BI Dashboard

The Sales BI Dashboard is a cloud-hosted platform that visualizes key business metrics, providing real-time insights that assist "Keswick Bookshop Kilimani" with sales performance tracking, product analysis, and forecasting.

System Requirements

The Sales BI Dashboard requires a reliable internet connection, access permissions, and a browser capable of supporting Power BI. Refer to the GitHub repository for further technical details.

Accessibility

The BI Dashboard is designed to ensure accessibility for all users with the following features:

- ❖ **Keyboard Navigation:** All interactive elements can be accessed via keyboard.
- ❖ **Responsive Design:** Automatically adjusts to various screen sizes, including tablets and smartphones.
- ❖ **Color Contrast:** Follows WCAG guidelines to ensure readability for visually impaired users.

User Interface Overview

The Sales BI Dashboard has three main sections, each offering distinct insights:

- Profit/Loss and Cost Analysis:** Provides financial insights on profitability and operational costs.
- Product Analysis:** Displays data on sales, customer preferences, and top-selling items for better stock and marketing decisions.

Functionalities

Key functionalities of the BI Dashboard include:

- ❖ **Dynamic Data Updates:** Visualizations update automatically with new data entries.
- ❖ **Interactive Charts and Tables:** Users can filter, sort, and customize data views.

Troubleshooting

Here are some common issues and suggested solutions:

- ❖ **Dashboard Not Loading:** Refresh the page, check internet stability, and clear browser cache.

- ❖ **Access Problems:** Confirm login credentials and access permissions.
- ❖ **Export Errors:** Ensure device storage is available, and try a different format if needed.
- ❖ **Visualization Errors:** Double-check data entries for accuracy and format.
- ❖ **Slow Performance:** Minimize active browser extensions or add-ons.
- ❖ **Collaboration Issues:** Use the "Version history" feature to revert to stable versions.
- ❖ **Data Loss:** Regularly back up data and use "Version history" for recovery.

For further assistance, users can access the Power BI Help Center.

Best Practices for Dashboard Use

To maximize the BI Dashboard's benefits, follow these best practices:

- ❖ **Regular Data Entry:** Keep data current for accurate insights.
- ❖ **Scheduled Data Reviews:** Conduct regular reviews to maintain data relevance and accuracy.
- ❖ **Frequent Training:** Schedule refresher training to keep the team proficient with new features and best practices.
- ❖ **Feedback Mechanism:** Establish a channel for user feedback on usability and issues.

User Support and Resources

In addition to troubleshooting tips, the following resources are available:

- ❖ **Help Desk:** Designate a contact point within Keswick Bookshop for BI tool assistance.
- ❖ **Training Sessions:** Conduct regular training sessions for new users or refresher sessions for experienced users.
- ❖ **Documentation Updates:** Regularly update this user manual to reflect any changes and new features in the BI tools.

1.9 **Feedback and Evaluation**

We had an extensive feedback session with Keswick Bookshop Kilimani, one of the renowned local bookshops in the area, and sought its views on the BI assessment, KPI dashboards, and overall project report. It was necessary feedback to confirm the appropriateness, usability, and effectiveness of the tools developed. The input from Keswick Bookshop Kilimani showed three areas of impact, including clarity and comprehensibility of the report, alignment to BI goals, and the positive influence these BI tools would help with long-term business growth. Such feedback from the shop emphasized that in less than eight months, the BI maturity assessment and sales dashboards would set them on the right track for making data-informed decisions, whereby the best practices supportive of their vision and operational objectives in carrying out businesses could be implemented.

1.9.1 **Clarity and Understandability of the Report**

Kilimani Bookshop Keswick praised the clarity of the BI report and dashboard. He noted that the materials the team presented made BI insights accessible to and actionable by a small non-technical team. The clarity and simplicity were fundamental for a team with little prior exposure to the concepts and tools of business intelligence. Feedback included:

- ❖ **Visual simplicity** means direct interpretation was easy to make from the sales and inventory data in the report using clear visuals such as bar charts, line graphs, and key metrics. Whatever information was represented through such visuals was understood easily by all the staff, whether technical or not. For example, the trend of sales data was pretty evident; therefore, the team could grasp month-over-month fluctuations and also which categories are driving more revenues. Their staff appreciated that even without formal BI training, it would be quite effortless on their part to interpret the meaning of sales performance and seasonal trends.
- ❖ **Accessible Language:** Technical jargon was avoided in order to make the report accessible. Instead, straightforward language was used when explaining all key concepts of BI and findings. Terms such as "KPI," "data visualization," were defined and provided with examples in an attempt to take the scary-sounding words and provide contextual meaning. It was felt by the owner and staff that the accessible language of the report better framed the project goals and tools, providing a starting point into BI rather than scaring the relevant parties with unnecessary complexity.
- ❖ **Direct Actionability Points:** There were clear, actionable recommendations included in the report, which Keswick Bookshop Kilimani found particularly useful. For instance, actionable insights enabled the report to allow the shop owner to identify what precisely to focus on: monitoring seasonal sales peaks, determining the popular genres of books, and optimizing the

product inventory based on such information. This was a rather important focus on actions, because in this way, the shop owner was empowered to apply for certain actions regarding sales and inventory management directly, setting goals that were quite attainable instead of recommendations.

This clear and complete approach enabled Keswick Bookshop Kilimani to start the implementation of data-driven insights in its operational practice without requiring extensive training in BI. They were confident of adapting these insights into daily decision-making processes, another milestone toward their goal of a data-driven business culture.

Alignment of BI Practice Goals and Recommendations

The BI maturity assessment provided an overview of the current Keswick Bookshop Kilimani business intelligence practices and helped identify the strengths as well as the areas that need strengthening. It also pointed out the scores along the different dimensions of BI, thus setting up a planned framework through which the bookstore will develop a realistic BI roadmap, which aligns with its resources and long-term objectives. The owner found the following useful:

- ❖ **BI Scores:** The owner realized that the scores of this assessment have correctly represented what actually was the status of their BI practices. There were gaps in gathering and analyzing data, especially in tracking customer feedback and detailed analytics of sales data. Its direct scoring with gap analysis gave a benchmark for the current shop BI capability to enable the team to focus on gradual improvements without overwhelming it from its current limitation.
- ❖ **Practical Recommendations:** These recommendations were in the report to meet the peculiar needs of Keswick Bookshop Kilimani and its resource limitations. Such included establishment of a basic BI function even if part-time to take over data gathering up to interpretation. Other suggestions were in the use of customer feedback tools to understand better the trends in preferences and demographics. He appreciated such focused recommendations since they were doable within the current shop budget and operations. These recommendations did not need a complete overhaul but, instead, provided small, manageable steps that were to be done in integrating data practices, something highly appealing to the team.
- ❖ **Commitment to BI Development:** Keswick Bookshop Kilimani was committed to the adoption of BI practices incrementally, informed by insights gained from the maturity assessment as the framework for guiding operation. For example, the owner wanted to do some seasonal sales analysis as a starting point and progressively move forward over time with BI. This ability to engage BI at such a partial, resource-sensitive stage was indicative of the respect

granted to recommendations and the plans toward immediate, achievable goals, which can further be refined as their BI grows.

The feedback confirmed our recommendations on BI maturity were appropriate for the Keswick Bookshop Kilimani scope of operation and aims, hence provided the team with a systematic means of addressing the development of BI with their long-term growth vision in perspective.

1.9.2 Positive Anticipated Impact on Business Growth

The most encouraging results of the feedback session, however, were how enthusiastic Keswick Bookshop Kilimani is about the potential for BI tools to support business growth in the future. They value how the BI dashboard and maturity assessment could be helpful in their strategic decision-making processes, especially since they endeavor to improve customer engagement through better sales tracking over time.

- ❖ **BI growth-oriented tools:** This BI Dashboard represented a very valuable asset in keeping track of sales and then optimizing inventories. A series of metrics were developed, showing the most popular genres of books in specific months of the year, so this forms a data-driven foundation on which to base decisions related to inventory management and marketing. This could lead to a pro-active decision on the stock, price, and timing of promotions by providing the shop owner with trending and best-selling genres, ultimately maximizing sales revenue and improving customer satisfaction.
- ❖ **Excitement to Implement:** The owner and employees were excited about implementing the BI dashboard and maturity assessment. They foresaw from these tools better sales insights and operation efficiencies. Engagement was quite good, too, with the findings presented to them through the project. The willingness to adopt and experiment with BI practices was proactive, and they were eager to apply these tools as they became familiar with them. Such enthusiasm showed their commitment toward using data as a strategic asset in the long term.
- ❖ **Long-term vision:** The BI recommendations set out in the report were seen as a strategic roadmap to digital transformation and enhancing business intelligence. Through adherence to the roadmap, Keswick Bookshop Kilimani expected better decision-making, which would be enabled by growth due to a better understanding of sales, improved stock management, and refined marketing strategies. The owner shared the long-term vision for embedding BI into the culture of the shop and found it quite necessary in turning an organization data-informed.

1.10 Future Recommendations

As Keswick Bookshop Kilimani looks to expand its reach and improve its operational processes, there are several key strategies they can adopt to enhance efficiency, deepen customer insights, and increase market reach. These recommendations build upon the current BI maturity assessment and can guide the shop's journey toward a data-informed, customer-centric business model.

Real-Time Inventory Management

Implementing advanced BI tools for real-time inventory tracking can significantly enhance stock management at Keswick Bookshop Kilimani. Real-time inventory dashboards would allow the team to monitor stock levels continuously and identify patterns in sales trends, which can be instrumental in determining optimal reorder points and managing stock availability during peak demand periods. Automated reorder alerts, along with visual indicators for low-stock items, can help reduce stockouts and improve customer satisfaction by ensuring popular books are always available.

Integrating methodologies like Economic Order Quantity (EOQ) and Just-in-Time (JIT) inventory management can provide additional layers of efficiency. EOQ helps calculate the most cost-effective quantity of stock to reorder, minimizing holding costs, while JIT allows the shop to receive goods only as they're needed, reducing the capital tied up in excess inventory. For a smaller team, outsourcing these inventory processes to a third-party provider specializing in BI-powered inventory management may streamline setup and maintenance. Such a system would require minimal hands-on management, allowing the shop's staff to focus on other key areas while benefiting from automated, optimized inventory control.

Customer Feedback System

To foster a more customer-driven approach, Keswick Bookshop Kilimani could establish a structured feedback system that captures valuable insights directly from patrons. By creating a dedicated feedback platform—either on their website or through social media channels—the shop can continuously gauge customer satisfaction and identify emerging trends in customer preferences.

Feedback collected from online reviews, social media comments, and post-purchase surveys would allow Keswick to build a comprehensive picture of customer satisfaction with factors like book selection, service quality, and store ambiance. Such a system would help the shop identify any service gaps and adjust their approach to meet customer expectations better. Additionally, this feedback data can be integrated with the BI dashboard to track sentiment trends over time, enabling a proactive response to shifts in customer expectations and enhancing the overall shopping experience.

Social Media Analytics

Social media analytics represents a powerful tool for Keswick Bookshop Kilimani to better understand and engage its customer base. By examining engagement metrics and audience demographics on platforms like Instagram, Facebook, and Twitter, the shop can gain insights into who their followers are, what interests them, and which content resonates most effectively. This information can be leveraged to guide targeted ad campaigns, reaching specific customer segments with tailored messaging.

For example, if analytics reveal a high level of engagement from younger readers interested in contemporary fiction, Keswick could launch targeted promotions or events around trending authors and titles in that genre. Social media data could also inform content creation, helping the shop post more effectively about popular books or community events, increasing both engagement and conversion rates. Using a BI tool with social media integration would simplify this process by consolidating metrics from multiple platforms into a single dashboard for easy monitoring and actionable insights.

E-Commerce Integration

Adding an e-commerce platform to Keswick Bookshop Kilimani's website could transform its sales tracking and customer experience. This would not only broaden the reach of the shop beyond its physical location but also provide a seamless, automated approach to sales data collection. Through e-commerce integration, Keswick could gain real-time insights into sales trends, customer purchasing patterns, and inventory status, eliminating the need for manual data entry and significantly reducing the potential for errors.

An e-commerce site would allow for automated transaction logging, which would instantly update inventory counts and reflect sales metrics on the BI dashboard. With an online store, customers could purchase books conveniently from home, allowing the shop to expand its customer base and offer personalized recommendations based on purchasing history. Additionally, integrated e-commerce analytics would allow the shop to track customer behavior on the website, such as time spent on specific product pages or popular search terms, providing valuable data to inform inventory selection, marketing, and customer engagement strategies.

1.11 Conclusion

The project provides a detailed analysis of the business intelligence maturity, data structure, and dashboard design of Keswick Bookshop Kilimani. Applying the Maturity Model Integration framework led to our pinpointing major areas of interest that needed improvement in Keswick Bookshop's BI practices to set a foundation for more informed decision-making and strategic growth.

Our focus in this analysis has been majorly based on sales data, inventory management, and marketing effectiveness. By analyzing the sales trend and inventory turnover, we identified a few critical patterns related to promotional periods and the management of stock levels with respect to profitability. Sales performances are deeply related to seasonal demand and engaging with customers, as can be clearly observed with a noticeable trough of sales in off-peak periods. Our addressing of these insights included a more proactive focus on the inventory management aspect via the timely replenishment of stock at times when promotional planning could maximize sales in key parts of the year.

This BI dashboard, developed on Google Sheets and Power BI, was fit for the Keswick Bookshop small team due to its accessibility, real-time updates, and low cost. Key areas for growth featured in the BI Maturity Assessment component of the Google Sheets are data management practices, supplier performance, and customer feedback. This interactive tool supports ongoing BI development by scoring maturity levels, identifying gaps, and prioritizing future BI activities. This dashboard will automatically update as new data comes into the system, ensuring that insights and actions are kept up to date.

The implementation plan explains how the BI dashboard will be integrated into daily life in concrete ways: periodic updating to ensure that data are accurate, training for all members of staff so as to take full use of the dashboard, and a continuous feedback loop by which features on the dashboard can be fine-tuned. In this way, through continuous monitoring and improvement, the bookshop will maintain its competitive advantage by its operations aligning with dynamic customers and market trends.

The project henceforth equips Keswick Bookshop with the appropriate BI tools and actionable insights towards driving future growth. The bookshop will hence be in a position to increase sales, manage its inventory well, and engage its customers since it shall have a very strong backbone needed for BI. Recommendations given shall guide the shop toward operational efficiencies and proper decision-making for the eventual long-term success at the market.

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1.13 Appendices

Appendix A: DSA3050 Project Introduction Letter to Keswick Bookshop Kilimani



SEMESTER 2024

DSA 3050 A Business Intelligence Class

INSTRUCTOR: Dr. Mursi

DATE: 13th November 2024

DSA 3050 Project Assignment

To Whom It May Concern,

My name is Michelle Kanuri, and I am a student enrolled in the DSA 3030 A Business Intelligence course at the United States International University (USIU), under the guidance of Dr. Mursi. I am reaching out to introduce an exciting and mutually beneficial opportunity for Keswick Bookshop to enhance its business intelligence (BI) capabilities through a collaborative academic project.

As part of our course requirements, we have been tasked with partnering with a Small or Medium Enterprise (SME) to conduct a comprehensive, real-world BI project. The goal of this initiative is to assess and improve the BI maturity of your organization, ultimately leading to more informed decision-making and increased operational efficiency. Through this partnership, Keswick Bookshop will benefit from expert analysis, actionable insights, and the development of a custom BI dashboard tailored specifically to your business needs.

Project Overview and Key Benefits:

- i. **BI Maturity Assessment:** Our team will carry out a thorough evaluation of your current BI practices, including data management processes, reporting frameworks, and analytics capabilities. Using established BI maturity models, we will assess the effectiveness of your existing systems and identify areas of opportunity for improvement.
- ii. **Comprehensive Analytical Report:** Upon completion of the assessment, we will provide a detailed, structured report outlining key findings, strengths, and areas for improvement. This

will include strategic recommendations on how to enhance your BI practices and drive better decision-making within your organization.

- iii. **Custom BI Dashboard:** Based on the insights gathered during the assessment, we will design and develop a bespoke BI dashboard specifically tailored to track your key performance indicators (KPIs). The dashboard will provide real-time analytics and actionable insights to support data-driven decision-making across your operations.
- iv. **Implementation Support and Training:** In addition to delivering the dashboard, we will offer hands-on support during its implementation phase. Our team will provide training to ensure your staff can effectively use and maintain the dashboard, empowering your organization to maximize the value of the BI tool over time.

This project represents a unique and valuable learning opportunity for us as students while simultaneously offering Keswick Bookshop the chance to implement cutting-edge BI solutions at no cost. Our goal is to provide practical, meaningful support to your organization, helping you leverage BI to drive growth, optimize operations, and remain competitive in the market.

We would be honored to collaborate with Keswick Bookshop on this project and contribute to the advancement of your BI capabilities. Should you be interested in exploring this opportunity further, we would be happy to schedule a meeting at your convenience to discuss the project details and answer any questions you may have.

Thank you for your time and consideration. We look forward to the possibility of partnering with you and supporting the continued success of Keswick Bookshop.

Warm regards,

Michelle Kanuri

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Appendix B: B.I Project Questionnaire and Response

Overview of the Questionnaire

The following questionnaire was designed to gather insights from key stakeholders and employees regarding the current Business Intelligence (BI) capabilities, data requirements, and areas for improvement within the organization. The questions focused on identifying gaps in data management, BI tool usage, reporting needs, and user satisfaction with the current BI solutions.

Questionnaire Structure

The questionnaire consisted of five main sections:

- ❖ **Section 1: BI Reporting & Insights**– This section evaluates the frequency and actionability of reports generated from sales and inventory data.
- ❖ **Section 2: BI Products, Services, and Technologies**– This section assesses the tools and technologies used for managing sales and inventory.
- ❖ **Section 3: BI Practice Performance Measurement** – This section measures how performance is tracked and assessed in relation to sales and inventory management.
- ❖ **Section 4: Stakeholder Engagement and Collaboration** : This section examines how stakeholders, engage with data insights and customer feedback.
- ❖ **Section 5: BI Decision Rights and Authority** : This section clarifies who holds decision-making authority in analyzing sales and inventory data.

BI Reporting & Insights

Purpose: This section assesses the frequency of reporting and the practical value of insights from sales and inventory data.

Responses:

- ❖ **Sales Reporting Frequency:** "Daily"
- ❖ **Inventory Reporting Frequency:** "Monthly"
- ❖ **Actionability of Sales Insights:** Rated "5" (Highly actionable)

Analysis:

The bookstore generates daily sales reports, indicating a priority on tracking sales in real time. Conversely, inventory reports are generated monthly, which is a common cycle for maintaining stock and managing costs. The actionability of sales insights, rated highly at "5," suggests that the data

generated effectively informs daily operational decisions and sales strategies. This high rating reflects strong confidence in the BI system's relevance and utility for sales.

BI Products, Services, and Technologies

Purpose: This section evaluates the tools used for sales and inventory management, particularly in terms of their effectiveness.

Responses:

- ❖ **Primary Tool for Sales Management:** "POS System"
- ❖ **Effectiveness of Inventory Management Tools:** Rated "1" (Low effectiveness)

Analysis:

The primary tool for managing sales is the Point-of-Sale (POS) system, a standard solution for tracking sales transactions and customer purchases. However, respondents rated the effectiveness of inventory management tools low, with a score of "1." This response points to potential limitations in the inventory system's capabilities, which may lack functionalities like demand forecasting and real-time stock updates. Upgrading or supplementing these tools could enhance inventory management by reducing stock-outs and optimizing reordering processes.

BI Practice Performance Measurement

Purpose: This section focuses on how performance is monitored in relation to sales and inventory, and the use of Key Performance Indicators (KPIs).

Responses:

- ❖ **Sales KPI Review Frequency:** "Monthly"
- ❖ **Inventory Management Performance in Reducing Stock-Outs:** Rated "3" (Moderate performance)

Analysis:

The bookstore reviews sales KPIs on a monthly basis, allowing for regular monitoring of sales trends and ensuring strategic alignment. The moderate rating of "3" for the inventory system's effectiveness in reducing stock-outs suggests that while some processes are in place to minimize stock issues, there may be gaps in timing. This area could benefit from implementing predictive analytics or automated restocking features to reduce instances of stock-outs further.

Stakeholder Engagement and Collaboration

Purpose: This section examines how actively stakeholders are engaged in BI data usage and the frequency of customer feedback collection.

Responses:

- ❖ **Staff Involvement in Decision-Making:** Rated "4" (High involvement)
- ❖ **Frequency of Customer Feedback Collection:** "Quarterly"

Analysis:

Store staff are actively engaged in data-driven decisions, with a rating of "4" indicating significant involvement in using BI insights to inform actions. The quarterly collection of customer feedback is a strategic approach that balances gathering customer preferences with minimizing survey fatigue. However, increasing the frequency of feedback collection could yield more timely data, enabling quicker adjustments in response to changing customer expectations.

BI Decision Rights and Authority

Purpose: This section clarifies which roles are responsible for data analysis and who holds decision-making authority over sales and inventory insights.

Responses:

- ❖ **Responsibility for Sales Data Analysis:** "Manager"
- ❖ **Decision-Making Authority on Inventory Reports:** "Manager"
- ❖ **Improvement in Customer Satisfaction Due to BI:** Rated "5" (High improvement)

Analysis:

The responsibility for data analysis and decision-making authority in both sales and inventory rests with managers, centralizing control to ensure consistency and alignment with business goals. The rating of "5" for BI's impact on customer satisfaction suggests that data insights are effectively utilized to enhance customer experiences. Expanding BI-related decision rights and offering BI training to additional staff could empower broader decision-making and improve responsiveness to operational challenges.

Key Insights and Recommendations

- ❖ **Upgrade Inventory Management Tools-**Given the low effectiveness rating, consider investing in a more robust BI-enabled inventory management system. Enhanced tools with predictive analytics, real-time tracking, and automated reordering can address current limitations and optimize stock levels.
- ❖ **Increase Customer Feedback Collection Frequency-**Moving from quarterly to monthly feedback collection would provide fresher insights, allowing for a quicker response to customer needs and improving overall satisfaction.

- ❖ **Expand Staff BI Engagement**-Allowing more staff to participate in data-driven decisions and providing additional BI training could foster a more agile and proactive approach, especially in inventory management.
- ❖ **Enhance Data Visualization and Reporting**-Implementing advanced data visualization tools could improve data interpretation, making insights more accessible and actionable for all staff, particularly in inventory and sales reporting.
- ❖ **Conduct Regular BI Performance Audits**-Regular audits of BI performance, focusing on customer satisfaction and inventory management, can help ensure alignment with business goals and identify areas for continuous improvement.

Conclusion

The responses from this questionnaire provide valuable insights into the bookstore's current BI practices. While the sales management tools are effective and BI significantly contributes to customer satisfaction, there is room to improve inventory management and expand decision-making participation. By implementing the recommended actions, the bookstore can better utilize its BI capabilities to meet customer needs, reduce stock-related challenges, and enhance operational efficiency.