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Contents

1.0 Introduction

Duns Store is a multinational retailer with locations in 147 countries, including the United States. The company provides a variety of products, including office supplies, furniture, and technology, to consumers, corporations, and home offices. In 2014, the revenue of Dun's shop exceeded $500,000.

The retail industry is characterised by a high level of competitiveness and dynamism, as businesses face numerous challenges, including shifting consumer behaviour, intensified competition, and fluctuating market trends, all of which contribute to a sales decline (McKinsey, 2020). To achieve growth and maintain competitiveness, businesses must analyse their sales performance effectively.

Problem statement

Due to disparities in sales and market presence across various segments, categories, and regions, DUNs Stores faces challenges in its retail sales performance. Despite growth, there are significant disparities between product segments, geographic regions, and consumer categories in terms of sales and profit margins. Some regions, including EMEA and African regions, have negative profit margins, indicating possible inefficiencies and market penetration difficulties.

This report will investigate how Business Intelligence can increase Duns's retail sales. Using tables, diagrams, and charts, the data visualization and reporting software Power BI generates interactive dashboards of key performance indicators such as sales revenue, profit, and margin. In addition, product categories, consumer segments, and geographic regions are examined by analyzing sales trends over time. The results of the Duns store dataset will provide valuable insights into the sales performance of a retail company, allowing for the identification of areas for advancement and the development of more effective strategies.

2.0 Theoretical Framework

Due to disparities in sales and market presence across segments, categories, and regions, DUNs Stores faces difficulties in its retail sales performance. The aggregate sales data for various product categories at the Duns store are inconsistent. Regarding sales performance and customer satisfaction, the consumer segment has the highest total sales, while the Corporate and Home office segments have the lowest total sales.

This observation suggests that there may be cause for concern in regard to the effectiveness and market demand of these segments.

Multiple causes of the problem

i. Limited Market Presence: This factor's impact on the organization's financial performance has the potential to restrict growth opportunities and impede the business's overall success (Lemon and Verhoef, 2016). Corporate and Home Office demand is relatively lower than consumer demand at Duns's retail location.

ii. Product Perception: Customers' perceptions of the innovation and relevance of these products may impact their purchasing decisions. However, underperforming sales can have a negative effect on a company's market positioning and brand image, threatening its competitive advantage and impeding innovation (Azmat and Lakhani, 2015). Corporate and Home Office consumers' perception of the product at Duns's store has the potential to decrease sales.

iii. Inventory Management: Inefficient inventory management and excessive stock levels can negatively impact a company's ability to generate revenue, resulting in increased holding costs and financial losses (Oluyemi, 2023). Due to the higher volume of consumer sales compared to corporate and home office sales, Duns's store is particularly susceptible to the negative impact of high holding costs on profitability.

iv. Lack of customer satisfaction: Insufficient customer satisfaction has negative effects on brand perception, customer referrals, online reviews, and the number of returns and complaints. In competitive markets, consumer contentment functions as a differentiating factor that provides businesses a competitive advantage (Lemon and Verhoef, 2016).

However, scientists around the world are employing data analytics tools to surmount obstacles and mitigate the impact of declining sales on businesses. Numerous organizations have implemented tools such as business intelligence techniques to reduce costs and bolster the role of managers in assuring continued operations and productivity (Sivarajah et al., 2017).

2.1 Business Intelligence System Layer

A Business Intelligence (BI) system comprises a data repository, business analytics tools for data manipulation, business performance management (BPM) for monitoring

performance, and an interface resembling a dashboard (Turban et al.,2014). Figure 1 depicts the proposed structure of the business intelligence system layer, which will assist Duns Store in addressing its data consolidation, visualisation, and management challenges.

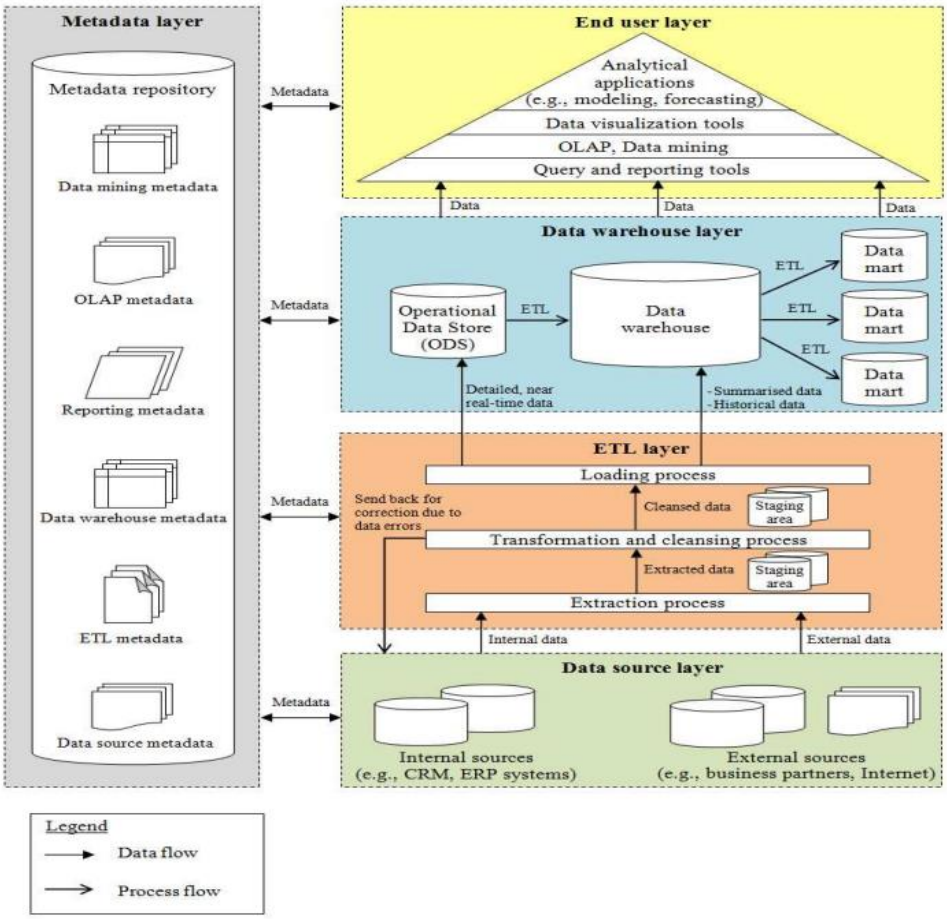


Figure 1: The proposed Business Intelligence Layer

Source: (Ong et al., 2011)

Modern management techniques incorporate a variety of analytics and business intelligence tools, such as end-user layers, metadata layers, data warehouse layers, and data source layers, to support decision-making (Ong et al., 2011).

i. **Data Source Layer:** Numerous disciplines today require the utilisation of both structured and unstructured/semi-structured data to facilitate efficient and expeditious decision-making (Baars and Kemper, 2008). In the case of Duns

Store, data can be gathered from internal or external sources. The internal data sources are those that are stored and maintained within Duns's store, such as CRM and ERM systems, and include data related to business operations (i.e., customers, products, and sales data), whereas the external data sources originate from outside an organisation and include business partners, syndicated data suppliers, the Internet, governments, and market research organisations (Chen et al., 2012; Strand et al., 2003).

ii. **ETL (Extract-Transform-Load) Layer:** Baars and Kemper (2008) highlight the significance of three primary ETL processes: extraction, transformation, and loading. Data is extracted from a variety of sources, sent to a staging area for processing, and then transformed and cleaned before loading into the target repository, which is applicable to Duns's dataset (Dayal et al., 2009).

iii. **Data Warehouse Layer:** The data warehouse is a vital component of any business intelligence architecture, and it comprises an operational store, warehouse, and data marts. Imhoff et al. (2003) emphasise the use of an operational data store (ODS) to integrate ETL data into data warehouses, storing subject-oriented, detailed, and current data for tactical decision-making. Inmon (2005) describes a data warehouse as an integrated, time-variable, and non-volatile collection of data for management decision-making, whereas data marts cater to various organisational needs which can be applicable in Duns's store.

iv. **Metadata Layer:** In a BI architecture, metadata is essential for managing and updating data. It contains information concerning data sources, ETL, reporting, OLAP, and data mining. A repository for metadata contains technical and business information, rules, and definitions, thereby reducing development time and making maintenance easier. It directs the data extraction, transformation, and encoding processes into target repositories (Ong et al., 2011).

v. **End User Layer:** The end-user layer is comprised of tools arranged in a pyramidal structure, whose comprehensiveness increases as data processing and presentation move up the organizational hierarchy to accommodate the complexity of decision-making and this is applicable in Duns's store (see Fig. 1).

The BI layer consists of tools for presenting data in diverse formats, such as OLAP for analysis, data mining for concealing information, dashboards for visualisation, and key performance indicators for in-depth analysis. These tools enable users to rapidly evaluate company data, recognise patterns, trends, and relationships, and obtain valuable insights regarding organisational performance. (Ong et al., 2011; Dayal et al., 2009).

2.2 Implementation of the BI to improve sale performance and market presence

Business Intelligence (BI) plays a crucial role in promoting retail sales performance by analysing consumer behaviour, predicting trends, optimising pricing strategies, enhancing store performance, evaluating marketing effectiveness, and monitoring operations in real-time (Hickinson, 2023). This extensive analysis results in tailored marketing campaigns, improved product offerings, and increased operational efficiency. BI components include, among others, architectures, tools, databases, analytical tools, applications, and methods. Business intelligence's primary objectives are to provide interactive data access, facilitate data manipulation, and conduct in-depth analysis (Turban, 2015). It primarily operates with financial, sales, and marketing data to assist businesses in making informed decisions. By implementing BI systems, businesses can realise numerous benefits relating to sales performance and inventory management optimisation. This, in turn, assists businesses in planning their inventory levels, budgets, reducing sales losses, and cutting costs (Kakhki and Palvia, 2016). By analysing client location information, business intelligence (BI) enables businesses to optimise resource allocation and expand consumer reach. Understanding consumer behaviour is essential for the development of effective marketing strategies and multichannel interactions, resulting in increased customer satisfaction and overall performance. This enables businesses to enhance products, optimise sales performance, and concentrate on customer service, order processing, and returns and exchanges, as well as to identify underperforming segments and regions. Nonetheless, business intelligence aids retail sales by employing data-driven insights to make informed decisions, maximise marketing strategies, and optimise operations in order to enhance consumer satisfaction, sales performance, and the success of the company (Riahi, 2018).

3.0 Evidence of Business Intelligence System

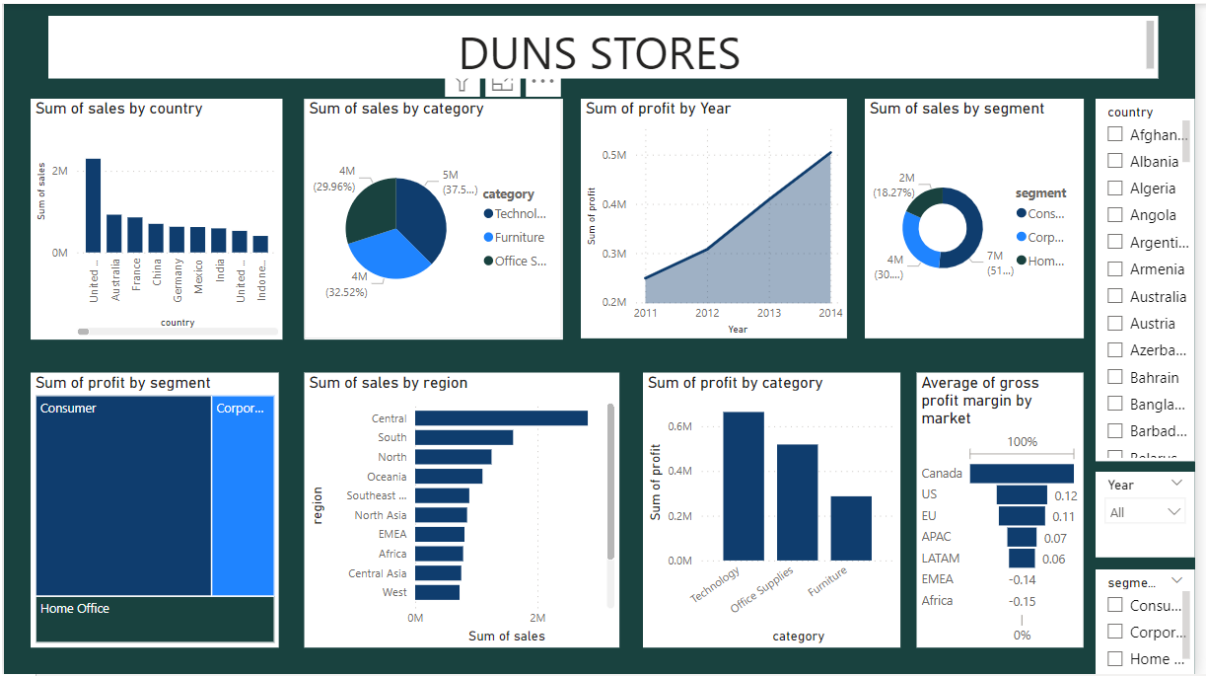


Figure 2: Duns Store Dashboard

Source: (Author, 2023).

4.0 Justification of Dashboard and Analysis

4.1 Dashboard Creation Process

Dashboards are graphical representations of essential data that are condensed and displayed on a single screen, enabling the rapid ingestion and subsequent analysis of data (Turban et al., 2014). Creating a dashboard for a Duns's store requires a series of sequential stages, which are outlined below.

4.1.1 Discovery

The dataset, which contains information about Duns's store product ID, category, sales, profit, and discount, was sourced from Kaggle through a search specifically targeting sales datasets.

4.1.2 Data Preparation

Subsequently, the dataset acquired from Kaggle was accessed and loaded into Microsoft Excel for further analysis. During this stage, a new column entitled "Gross Profit" was introduced by employing the following command: (=Profit/Sales). The

purpose of this operation was to calculate and record the gross profit values corresponding to the dataset entries.

4.1.3 Model Planning and Building

Upon importing the dataset into Power BI, it underwent a series of transformations in the Power BI Query Editor. Subsequently, a comprehensive review was carried out to identify and rectify any errors present in the loaded datasets, ensuring data integrity and accuracy.

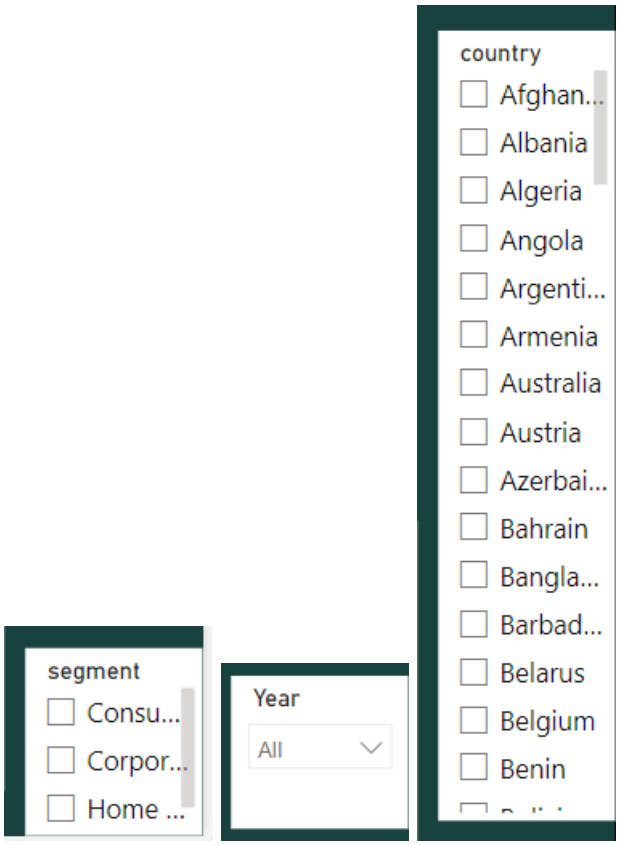
4.1.4 Communicate Results and Operationalise

In the final step of the process, the obtained results were thoroughly validated to ensure their accuracy and reliability. The Key Performance Indicator (KPI) measurements were then prominently presented on the Power BI dashboard, culminating the data analysis and visualization phase.

4.2 Justification of Dashboard

On Duns's store dashboard, pie, bar, donut, funnel, area, and treemap charts are used to display the annual profit, total sales by nation, category, segment, state, and profit by segment and category.

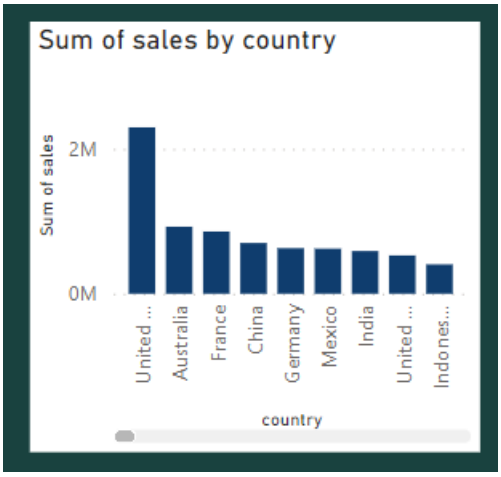
i. Figure 3: Slicers for Duns store



Source: Author (2023)

Turban (2015) emphasises the utilisation of slicers in Duns store dashboards, which provide an interactive and visually enticing user experience. Managers of Duns stores can rapidly access data on product segments, sales by year (2011-2014), and consumer preferences in each country, which improves their resource allocation and decision-making. The dashboard's three categories are segments, years, and countries inorder to permit efficient and rapid data analysis.

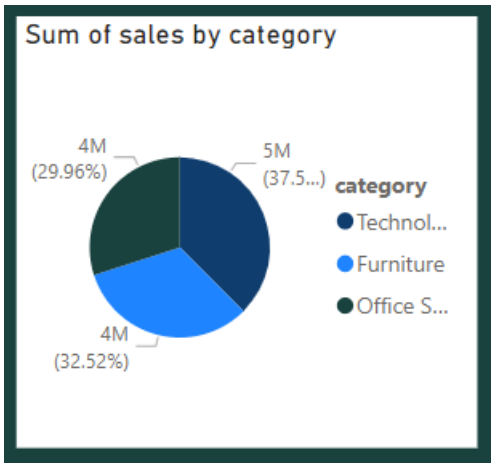
ii. Figure 4: Sum of Sales by Country



Source: Author (2023)

The chart depicts the total sales of DUNs Stores in various countries, with the United States in the lead with $2,297,354, followed by Australia and France with $925,257 and $858,949, respectively. Additionally, sales in China and Germany are substantial, indicating a robust market presence. However, DUNs Stores can invest in R&D to satisfy market demand, grow its consumer base, and employ targeted marketing campaigns to increase market engagement and brand loyalty.

iii. Figure 5: Sum of Sales by Category

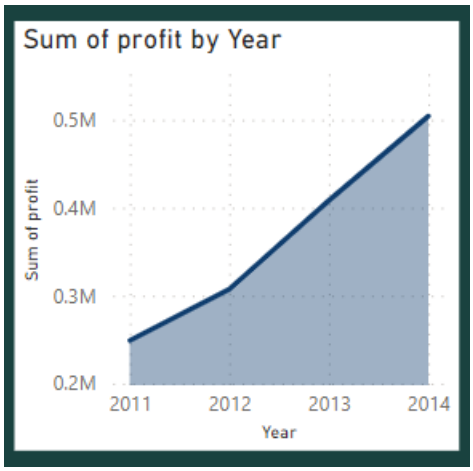


Source: Author (2023)

Figure 5 illustrates DUNs Stores' total sales of technology, office furniture, and office supplies. Technology generates the most revenue with $4,744,691, followed by Furniture with $4,110,884 and Office Supplies with $3,783,330. To increase its retail presence and market share, DUNs Stores can broaden its selection of technology, provide a variety of furniture styles, and bolster its office supplies section. However,

DUNs Stores will be able to accommodate to tech-savvy consumers and meet office supplies needs by employing market analysis, product diversification, online presence, promotions, and sustainable practises.

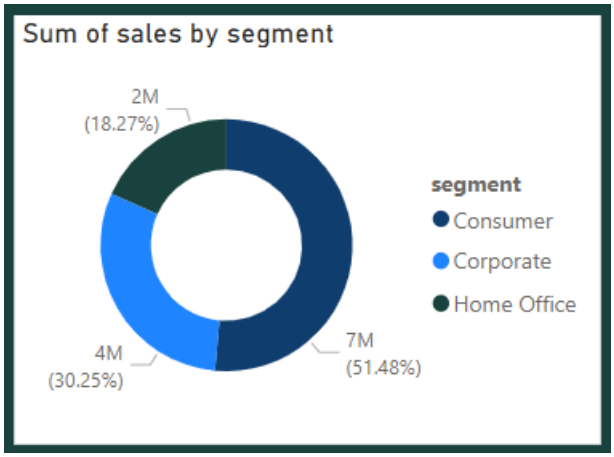
iv. Figure 6: Sum of Profit by Year



Source: Author (2023)

Figure 6 depicts the sum of DUNs Stores' annual profits over a four-year period. The graph depicts an upward trend with earnings increasing from $248,940.8115 in 2011 to $307,415.2791 in 2012, then to $408,512.7602 in 2013, and ultimately to $504,167.0805 in 2014. However, DUNS Stores' financial growth indicates future success. To maintain long-term success, the company should prioritize marketing, brand promotion, and optimizing the supply chain for cost savings and customer loyalty.

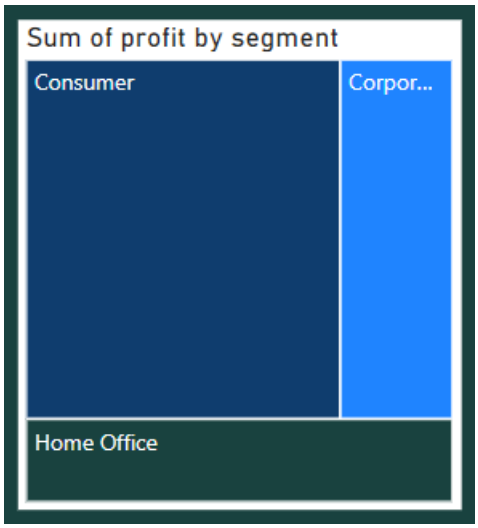
v. Figure 7: Sum of Sales by Segment



Source: Author (2023)

Figure 7 displays the total sales for the three segments of DUNs Stores: consumer, corporate, and home office. Consumer revenue leads with $6,508,141, followed by Corporate with $3,824,808 and Home Office with $2,309,956. DUNs Stores can enhance its approach by customizing marketing campaigns and catering to diverse consumer interests. For corporate segments, offering volume discounts, customized products, and ergonomic solutions for home offices will be beneficial. Prioritizing customer segmentation, product diversity, digital transformation, and positive customer experience is essential for sustained growth and competitiveness.

Figure 8: Sum of Profit by Segment

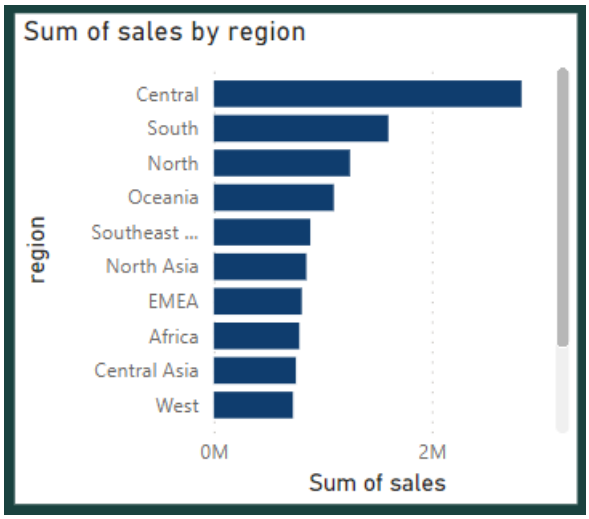


Source: Author (2023)

The Consumer segment has the highest profit of $43,835,365, followed by Corporate with $15,631,185, and Home Office with $13,721,984. To capitalize on opportunities,

DUNs Stores should focus on strengthening its position in the Consumer segment by introducing new products and implementing effective marketing strategies. For the Corporate segment, customized solutions, streamlined volume order processes, and building long-term relationships can drive growth. Additionally, there is potential for development in the home Office segment, particularly in technological products.

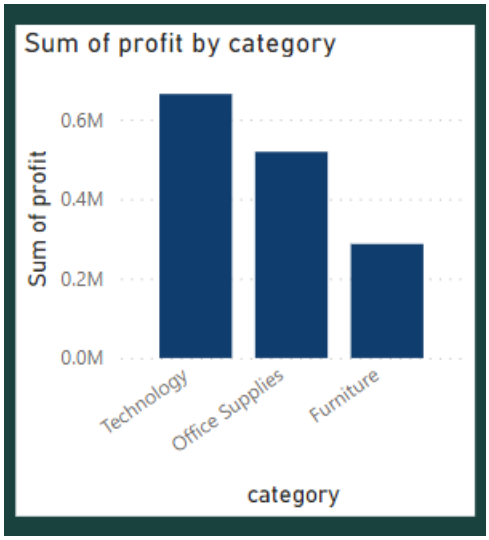
vi. Figure 9: Sum of Sales by Region



Source: Author (2023)

Figure 9 depicts the total DUNs Stores sales by region. The data indicates that sales statistics in various locations vary. The Central region is in first place with $2,822,399, followed by the South with $1,600,960 and the North with $1,241,192. Oceania and Southeast Asia had significant sales of $1,100,207 and $884,438 while North Asia and EMEA exceeded $800,000. In addition, sales projections for Africa and Central Asia are $783,776 and $758,339, respectively. Canada has the lowest sales, at $66,932, compared to the East, West, and Caribbean regions. To maximise sales potential and market presence, DUNs Stores should explore opportunities in targeted marketing, product diversification, and understanding regional preferences.

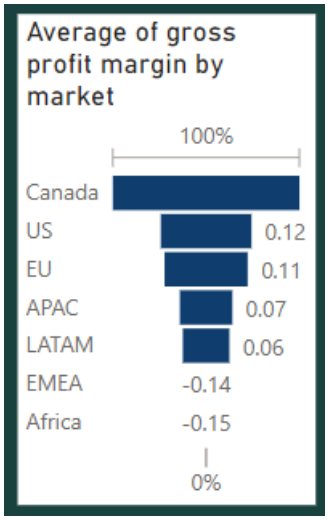
vii. Figure 10: Sum of Profit by Category



Source: Author (2023)

Figure 10 depicts the profit totals for three DUNs Stores categories: technology, office supplies, and furniture. The leading category is Technology with $663,778.7332, followed by Office Supplies with $518,474.9443 and Furniture with $286,782.2538. DUNs Stores should diversify its electronic offerings and invest in product development to attract tech-savvy customers. A vast selection of inexpensive and eco-friendly office supplies could enhance the Office Supplies industry. Ergonomic and contemporary furniture designs may help attract more customers. Long-term success requires cross-category marketing, market research, development of customer experience, enhancement of digital presence, and sustainable practices.

Figure 11: Average of Gross Profit Margin by Market



Source: Author (2023)

Figure 11 depicts the average gross profit margin for DUNs Stores' various markets. The United States ranks second (12.02%), followed by the European Union (11.04%). APAC (6.96%) and LATAM (6.17%) profit margins are moderate. EMEA and Africa have negative profit margins of -14.16 and -14.56%, respectively. DUNs Stores should prioritize expanding their presence in Canada and the United States in order to capitalize on opportunities. For increasing profit margins and enhancing market competitiveness in other regions, strategies such as optimizing pricing, supply chain operations, and market analysis, as well as product differentiation and sustainable practices, are essential.

5.0 Recommendation and Conclusion

In conclusion, DUNs Stores's retail sales performance is hindered by disparities in sales and market presence across segments, product categories, and geographic regions. The analysis revealed that the Consumer segment has the highest total sales and profits, while the Corporate and Home Office segments lag behind. Limited market demand, product perception, ineffective inventory management, and inadequate customer satisfaction are identified as potential causes of the problem. To address these obstacles and improve retail sales performance, it is recommended to implement a Business Intelligence (BI) system that enables management to make organization-wide decisions based on accurate data. Business intelligence (BI) implementation in Duns stores has the potential to improve sales performance, decision-making skills, territory optimisation, and operational efficiency. To improve sales performance and maintain a competitive edge in the retail industry, Duns Store must implement strategic measures such as market research, innovative products, customer experience management, inventory optimisation, targeted marketing campaigns, and strategic partnerships. Additionally, Duns Store should implement business intelligence to assist with the prioritisation of targeted marketing, product diversification, and regional preferences in order to remain abreast of emerging industry trends and maintain a competitive advantage. Moreover, the BI dashboard will provide daily insights into the optimal allocation of DUNs Stores' expansion efforts in Canada and the United States. Furthermore, it will facilitate the optimisation of pricing strategies, supply chain operations, and the adoption of sustainable business practises. These measures will help DUNs Stores overcome sales performance obstacles, increase profitability, and maintain its competitive edge in the retail industry.

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