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**International Business and Data Analytics**

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1. **Introduction**

Dataville Ltd., a multinational corporation headquartered in the United States of America, boasts a diverse portfolio of products spanning various categories. From automobiles & accessories to fashion items, electronics, and home and furnishing products, the company caters to a wide range of consumer needs. These products are strategically classified into consumer, corporate, and home office market segments, allowing for targeted marketing and operational efficiency.

In the fiscal year of 2015, the company showcased its prowess in the market, achieving an impressive cumulative sales revenue of $8,023,381.00. This substantial revenue stream translated into a commendable profit of $3,729,902.95, signifying a robust profit margin of 46%.

This stellar financial performance reflects the company's strategic positioning, effective market segmentation, and operational excellence. By tapping into diverse market segments and offering a range of high-quality products, Dataville Ltd. has secured a strong foothold in the global marketplace.

Moving forward, the company stands poised for continued success, leveraging its global presence, innovative product offerings, and data-driven decision-making. With a strong foundation built on solid financial performance, Dataville Ltd. is well-equipped to navigate the ever-evolving landscape of international business and maintain its position as a leader in the industry.

**1.1. Problem statement**

In 2015, the company faced a significant challenge with a notable decline in sales, particularly within the electronic product category. This decline amounted to $394,738.00, representing 5% of the overall sales distribution across various product categories. This downturn has had a tangible impact on the company's projected sales revenue and anticipated profits for the fiscal year, prompting a need for strategic intervention.

To address this issue, the company has set an ambitious goal to increase the sales income of the electronic product category by 25%. This aggressive target aims to achieve a sales revenue of $2,005,845.25 for the upcoming year. This objective reflects the company's strong determination to not only recover from the decline but also to propel the electronic product category to new heights of success.

The decision to employ business intelligence (BI) tools and strategies is pivotal in this endeavour. By leveraging BI, the company intends to effectively monitor, manage, regulate, and optimize the sales performance and activities of the enterprise. This approach will involve:

1. **Data Analysis and Insights**: Utilizing BI tools to analyse historical sales data, market trends, and consumer behaviour within the electronic product category. This data-driven approach will uncover valuable insights into the root causes of the decline and identify opportunities for improvement.
2. **Performance Monitoring**: Implementing real-time dashboards and reports to continuously monitor the sales performance of electronic products. This proactive monitoring will allow for swift identification of any deviations from targets, enabling timely interventions.
3. **Customer Segmentation and Targeting**: Using BI to segment customers based on purchasing behaviour, preferences, and demographics. This will enable personalized marketing strategies and targeted promotions to drive sales.
4. **Inventory Management**: Optimizing inventory levels and product assortment within the electronic product category based on demand forecasting and sales insights provided by BI analysis.
5. **Competitor Analysis**: Leveraging BI tools to gather intelligence on competitor strategies, pricing, and market positioning within the electronic product market. This will inform the company's competitive tactics and pricing strategies.

By harnessing the power of business intelligence, the company aims to not only reverse the decline in the electronic product category but also to position it as a thriving and lucrative segment of its business. The data-driven approach will enable the company to make informed decisions, allocate resources effectively, and implement targeted initiatives to achieve its ambitious sales revenue target.

**1.2. Objective of the study**

This study delves into the transformative potential of business intelligence (BI) on the business and sales performance of the organization. With a specific focus on the implementation of a performance-based dashboard system for monitoring and tracking purposes, the research aims to uncover the manifold benefits and strategic advantages that BI can offer.

At the core of this investigation lies the role of the performance-based dashboard system. This sophisticated tool provides a centralized platform for collecting, analysing, and visualizing key business metrics and performance indicators. By aggregating data from various sources such as sales figures, customer feedback, market trends, and operational metrics, the dashboard offers a comprehensive and real-time view of the organization's performance landscape.

One of the primary objectives of this study is to explore how the utilization of this BI dashboard system empowers management to make informed decisions. By presenting complex data in a clear, concise, and visually intuitive manner, the dashboard enables executives and decision-makers to quickly grasp the pulse of the business. This includes insights into sales trends, customer preferences, product performance, and operational efficiencies.

Through detailed analysis and visualization of this data, management gains the ability to:

1. **Identify Performance Trends**: The BI dashboard allows for the identification of both positive and negative performance trends across various business units, product categories, or geographical regions. This enables proactive decision-making to capitalize on strengths and address weaknesses promptly.
2. **Track Key Performance Indicators (KPIs)**: The dashboard system provides a centralized hub for tracking KPIs that are critical to the organization's success. This includes metrics such as sales growth, customer acquisition costs, conversion rates, inventory turnover, and more.
3. **Monitor Sales Performance**: With real-time data on sales figures, product sales by category, customer segments, and geographic locations, management can gain deep insights into what drives sales and where opportunities for growth lie.
4. **Enhance Operational Efficiency**: By analyzing operational metrics such as production costs, supply chain efficiency, and inventory management, the dashboard aids in identifying areas of inefficiency and optimizing processes for cost reduction.
5. **Enable Data-Driven Decision-Making**: Armed with accurate and up-to-date information, management can move away from gut-feel decisions to data-driven strategies. This minimizes risks, maximizes opportunities, and ensures that resources are allocated effectively.

Furthermore, the study delves into the broader implications of BI on the organization's bottom line. By harnessing the power of data analytics and visualization, the organization stands to benefit from:

1. **Enhanced Sales Performance**: Targeted marketing campaigns, personalized customer experiences, and strategic product positioning driven by BI insights can lead to increased sales and revenue growth.
2. **Reduced Costs and Wastage**: The ability to pinpoint inefficiencies in operations, identify areas of unnecessary expenditure, and optimize resource allocation can result in substantial cost savings.
3. **Improved Customer Satisfaction**: Understanding customer preferences, behaviours, and feedback through BI analysis enables the organization to tailor products and services to meet and exceed customer expectations.
4. **Competitive Advantage**: By staying agile and responsive to market trends, competition, and consumer demands through BI, the organization can maintain a competitive edge in the industry.

**1.3. Methodology**

The study at hand embraces the Data Analytics Life Cycle methodology, a structured approach to extracting insights from data. With a dataset comprising 51,290 records of the company's 2015 sales transactions, sourced from Kaggle, the research embarks on a comprehensive analysis within the Microsoft Excel Business Intelligence framework.

The dataset undergoes meticulous examination using a Pivot table, a powerful tool for organizing and summarizing data. This step serves as the foundation for further analysis, enabling the study to delve into the intricacies of the company's sales performance across various product categories and market segments.

Key Performance Indicators (KPIs) emerge as pivotal metrics in this analysis, offering a quantitative measure of the company's success in meeting its objectives. By leveraging KPIs, the study aims to gauge performance, identify trends, and uncover areas for improvement within the sales data.

The utilization of data visualizations within the Microsoft Excel Business Intelligence framework further enhances the study's analytical capabilities. These visual representations, ranging from bar charts to pie graphs and trend lines, serve as powerful tools for presenting complex data in an easily digestible format.

The goal of these visualizations is two-fold: to deepen the researchers' understanding of the dataset and to enhance users' comprehension of the study's findings. By presenting the data on a performance-oriented dashboard, inspired by the principles outlined by Eckerson (2006), the study aims to provide a comprehensive and intuitive overview of the company's sales performance in 2015.

Through this meticulous process of data analysis and visualization, the study endeavours to uncover actionable insights that can drive strategic decision-making. By adopting a structured methodology and harnessing the power of data analytics tools, the research aims to offer valuable insights into the company's sales trends, market dynamics, and areas of potential growth.

In essence, the study serves as a roadmap for leveraging data analytics to gain a deeper understanding of business performance. By embracing the Data Analytics Life Cycle methodology and employing innovative tools within the Microsoft Excel Business Intelligence framework, the research aims to unlock the hidden potential within the company's sales data and pave the way for informed and strategic decision-making.

**2.0. Theoretical Framework**

2.1. Competitive intelligence

Sales depend on an organization's knowledge about competitors, markets, and products. Makame et al. (2014) say e-commerce is evolving quickly. It altered business models, market dynamics, and market structures (Al-Hawari, 2011). This technology gives organizations a detailed view of online product usage. This shows how companies may reward customers. Because e-commerce is more efficient, commercial transactions require less time. Websites promote goods and services and simplify ordering and tracking (Huang et al., 2015).

2.2. Business Intelligence.

Due to the growing relevance of information intelligence inside and outside businesses, modern organisations have substantially invested in business intelligence systems (Hou, 2012). Company intelligence (BI) uses data from different sources to assist companies understand dynamics and make better decisions (Aruldoss et al., 2014). Business Intelligence (BI) analyses primary or secondary data to know competitors (Jaworski, MacInnis & Kohli, 2002, p. 304). It is essential to strategic marketing decisions and market-oriented organisation growth (Jaworski et al., 2002, p. 279). The corporation can make organisational decisions via mobile, web, and email (Gao and Xu, 2009). Management needs quick communication routes.

2.2.1. Business intelligence framework

According to Kemper and Baars (2006), the Business Intelligence Framework consists of three distinct levels that are organized in a hierarchical fashion. The data layer, the logic layer, and the access layer are all included in the components.

Data layer

ETL-extracted sustainability data from multiple data sources is stored in the institutional data warehouse (Muntean et al., 2013). Inmon (2005) says data warehouses with data marts improve searching and analysis. The data layer consolidates data marts to increase quality and consistency and save money.

Logic layer

The Logic Layer helps analyze organized and unstructured data, enabling the effective distribution of pertinent knowledge. OLAP and data mining are among the Logic Layer's analytical functions. The Logic Layer compiles, processes, and delivers data for management decision-making (Kemper et al., 2000).

Access/Visualization Layer

Data Access Layer connects Logic Layer components and capabilities and displays them coherently and customized. The "portal systems" deploy this layer. Portals combine multiple information and application systems into one interface (Davydov, 2001). IBM describes data visualization as charts, graphs, infographics, and animations. Complex data interactions and insights are simplified by these visualizations. Data visualization isn't for data teams. It helps data analysts and scientists uncover and explain patterns and trends, while management utilizes it to indicate organizational hierarchy.

A diagram of a business process

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Business intelligence framework and integration approaches

Adapted from An Integrated Business Intelligence Framework (2023)

**3.0. Data Analysis**

Data analysis involves acquiring, modelling, and analyzing data to improve decision-making, according to McFedries (2018). Deloitte's 2021 data analytics report defines data analytics as capturing, managing, and analyzing data to drive company strategy and performance. It ranges from retrospective analysis to prospective planning and forecasting.

3.1. Data Analytics Framework

The study will adopt the data analytics life cycle methodology outlined below in order to effectively apply business intelligence (BI).

A diagram of a data analysis process

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Data Analytics Life Cycle.

Source: Adapted from the Data analytics Lecture note (2023)

3.1.1. Discovery

Given the low sales of the electronic product category, the company has pledged to increase sales by 25% in the coming year. The company plans to use business intelligence (BI) to achieve its goals. This implementation will help the company manage, monitor, and regulate sales, increasing sales revenue.

3.1.2. Data preparation

The company's 51,290 data records from Kaggle, an online data firm, were downloaded and saved on the computer system to examine its performance in 2015. Microsoft Excel was used to model the data. Several measures were used during data modelling to ensure complete, analysed, and unambiguous dataset knowledge. Some steps are,

Data Filtering

The Excel application during pivot table analysis restricted the analysis of profit margin, sales revenue, sale volume, and countries to “top ten ” for convenience of presentation and analysis due to the enormous volume of data records.

Field deletion

Due to the enormous volume of data records, some columns in the working sheet of the datasets were deleted. The columns include, The order Id, order date and shipping date, shipping mode, order priority shipping cost, Customer id, City, Customer name, and Aging. In addition, the columns were also deleted because they are not relevant to the study and the objective of the analysis we want to achieve.

Field modification

The working sheet sales column was renamed ‘sales revenue’. The quantity column was changed to sales volume, while the profit column was changed to operating profit. This action encourages dataset examination and thoughtful reflection to elevate visualisation.

Creation of field columns

The profit margin column was added to the dataset's working sheet to show revenue left after operating expenses. The operational profit margin was calculated by dividing operating profit by sales revenue and multiplying by 100. The datasets working sheet now includes a cost of goods column for commodities. Its goal is to show production costs. The cost of products was estimated by deducting operating profit from sales income. To illustrate product costs, the dataset working sheet includes a cost price column. This measure shows the mean cost price of sold products. The cost price of a product was calculated by dividing sales income by the quantity sold.

The cell row has no duplicate or missing values during modelling. However, several field columns were changed to improve dataset presentation and comprehension.

After the preceding steps, the datasets were stored in the system and a pivot table was constructed on Excel using the insert command.

3.1.3. Model Planning and Building

Microsoft Excel pivot tables were created to analyse datasets based on Key Performance Indicators. We evaluated key performance indicators (KPIs) from the datasets most relevant to the study's aim based on management's strategic plan. A pivot table was used to analyse and visualise important performance characteristics such as profit margin, sales revenue, country, product categories, market segment, cost of goods, sales volume, sales discount, and product subcategories. The data were presented using visual charts and an interactive dashboard with slicers. Business intelligence (BI) helps decision-makers assess the problem and make the best choices (Sharda, Turban, and Delan, 2014).

3.1.4. Communicate results and operationalise.

After validating the output and creating an Excel dashboard for key performance indicator data, the procedure is complete. Slicers made the dashboard interactive. This helps management comprehend the situation and make decisions quickly.

**4.0. Dataville Business Intelligent System Dashboard**

The 4.0 Figure The firm dashboard, which is used for the purpose of monitoring and tracking the operational efficacy of the organisation, is shown below. This helps with the creation of well-informed assessments, which is the goal of using the dashboard.

**A screenshot of a computer

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Dataville Sales Performance Dashboard

Fig 4.0: Dashboard system. Source: (own work)

4.1. Dashboard Justification

The implementation of a comprehensive sales dashboard within an organization is more than just a digital display of numbers; it's a strategic move towards enhancing business efficacy and achieving long-term objectives. By integrating key sales indicators and statistics into a centralized dashboard, a wealth of invaluable insights becomes readily accessible to managers and decision-makers.

As highlighted by Ong et al. (2011), the utilization of this dashboard allows for a meticulous evaluation of sales performance through the lens of Key Performance Indicators (KPIs). These metrics act as compass points, guiding managerial focus towards areas of strength and opportunities for growth. Whether it's tracking conversion rates, analysing customer acquisition costs, or monitoring sales pipeline progression, the dashboard offers a holistic view of the sales landscape.

Moreover, the transformative power of the sales dashboard, as noted by Sharda, Turban, and Delan (2014), extends beyond basic performance assessment. It becomes a catalyst for operational efficiency by streamlining processes and identifying bottlenecks. Real-time data updates ensure that decisions are not just informed but also timely, enabling agile responses to market fluctuations and customer demands.

Strategic decision-making, the cornerstone of organizational success, finds a robust ally in the sales dashboard. Armed with precise, up-to-date information on market trends, customer preferences, and competitor movements, executives can chart a course that aligns with overarching business objectives. Whether it's pivoting product strategies, optimizing pricing models, or targeting new market segments, the dashboard provides the necessary intelligence for bold, calculated moves.

The benefits of such a solution are manifold and far-reaching, justifying its adoption as a pivotal tool within the organization. Improved sales processes lead to enhanced revenue generation, customer satisfaction, and market competitiveness. Operational efficiencies translate into cost savings and resource optimization. Strategic decision-making ensures that every action taken is not just a step forward but a leap towards sustainable growth and market leadership.

4.1.1. Operating profit margin of the Top Ten countries

Fig .4.1.1: Profit Margin of the Top ten countries. Source (own work)

The column bar chart depicted in Figure 4.1.1 offers a concise yet impactful snapshot of the profit performance across the top 10 countries within the organization's purview. The metric used, operating profit margin (calculated as revenue after operating expenses), sheds light on the financial prowess of each nation in driving profitability.

At the forefront of this chart, Tunisia proudly stands as the leader with an impressive profit margin of 60%. This stellar performance not only highlights Tunisia's market strength but also signals a lucrative opportunity for further investment and growth within this region. Following closely behind is South Sudan, boasting a commendable 54% profit margin, indicating a robust market environment ripe with potential.

On the other end of the spectrum, Belarus, and the UAE present figures of 47% and 48%, respectively, marking them as the countries with the lowest profit margins among the top 10. While these numbers might suggest areas of improvement, they also serve as valuable insights into regions where strategic interventions could yield substantial returns.

For management, this information serves as a compass for navigating the complex landscape of international sales and operations. By dissecting the profit margins of each country, managers can identify high-performing markets deserving of additional resources and attention. This targeted approach allows for the optimization of product category sales, tailoring offerings to meet the specific demands of each region.

Moreover, the analysis extends beyond mere profit margins, delving into the nuanced interplay of sales performance and operational costs. By assessing product category sales in conjunction with profit margins, management gains a holistic view of each country's contribution to the organization's bottom line.

Identifying areas where sales can be bolstered, and costs mitigated becomes a strategic imperative. Whether it's through targeted marketing campaigns, localized product variations, or supply chain optimizations, the goal is clear: to enhance profitability by maximizing revenue and minimizing expenses.

The decision to focus on the top 10 countries, despite the wealth of available data, speaks to the pragmatic approach taken in this analysis. By homing in on these key markets, management can allocate resources efficiently, prioritizing efforts where they are likely to yield the greatest returns.

In essence, the column bar chart serves as more than just a visual representation of numbers; it is a roadmap for strategic decision-making. It empowers management to make informed choices regarding market expansion, product development, and cost management, all with the overarching goal of increasing profitability and ensuring sustainable growth.

4.1.2. Sales Revenue of Top Ten Countries

Fig .4.1.2: Sales Revenue by Top Ten Countries. Source (own work)

The column bar chart depicted in Figure 4.1.2 offers a succinct overview of the average sales income across the organization's top 10 countries. These figures, ranging from Eritrea's leading average of $219.50 to the lowest averages of $171.80 for Mozambique and $170.40 for Uzbekistan, provide valuable insights into revenue generation on a country-by-country basis.

Eritrea's notable position at the top of the chart signals a strong market presence, with substantial average sales income. This insight allows management to recognize the potential for further investment and strategic initiatives within this lucrative market.

Conversely, the lower average sales income of Mozambique and Uzbekistan underscores areas where targeted interventions may be needed. By identifying these countries as those with comparatively lower revenue generation, management can devise tailored strategies to bolster sales performance.

Utilizing this data, management can allocate resources towards enhancing sales in countries with lower average incomes. This might involve targeted marketing campaigns, localized product adaptations, or exploring avenues for cost reduction to improve competitiveness.

The decision to focus on the top 10 countries for analysis, despite the breadth of available data, is a pragmatic approach. It ensures that management's efforts are concentrated where they are likely to yield the greatest impact on overall sales revenue.

In essence, this column bar chart serves as a roadmap for strategic decision-making. It empowers management to identify key markets generating significant sales income, as well as those that require attention to boost revenue. By leveraging this data, the organization can implement focused strategies to optimize sales performance, enhance market presence, and drive sustained growth in a competitive global landscape.

4.1.3. Sales Proportion by product categories

Fig 4.1.3.Sales Proportion of the Product categories. Source (own work)

The pie chart depicted in Figure 4.1.3 provides a visual representation of the sales performance for each product category within the organization. This breakdown, showcasing the proportion of sales contributed by each category, reveals valuable insights into the growth dynamics of the business.

At the forefront of this chart is the fashion category, boasting a substantial 65% share of overall sales. This impressive growth rate signals a strong market demand for fashion products, presenting an opportunity for further expansion and strategic initiatives within this lucrative segment.

Conversely, the electronics category trails behind with a modest 5% share of sales. This lower growth rate indicates areas where the product category may be underperforming compared to others.

For management, this information serves as a critical tool for pinpointing areas of strength and weakness within the product portfolio. By identifying the electronics category as having the lowest growth rate, management can delve deeper into the factors contributing to its underperformance.

Possible strategies to enhance sales in this category may include:

1. **Increased Sales Discounts**: Offering promotions and discounts on electronics products to stimulate demand and attract price-sensitive customers.
2. **Product Development**: Introducing new and innovative electronics products or updating existing ones to align with market trends and consumer preferences.
3. **Pricing Approach Adjustment**: Analysing pricing strategies to ensure competitiveness in the market, potentially through pricing adjustments or bundling strategies.
4. **Targeted Marketing Strategies**: Tailoring marketing campaigns specifically to promote electronics products, highlighting unique features, benefits, and value propositions.
5. **Partnerships and Collaborations**: Exploring partnerships with electronics manufacturers or retailers to expand product offerings and reach a broader customer base.

By leveraging the insights from the pie chart, management can make informed decisions to revitalize the electronics category's sales performance. This strategic approach ensures that resources are allocated efficiently to areas with the greatest potential for growth and profitability.

4.1.4. Sales Revenue by Market Segment

Fig. 4.1.4: Sales Proportion by Market Segment. Source (own work)

The Donut Pie chart showcased in Figure 4.1.4 provides a clear overview of the success rates of various product market sectors within the organization. These insights, ranging from the home office market category with the lowest performance rate of 18% to the consumer goods category boasting the highest success rate of 52%, offer valuable guidance for strategic decision-making.

The data presented allows management to identify key market segments where the organization is excelling and where there is room for improvement. In this case, the consumer goods category emerges as a standout performer, indicating strong demand and successful market penetration.

Conversely, the home office market category lags behind with a lower performance rate of 18%. This signals an area where the organization may need to focus its efforts to enhance sales and market presence.

For management, this information serves as a foundation for strategic planning and market research. By understanding the success rates of each product market sector, they can tailor their approach to capitalize on strengths and address weaknesses.

Strategies for increasing sales of home office products may include:

1. **Targeted Marketing Campaigns**: Developing marketing initiatives specifically aimed at the home office market segment, highlighting the benefits, features, and utility of these products.
2. **Product Innovation and Customization**: Introducing new and innovative home office products or customizing existing ones to better meet the needs and preferences of this segment.
3. **Market Expansion**: Exploring new channels or partnerships to reach a wider audience within the home office market, such as online retailers, office supply stores, or business-to-business sales.
4. **Price Adjustments and Promotions**: Offering competitive pricing, discounts, or special promotions to attract customers within the home office segment.
5. **Customer Engagement and Support**: Providing excellent customer service, after-sales support, and resources tailored to the home office market's requirements.

By utilizing this data, management can formulate targeted strategies to not only improve sales within the home office product category but also enhance the performance of other product categories. This strategic approach ensures that resources are allocated effectively, maximizing opportunities for growth and market competitiveness.

4.1.5 Sales Volume of the Top Ten Countries

Fig .4.1.5: Sales volume of the Top Ten countries. Source (own work)

The 2015 sales volume column bar chart, as depicted in Figure 4.1.5, provides a clear snapshot of country-wise sales within the organization. Among these figures, the United States emerges as the frontrunner with an impressive sales volume of 30,024 units. In contrast, countries such as India and Indonesia lag behind with comparatively lower sales volumes.

For management, this data serves as a valuable tool for understanding the driving forces behind the United States' exceptional sales performance. By dissecting the sales figures across different product categories and subcategories within the US market, management can uncover insights into consumer preferences, market trends, and effective sales strategies.

Possible factors contributing to the US's high sales volume might include:

1. **Strong Demand for Specific Product Categories**: Certain product categories or subcategories might resonate particularly well with US consumers, driving higher sales volumes.
2. **Effective Marketing Campaigns**: Targeted and impactful marketing strategies could have heightened consumer awareness and interest in specific products.
3. **Strategic Partnerships or Distribution Channels**: Collaborations with key retailers, partnerships with e-commerce platforms, or effective distribution networks could have expanded market reach.
4. **Product Innovation and Differentiation**: Unique product features, innovations, or brand differentiators might have captured consumer attention and loyalty.

By understanding the drivers of success in the US market, management can replicate effective strategies in other countries or regions with lower sales volumes. This includes:

1. **Market-Specific Marketing Strategies**: Tailoring marketing campaigns to resonate with the preferences and behaviours of consumers in low-volume markets.
2. **Product Customization or Localization**: Adapting products to meet the specific needs or preferences of consumers in different regions, enhancing relevance and appeal.
3. **Resource Allocation and Investment**: Allocating resources, such as sales teams, advertising budgets, and promotional efforts, towards markets with growth potential.
4. **Competitive Pricing Strategies**: Analysing pricing structures to ensure competitiveness in markets with varying economic conditions and consumer purchasing power.

The decision to focus on the top ten countries, despite the vastness of available data, allows for a targeted analysis that yields actionable insights. By concentrating on these key markets, management can prioritize efforts where they are most likely to drive significant returns.

4.1.6. Cost of Goods of Good by Product Categories

Fig .4.1.6: Cost of Goods by product categories. Source (own work)

The column bar chart displayed in Figure 4.1.6 offers a glimpse into the mean cost of manufacturing a single product quantity across various product categories within the organization. Among these figures, the fashion products category stands out with the highest mean cost of $88.65 per unit. In contrast, the home & furniture product category boasts the lowest mean cost at $70.99 per unit.

This data presents a prime opportunity for management to delve into the cost structures of each product category and identify areas for improvement in operational efficiency and cost reduction. Key insights from this analysis may include:

1. **Identifying Cost-Intensive Processes**: Understanding the factors contributing to the high manufacturing costs of fashion products can unveil areas such as material sourcing, production methods, or labour expenses that might be optimized.
2. **Streamlining Production Processes**: Implementing lean manufacturing principles or process automation can lead to cost savings by reducing waste, minimizing lead times, and improving overall efficiency.
3. **Supplier Negotiations and Relationships**: Engaging in strategic partnerships with suppliers or renegotiating contracts can result in better pricing for raw materials, components, or services, directly impacting manufacturing costs.
4. **Product Design and Complexity**: Evaluating the design complexity of fashion products and exploring ways to simplify without compromising quality can lead to cost savings in production.
5. **Benchmarking and Best Practices**: Comparing manufacturing costs across product categories and against industry benchmarks can highlight areas of inefficiency and opportunities to adopt best practices.

By pinpointing product categories with high manufacturing costs, management can implement targeted strategies to enhance cost efficiency and competitiveness. This, in turn, can have a direct impact on sales revenue and business profitability:

1. **Improved Pricing Strategies**: With a better understanding of manufacturing costs, management can adjust pricing strategies to ensure margins are optimized without sacrificing competitiveness.
2. **Investment in Innovation**: Allocating resources towards research and development for cost-saving technologies or materials can lead to long-term savings in manufacturing.
3. **Enhanced Profit Margins**: Lowering manufacturing costs directly translates to higher profit margins per unit sold, contributing to overall business profitability.
4. **Resource Reallocation**: Identifying cost-intensive product categories allows management to reallocate resources towards high-growth, high-margin products, or markets.

4.1.7. Sales Discount by Product Categories

Fig .4.1.7: Sales discount by product categories. Source (own work)

The column bar chart in Figure 4.1.7 offers a comprehensive view of the sales discounts across different product categories within the organization. Among these figures, the fashion category stands out with the highest sales discount, amounting to $923.47 on average per unit. Conversely, the electronics category exhibits the lowest discount, totalling $80.67 per unit.

This data provides valuable insights into the pricing strategies and competitiveness of each product category. A notable observation is the impact of sales discounts on sales turnover, particularly evident in the case of the electronics category:

1. **Effect on Sales Volume**: The low sales discount in the electronics category, with specific products such as LCD and keyboard products showing minimal discounts of 0.03 and 0.01 respectively, may have contributed to subdued sales volumes. Customers often respond positively to discounts and promotions, making it a crucial factor in purchase decisions.
2. **Price Sensitivity**: Electronics products, being relatively high-ticket items, often exhibit higher price sensitivity among consumers. The lack of attractive discounts might deter potential buyers, leading to lower sales figures.
3. **Competitive Positioning**: Comparing the sales discounts across categories can shed light on the organization's competitive positioning. The fashion category's higher discounts might indicate a more competitive market landscape where promotional pricing plays a significant role.

For management, this data serves as a catalyst for strategic decision-making in several key areas:

1. **Adjusting Sales Strategies**: Assessing the necessity of implementing additional sales discounts and promotional offers across all product categories to stimulate demand and drive sales volume.
2. **Marketing Techniques**: Tailoring marketing campaigns to highlight promotions, discounts, and value propositions, particularly for product categories with lower sales figures and discount rates.
3. **Product Bundling and Cross-Selling**: Exploring opportunities to bundle electronics products with accessories or complementary items, offering attractive package deals to enhance value perception.
4. **Competitive Analysis**: Conducting a thorough analysis of competitors' pricing and promotional strategies to ensure the organization remains competitive in the market.
5. **Targeted Pricing Adjustments**: Considering strategic pricing adjustments for specific products or categories to align with market demand and price sensitivity.

By focusing on the impact of sales discounts on sales turnover, management can refine pricing strategies, enhance competitiveness, and ultimately drive revenue growth:

1. **Sales Volume Boost**: Offering compelling sales discounts can lead to increased sales volume, capturing a larger share of the market and driving revenue growth.
2. **Improved Customer Acquisition and Retention**: Attractive discounts and promotions not only attract new customers but also encourage repeat purchases and customer loyalty.
3. **Market Penetration**: Lowering barriers to entry through discounts allow the organization to penetrate new markets and expand its customer base.

**5.0. Conclusion and Recommendation**

The research conducted provides valuable insights into the utilization of big data for informed decision-making, as highlighted by Kopanakis, Vassakis, and Mastorakis (2016). In response, the company has taken significant steps towards implementing a data-driven decision-making model, leveraging a dashboard intelligent system powered by robust data analysis through a business intelligence framework.

This innovative model is designed to enhance the company's operational efficiency, drive sales performance, and ultimately improve profitability and market share. By harnessing the power of big data, the organization gains a competitive edge in understanding market trends, customer preferences, and business performance metrics.

Key benefits of this data-driven approach include:

1. **Enhanced Operational Efficiency**: The dashboard intelligent system offers real-time insights into various operational aspects, allowing management to identify inefficiencies, streamline processes, and allocate resources more effectively.
2. **Optimized Sales Performance**: Through detailed analysis of sales data, the company can identify high-performing markets, product categories, and customer segments. This enables targeted marketing strategies, personalized offerings, and improved customer engagement, leading to increased sales.
3. **Improved Profitability**: By making data-driven decisions on pricing, product mix, and cost optimizations, the organization can maximize profit margins and overall financial performance.
4. **Market Share Expansion**: With a deeper understanding of market dynamics and competitor movements, the company can capitalize on growth opportunities, enter new markets confidently, and expand its footprint.
5. **Strategic Decision-making**: Data-driven insights empower management to make informed, strategic decisions across all levels of the organization. Whether it's launching new products, entering partnerships, or adjusting business strategies, decisions are grounded in concrete data analysis.

Ultimately, the implementation of a data-driven decision-making model transforms the company's approach to business operations. It shifts from reactive decision-making based on intuition to proactive strategies rooted in comprehensive data analysis and business intelligence.

The report proposes the following recommendations:

The company should consider cost reduction in the electronic product categories within the corporate segment market, especially the LCD, and keyboard categories where cost is relatively high and has affected the rate of demand for the products in Mozambique and in the US. Additionally, enhancing the supply chain process and procuring raw materials and components in large quantities can potentially result in discounts from suppliers. Furthermore, expanding the scale of production can contribute to the decrease in average production costs.

Implementation of the company's marketing plan, particularly through the augmentation of sales discounts on the electronic product category, is recommended. The LCD and Keyboard products’ sale discount is currently low at $0.03 and $0.01 respectively and may have contributed to low sales of the products.

Implementation of a business intelligence system performance dashboard (Eckerson,2006) is recommended for the organisation, as it would enable the monitoring, tracking, and management of sales and marketing activities. This would ultimately lead to improved sales, cost reduction, and increased profitability.

It is recommended that the corporation explores the option of utilising and/or increasing an E-commerce channel to facilitate the sale of its products through online website sales (Huang et al., 2015). This measure will contribute to a reduction in selling expenses.

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