

BI Adoption and Implementation in Lakhani

Final Project (MIS584-F23-F02)

Team 11:

Shirin Javadi

Vishal Patidar

Mehrdad Shoeibi

Solomiya Sorokotyaha

Advisor: Prof. Kordzadeh

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1.Executive summary

1.1. Project Overview

This project was initiated to assist Lakhani, a prominent Indian shoe company, in its strategic expansion into the United States market. This ambitious move presents significant challenges, primarily due to the differing market landscapes and consumer behaviors between the two countries. The project's focus was to leverage Business Intelligence (BI) and analytics to overcome these challenges, thereby facilitating a smoother entry into the US market.

1.2. Goals and Problems Addressed

1. **Expansion Goal:** The primary objective is to establish Lakhani's presence in the US market. This involves navigating a market environment that is vastly different from India in terms of consumer preferences, regulatory conditions, and competitive landscape.
2. **Understanding Customer Behavior:** A key challenge lies in decoding the US consumer's preferences, specifically in terms of shoe features like size, durability, comfort, and style. This is critical for Lakhani to adapt its product lines to suit the American consumer.
3. **Data Utilization:** The project emphasizes the necessity for Lakhani to shift towards a data-driven decision-making approach. This transition is essential to understand complex market dynamics and consumer trends in real-time.
4. **BI Adoption:** Implementing BI tools effectively and swiftly is identified as a critical factor for Lakhani's successful market penetration. This involves not just the adoption of technology but also the integration of data analytics into the company's core strategic processes.

1.3. Project Deliverables

The project's deliverables were centered around developing comprehensive dashboards and analyses, using detailed datasets from established players in the US market, like Adidas and Nike.

- **Sales Analysis:**
 - A dashboard was created to analyze sales data, encompassing variables such as Retailer details, Invoice Dates, Product specifications, and Sales Metrics.
 - The analysis provided insights into diverse aspects like Sales by Retailer, Top Selling Products, and Operating Margins, offering a clear picture of effective sales strategies and product profitability.
- **Human Resource Analysis:**
 - An extensive examination of Nike's employee dataset was conducted. This dataset included variables such as Department, Salary, Job Title, and Employee Retention.

- The resulting dashboards highlighted key HR aspects like Salary Trends, Employee Retention Patterns, and Bonus Distribution, offering insights into effective workforce management practices in the US context.
- **Consumer Market Analysis:**
 - Advanced techniques like sentiment analysis and word clouds were employed on customer feedback and ratings. This approach unearthed valuable insights into what shoe characteristics are most valued by US consumers, such as durability, size, and comfort.
 - These findings are crucial for Lakhani to align its product designs and marketing strategies with the preferences of US customers.

1.4. Conclusion

The project equips Lakhani with critical insights and strategic tools necessary for its successful entry and establishment in the US market. Through the intelligent application of BI and analytics, Lakhani is positioned to make well-informed decisions, ensuring its products and strategies resonate with the US consumers, thereby paving the way for a successful and sustainable market expansion.

2. Introduction

2.1. Client Company Background

Lakhani Footwear Pvt. Ltd., a titan in the Indian footwear industry, began its journey in 1986. Over the years, it has grown into a leading brand, offering an extensive range of sports shoes for men, women, and kids. Notably, Lakhani is the largest manufacturer of beach slippers and the second-largest manufacturer of canvas shoes in India. The company boasts a diverse product line that includes sports shoes, beach slippers, PU and PVC injected sports shoes, leather shoes, canvas shoes, and EVA slippers, with a staggering annual capacity of 55.5 million pairs.

Lakhani's manufacturing process is backed by its state-of-the-art plants located in Faridabad (Haryana), Dhar (Madhya Pradesh), and Haridwar (Uttarakhand), where a wide range in footwear is produced—encompassing cemented, vulcanized, injected, and slipper styles. This vast range caters to various consumer needs, while the company maintains a strong focus on style and comfort. Lakhani has also been a trusted manufacturer for other leading brands, contributing significantly to the evolution of the footwear market with its innovative designs and comfort-centric products.

As Lakhani Footwear Pvt. Ltd. stands at the cusp of its next growth phase, it looks to expand its horizons by entering the US market. This venture represents a strategic move to take the brand global and continue its legacy of innovation and market leadership.

2.2. Potential of BI-Related Processes and Capabilities for US Market Entry

While Lakhani's success in India is undisputed, its processes currently do not leverage Business Intelligence (BI), a gap that presents both a challenge and an opportunity as it plans to enter the US market. BI and analytics represent untapped potential for Lakhani to gain a competitive edge in a new, more diverse market environment.

Adopting BI can enable Lakhani to:

- Analyze and understand the US market's unique consumer behavior and preferences.
- Optimize supply chains and production lines to meet the dynamic demands of US consumers.
- Enhance sales and distribution strategies through data-driven insights, adapting to different regional needs within the US.
- Conduct competitive analysis to strategically position Lakhani against established US brands.

2.3. Information Systems for Expansion

To support this ambitious expansion, Lakhani requires advanced information systems capable of handling complex data analytics. These systems will need to integrate data across various metrics—market research, consumer feedback, sales patterns, and operational efficiency—to provide a holistic view of the US market. The BI infrastructure will underpin Lakhani's strategic decisions, from market entry to establishing a robust presence in the competitive US landscape.

2.4. Current Status of BI and Analytics at Lakhani

2.4.1. Reporting Tools:

- Lakhani currently relies heavily on Microsoft Excel for its reporting needs. This suggests that data is being managed manually, which is typical of organizations in the earliest stage of BI maturity. Excel, while versatile, lacks the advanced analytical capabilities and automation that specialized BI tools provide.

2.4.2. Data Warehouses:

- The company does not use any data warehouses, indicating that data is likely siloed across different departments. Without a centralized data repository, the organization misses out on the holistic insights that a data warehouse can offer, and this can lead to inefficiencies and a lack of data integrity.

2.4.3. Integrated Information Systems:

- With no seamless or integrated information systems like an ERP in place, Lakhani's data flow between business processes is probably disjointed. This lack of integration can lead to delays in information retrieval and may impact decision-making speed and accuracy.

2.4.4. BI Team:

- The absence of a dedicated BI team means that Lakhani does not yet have the internal expertise to build, manage, and derive insights from a sophisticated BI infrastructure. This hampers their ability to progress beyond basic data analysis and reporting.

2.4.5. BI Tools:

- Since Lakhani does not use any specific BI tools, it is not taking advantage of the potential insights that such tools can provide through data visualization, advanced analytics, predictive modeling, and more.

2.5. Position on the BI Maturity Model:

- Based on the lack of advanced analytics, data warehousing, integrated systems, and a dedicated BI team, Lakhani sits at the "Prenatal" to "Infant" stage on the BI Maturity Model. This is characterized by a lack of formal BI processes and an absence of infrastructure to support data-driven decision-making.

For Lakhani to advance in the BI Maturity Model, they would need to:

- Adopt specialized BI tools to automate and enhance reporting and analytics.
- Consider implementing a data warehouse to consolidate data for better accessibility and analysis.
- Explore integrated information systems that can streamline business processes and data flow.
- Establish a dedicated BI team to develop BI competencies and lead the adoption of BI practices within the organization.

As Lakhani stands at the threshold of its BI journey, the opportunity to leverage advanced analytics for its US expansion is significant. Progressing through the BI Maturity Model will be critical in transforming data into actionable insights that can drive the company's strategic goals and international success.

2.6. Summary of Case Studies

In our initial presentation, we examined how two leading footwear companies, Allbirds and Adidas, leveraged Business Intelligence (BI) to address their unique business challenges and enhance their operational efficiency.

2.6.1. Case Study 1: Allbirds

Company Overview: Allbirds is a paradigm of innovation and sustainability in the footwear industry, conceived from a blend of New Zealand's rich merino wool heritage and modern design sensibilities. Officially launched in March 2016 and headquartered in the bustling city of San Francisco, California, Allbirds has swiftly risen to prominence for its eco-friendly practices and minimalist shoe design that does not compromise on style or comfort.

Co-founded by Tim Brown and Joey Zwillinger, the brand was born out of a simple idea: to craft shoes that felt as natural as they looked. This inspiration was rooted in New Zealand's environmental stewardship, a country known for its vast sheep population and negligible native land mammals, encapsulated in the company's name 'Allbirds' - a nod to its avian-dominated ecology.

The company's approach to footwear is a testament to its commitment to the environment, utilizing sustainable materials such as merino wool, eucalyptus tree fiber, and sugarcane-based Sweet Foam™. Allbirds' dedication to creating a product that is both comfortable for consumers and kind to the planet has earned it a Certified B Corporation status, further solidifying its role as an industry leader in environmental responsibility.

In addition to its ecological ethos, Allbirds has pioneered a direct-to-consumer model that challenges traditional retail by opting for simplicity and transparency. This model, complemented by select partnerships with premium retailers like Nordstrom and Dick's Sporting Goods, has not only disrupted the market but has also allowed for a deeper connection with customers who value the brand's mission and the quality of its products.

Through its innovative use of materials, transparent business practices, and thoughtful growth, Allbirds has set a new benchmark for what it means to be a successful and responsible modern company. Its journey from a Kickstarter campaign to a publicly-traded entity on the NASDAQ is a story of entrepreneurial spirit, environmental consciousness, and the relentless pursuit of excellence.

Challenges in Growth: With rapid expansion came significant operational challenges, particularly in the management of a complex global supply chain. As Allbirds grew, the need for a robust system to handle logistics and data became apparent.

Business Intelligence Implementation: To address these challenges, Allbirds implemented Business Intelligence (BI) tools. This strategic move allowed the company to centralize their data across various points in their supply chain. By doing so, Allbirds gained invaluable insights into their operational efficiencies and inefficiencies.

Impact of BI Tools: The use of automated dashboards revolutionized Allbirds' approach to supply chain management. Real-time analytics provided a comprehensive snapshot of their fulfillment process, enabling swift and informed decision-making. This led to an enhancement in the efficiency of their operations and a reduction in delays.

Predictive Analytics: Furthermore, predictive analytics played a pivotal role in Allbirds' expansion strategy. The insights gained from BI tools equipped the company with the ability to anticipate market demands, optimize inventory, and manage warehouse space. This forward-thinking approach helped Allbirds avoid the pitfalls of overcapacity and logistical bottlenecks.

Outcome: As a result of integrating BI tools into their business model, Allbirds has not only managed to sustain their growth but has also set new benchmarks in supply chain management within the footwear industry.

2.6.2. Case Study 2: Adidas

Company Overview: Adidas AG is not just a brand; it's a cultural icon that has seamlessly blended performance with lifestyle over decades. With its roots firmly planted in Herzogenaurach, Bavaria, Adidas has evolved from a modest family-run shoe factory into a global powerhouse in athletic apparel and footwear. As Europe's largest and the world's second-largest sportswear manufacturer, Adidas has consistently set the benchmark for innovation, performance, and style.

Historical Roots: Founded by Adolf Dassler in the aftermath of World War I, Adidas began in a small washroom, where the first pairs of shoes were crafted with a visionary approach to athletic performance. It was Dassler's pioneering spirit that transitioned the athletic footwear industry from the traditional heavy metal spikes to more efficient materials like canvas and rubber. The brand's legacy was cemented when Adolf persuaded U.S. sprinter Jesse Owens to wear his handmade spikes at the 1936 Summer Olympics, where Owens's success catapulted Adidas into the global spotlight.

Growth and Evolution: The company's journey has been marked by a series of innovative milestones and strategic decisions that have shaped its current identity. The acquisition of the iconic three stripes from Finnish sports company not only defined the visual representation of Adidas but also underscored the brand's commitment to excellence. The phrase "The three stripes company" perfectly encapsulates Adidas's identity, reflecting both its heritage and its mission.

Strategic Initiatives for Operational Excellence: Adidas AG has taken a multifaceted approach to enhance its operations and maintain its competitive edge in the global sportswear market. The company's strategy focuses on:

- **Data-Driven Efficiency:** Leveraging data insights to increase operational efficiency.
- **Consumer-Centric Products:** Developing products that resonate with consumer trends and preferences.
- **Sales Enhancement:** Boosting sales volume while reducing the associated costs.
- **Supply Chain Optimization:** Refining inventory management, order book accuracy, and purchasing processes to bolster financial outcomes.

Digital Transformation Investment: Adidas's commitment to innovation is exemplified by its €1 billion investment in digital transformation, encapsulated in the "Own the Game" growth strategy. This bold move includes the recruitment of over 1000 new tech talents to enhance Adidas's capabilities in the digital and technological domains.

Technological Solutions Implemented: Key initiatives undertaken by Adidas include:

- **Digitalization of Core Processes:** Streamlining operations across the entire value chain through digital technology.
- **3D Design Integration:** Employing 3D design tools in the product creation process to accelerate development and reduce time to market.
- **Personalized Online Shopping:** Enhancing the consumer experience with customized online purchasing journeys.
- **Tech Team Expansion:** Significantly expanding the tech department and investing in a state-of-the-art ERP system, S/4HANA, to support the digital overhaul.
- **Data Infrastructure:** Establishing a Data Mesh infrastructure to facilitate better data access and analytics.

Business Intelligence Data Utilization: Adidas's data landscape is rich and varied, encompassing vital business dimensions such as retailer profiles, timing of orders, product specifics, order particulars, sales, profitability, and distribution channels. This extensive dataset has been a cornerstone in driving Adidas's BI initiatives, enabling a comprehensive view of their business operations and supporting informed decision-making.

Conclusion: Both Adidas and Allbirds have harnessed the power of Business Intelligence to address their unique business challenges and propel their growth. For Allbirds, the focus was on mastering the intricacies of supply chain management, while Adidas pursued a holistic digital transformation to cement its position as a leader in the sportswear industry. These case studies provide a roadmap for other companies, such as Lakhani, to glean insights into the benefits of BI tools, especially when considering expansion into new markets like the US.

3. Proposed BI solution

3.1 Introduction to Business Intelligence

Business Intelligence (BI) represents a technological and methodological foundation that facilitates data-driven decision-making. By leveraging data analysis, BI enables organizations to discern patterns and insights within their operational activities, enhancing strategic and tactical business decisions. It is a process of analyzing data to make informed business decisions. BI includes a range of technologies and methods, such as Data organization, Data analysis, Reporting findings, Data collection, and Data visualization. BI tools can present information in user-friendly dashboards and data visualizations. These tools can automate many processes, saving companies time and effort.

Some benefits of BI include:

- Faster, more accurate reporting and analysis
- Improved data quality
- Better employee satisfaction
- Reduced costs
- Increased revenues
- Better business decisions

3.2 The Components of Lakhani's BI Solution

Based on the previous findings and company information, Lakhani is still at the "Prenatal" - "Infant" states of the BI Maturity Model. It is sure that the company has a sales and operational data flow in the system, yet there is no reliable evidence of them using the data for analytical purposes. We can also assume that the data is being transferred and aggregated in forms of distinct data files such as Excel sheets.

People and Processes

As part of the research, we have tried to tailor the BI solution in regard to Lakhani's business model. For the purpose, we have defined the company's organizational structure as follows:

- Production/Manufacturing Department:
 - Operations: Oversees the manufacturing process, production planning, and inventory management.
 - Quality Control: Ensures product quality meets standards through inspections and testing.
 - Supply Chain Management: Manages the flow of materials, sourcing, procurement, and logistics.
- Design and Development Department:
 - Product Design: Creates shoe designs based on market trends, customer preferences, and technical specifications. (can be outsourced)
 - Research & Development: Innovates new materials, technologies, and processes for shoe manufacturing. (can be outsourced)
- Sales and Marketing Department:

- Sales: Handles sales strategies, customer relations, and sales channels (retail, online, wholesale).
- Marketing: Develops marketing campaigns, branding, advertising, and promotions to drive sales.
- E-commerce: Manages online sales platforms, website maintenance, and digital marketing. (Just starting recently)
- Retail Operations:
 - Store Operations: Manages physical retail stores, including staffing, customer service, and day-to-day operations. (partners)
- Finance and Accounting Department:
 - Accounting: Manages financial transactions, budgeting, bookkeeping, and financial reporting.
 - Financial Planning and Analysis (FP&A): Analyzes financial reports and provides insights for decision-making.
 - Treasury and Cash Management: Handles cash flow, banking relationships, and financial risk management.
- Human Resources (HR):
 - Recruitment and Talent Management: Handles hiring, training, and development of employees.
 - Employee Relations: Manages employee benefits, performance evaluations, and workplace policies.
 - HR Operations: Manages payroll, compliance, and HR-related administrative tasks.
- Customer Service and Support:
 - Customer Experience: Ensures a positive customer journey, handles inquiries, complaints, and returns.
 - After-Sales Service: Manages warranty claims, repairs, and customer follow-ups post-purchase.
- Information Technology (IT):
 - IT Infrastructure: Manages hardware, software, and network infrastructure for the company. (power users)
- Legal and Compliance:

- Legal Affairs: Handles legal matters, contracts, intellectual property, and regulatory compliance.
- Compliance: Ensures the company adheres to industry standards, regulations, and ethical practices.

Aligning with the company's goal to start expanding operations to the United States market, we decided to focus on the key departments and processes where BI can bring the most value:

1. Sales Management
2. Human resources
3. Customer Analytics

Management

Lakhani can benefit from a rich compilation of datasets, including sales data like Adidas, human resources metrics, and consumer sentiment analysis. These varied datasets provide a comprehensive view of market trends, operational efficiencies, and customer preferences. Yet it is crucial to establish a clear and robust ETL (Extraction, Transformation and Loading) process. Through the ETL process, Lakhani can ensure that data from diverse sources is standardized, cleansed, and ready for analysis. This is essential for accurate insights and aligning the Indian data infrastructure with US market standards. Lakhani needs to take the following steps as part of the ETL:

- Extraction:
 - Source Identification: Determine where the sales data resides. It might be stored in Excel spreadsheets, CRM systems, online sales platforms, or a combination of sources.
 - Data Collection: Extract sales data from various sources into a unified format. This could involve exporting Excel sheets, pulling data from APIs, or querying databases.
- Transformation:
 - Data Cleaning: Clean the extracted data to remove duplicates, correct errors, and standardize formats (e.g., date formats, currency, etc.).
 - Data Integration: Combine data from different sources if necessary to create a comprehensive dataset (for example, sales from across the country)
 - Enrichment: Enhance the data by adding relevant information such as customer demographics, or reviews about the product.

- Aggregation: Aggregate sales data to various levels (daily, weekly, monthly) for better analysis and reporting.
- Load:
 - Data Storage: Determine where the transformed data will reside. We suggest Lakhani to choose a proper tool for a data warehouse that can fit within the budget.
 - Data Loading: Load the cleaned and transformed data into the chosen storage solution. This may involve using ETL tools, SQL scripts, or other data loading methods, which will need to be developed by a software development team.
 - Incremental Updates: Establish processes for incremental updates to add new sales data without reloading entire datasets and log the changes.
- Validation and Quality Checks:
 - Data Quality Assurance: Perform quality checks to ensure accuracy, completeness, and consistency of the sales data.
 - Error Handling: Implement procedures to handle errors encountered during the ETL process and log them for troubleshooting.
- Reporting and Analytics:
 - Connectivity: Enable connections between BI tools or reporting platforms and the stored sales data for analysis and visualization.
 - Dashboard Creation: Develop dashboards and reports to provide insights into sales performance, trends, and key metrics.
- Automation and Monitoring:
 - Scheduled ETL Jobs: Automate the ETL process to run at scheduled intervals (daily, weekly, etc.).
 - Monitoring and Alerts: Set up monitoring systems to detect issues or anomalies during the ETL process and trigger alerts for immediate action.

Governance

One of the weakest components in regards to Lakhani, since the data is not being well managed. While being collected, it is mainly pursuing the goal of being recorded than analyzed, therefore several inconsistencies might occur and accumulate over time without any notice. A strong need for a clear and standardized data management approach is observed as an essential step to adapting data driven decision making.

For the dashboards we need to have the following data:

Company dashboards:

EmployeeID	First_Name	Surname	StreetAddress	City	State	StateFull
ZipCode	Country	CountryFull	Age	Office	Start_Date	
Termination_Date	Office_Type	Department	Currency	Bonus_pct		
Job_title	DOB	level	Salary	Active Status	Job_Profile	Notes retained
Bonus_dollars.						

In regards to Lakhani business, the company data is the most reliable type of data for us to analyze. Yet, taking into consideration the expansion to a new market, there are several things to adjust and implement to have a smooth transition to a multi continent business. One of the most important things is to join the data between the different locations, and define proper permissions.

Sales:

Retailer	Retailer ID	Invoice Date	RegionState	City	Product	Price per Unit
Units Sold	Total Sales	Operating Profit	Operating Margin	Sales	Method	
Price Category	Popularity	Category				

Since the sales data is already been collected, we need to combine and store it in a structured way to be able to retrieve and analyze it efficiently, enabling drill down and roll up functions for the better understanding and monitoring on important sales KPIs.

Customer Reviews:

id_	gender	title	url	category	price	description	description_long
n_reviews	score	size	comfort	durability	r_title	r_raiting	
tweet_text	r_date	r_body	Score_Azure	Sentiment	Score2		

While the sales and company data is already present in Lakhani, the reviews table should be started from scratch. Therefore we will need to define the table structure, define data sources, define the extraction and collection process, implement the basic data quality gates and finally define the access configuration to it.

3.3 Ensuring Data Integrity for Lakhani

For Lakhani, data integrity means maintaining the accuracy and consistency of data throughout its lifecycle. This is critical for making reliable business decisions. For instance, let's consider inventory levels – a fundamental metric for any retail business. Data integrity ensures that the inventory count is always accurate, preventing scenarios where the system shows a negative number of shoes available, which is practically impossible. This could occur due to a system error or incorrect data entry. Imagine a situation where a sales record is created without an associated product – akin to a customer being charged for shoes that don't exist or weren't actually sold. This not only skews Lakhani's sales data but can also lead to financial discrepancies and customer service issues.

Maintaining data integrity also means that every transaction recorded in Lakhani's sales database corresponds to actual products. This helps in avoiding situations where sales data suggests that a

certain model of shoe has been sold, but there is no corresponding entry in the inventory, indicating a mismatch. Such discrepancies can cause confusion about stock levels, leading to overordering, understocking, or even financial losses.

In essence, data integrity for Lakhani ensures that every number, every transaction, and every report reflects reality. This accuracy is what enables Lakhani to make informed decisions about production, sales strategies, and customer engagement. By having reliable data, Lakhani can better manage its supply chain, forecast demand, and maintain customer satisfaction through the effective availability of products.

In the BI system, the ETL process plays a vital role in ensuring data integrity. It checks and validates data to prevent errors and inconsistencies. For example, if an attempt is made to enter a sale with a product ID that does not exist in the inventory database, the system would flag this as an error and prevent the transaction from being recorded until it is corrected.

By investing in robust BI systems that prioritize data integrity, Lakhani lays the groundwork for accurate and dependable analytics, fostering a trustworthy foundation for its expansion into the US market.

3.4. BI value and Use Cases

Sales department will greatly benefit from the suggested BI solution. For example, by examining sales trends and patterns over time, Lakhani can identify the most lucrative US states for market entry and determine the popularity of specific shoe models, as well as identify best performing retailers to partner with or gain the insight of the sales geography and sales method to maximize profit.

Analyzing HR data such as salary trends, bonuses, and retention rates can help Lakhani to optimize its workforce management in alignment with US industry benchmarks. It is necessary to keep the people satisfied, since they are the core of Lakhani's operations.

In the realm of HR analytics, Business Intelligence (BI) is not just about managing Lakhani's internal workforce data; it's about gaining a competitive edge in the talent market. Just as Lakhani compares product offerings and pricing with competitors, the company can also analyze competitors' workforce strategies. By examining industry benchmarks for salaries, benefits, and employee perks, Lakhani can identify if they are offering competitive compensation packages. This is essential in attracting and retaining top talent, especially in the highly competitive US labor market. For example, if competitor analysis reveals that other shoe companies offer more comprehensive health benefits, Lakhani might consider enhancing its benefits package to ensure it remains an employer of choice.

In the retail sector, particularly footwear, sales bonuses can be a significant motivator. Lakhani can use BI to assess the effectiveness of different bonus models that competitors use. For example, if data indicates that a tiered commission structure based on sales targets leads to higher sales figures in the industry, Lakhani might implement a similar or improved bonus structure to incentivize its sales staff, thereby driving sales performance and brand loyalty.

At the same time, our third proposed solution is analyzing the reviews per product to understand better the customer profile and preferences. Customer reviews and sentiment scores are invaluable for understanding consumer attitudes towards Lakhani's products, particularly regarding size, comfort, and durability.

Having collected and analyzed this data, Lakhani will be able to prioritize and tailor the products per customer segment, in this way maximizing the profit, since the costs of having an overstock/unnecessary item is decreased by the proper selection of products. At the same time, learning about the bad reviews of others can provide Lakhani a competitive advantage on new designs for the product and as well improvement of existing ones.

3.5 Applying BI to Lakhani's Expansion Strategy

- Lakhani's entry into the US market can be strategized using sales and sentiment analysis, identifying niches and customer segments that align with the company's strengths.
- Insights derived from BI can guide product development and marketing strategies, ensuring that Lakhani's offerings meet the expectations and preferences of US customers.
- BI solution can power a strategic HR plan that incorporates competitive salaries, effective incentive programs, and employee development initiatives, which are crucial for attracting and retaining talent in the US.

3.6. Conclusion and Next Steps

With the proposed BI solution, Lakhani can embrace a data-driven culture. From selecting the right product mix to crafting HR policies, every decision can be informed by robust data analysis, mitigating risks and enhancing the likelihood of success in the US market.

In conclusion, Lakhani's expansion into the US market can be substantially supported by a strategic BI solution. The next steps will involve developing detailed use cases and prototypes for the BI dashboards and analytics techniques, which will be detailed in the subsequent sections of this report.

4. Prototypes

4.1. Sales Dashboard

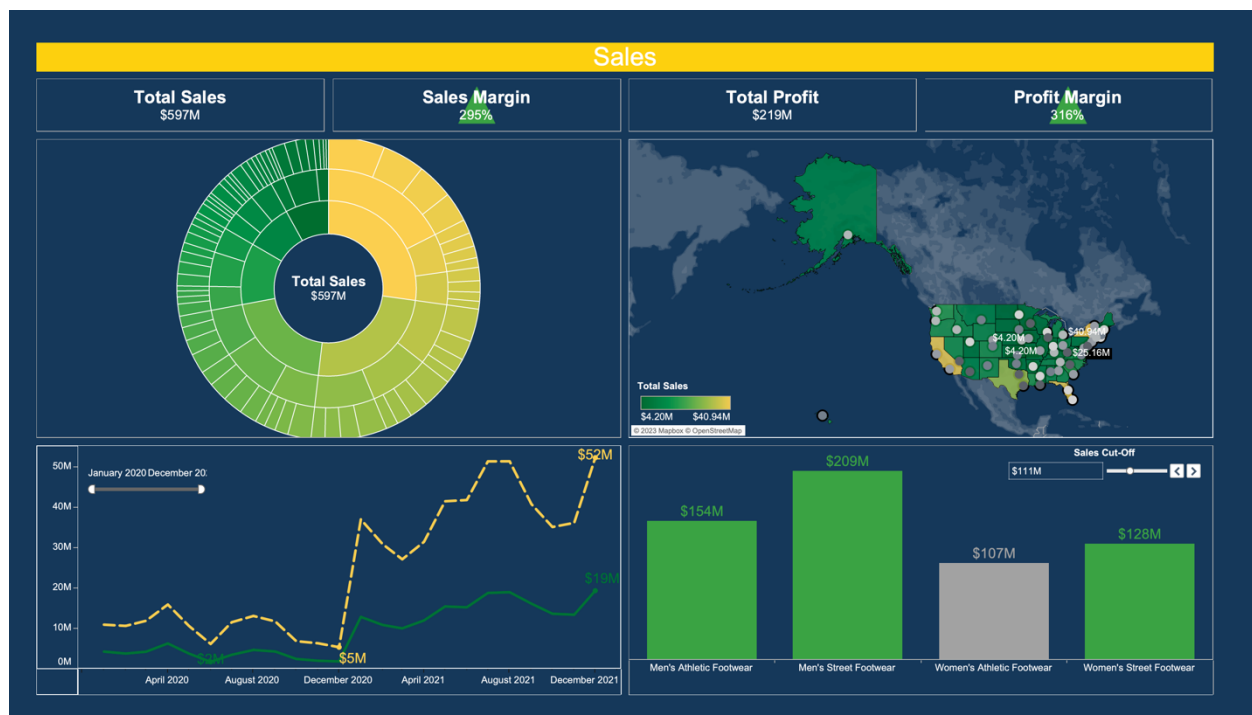
Overview

In this section we want to help Lakhani to leverage business intelligence and data-driven insights to enhance decision-making. By utilizing the Adidas sales dataset within Tableau, we aim to create a dynamic sales dashboard for Lakhani. This dashboard will visually represent key sales metrics and KPIs, total sales for retailers and sales methods and each product, and sales by state and city and finally sales over time. Through this approach, Lakhani can gain valuable insights into sales,

identify growth opportunities, optimize sales methods, and make informed strategic decisions to drive their business forward.

BI Solution

Our solution offers a dynamic, user-friendly sales dashboard tailored for Lakhani's sales managers and department. Using the Adidas sales dataset, this dashboard demonstrates how Lakhani can effectively oversee and enhance their sales strategies. The dashboard comprises key performance indicators (KPIs) in the first row, such as total sales, total profit, sales margin, and profit margin, showcasing overall success and growth percentages across different years. The sunburst chart dives deeper, displaying sales breakdowns by retailer, sales method, and product. It helps answer pivotal questions like which retailers to partner with, the best sales methods, and which products are most popular. For instance, examining West Gear reveals that in-store sales of men's street footwear yield the highest profits. The map chart visualizes sales across states and cities, aiding decisions on marketing focus, ideal locations for in-store outlets, and identifying the most profitable regions. Linked to the sunburst chart, filtering by retailer, sales method, or product updates the map accordingly. The line chart tracks sales and profit trends over time, while the bar chart showcases sales for each product and offers a cutoff feature to set and assess sales targets. The cut-off feature will be very helpful when company has a vast range of products. Importantly, all charts are interconnected, allowing seamless filtering across the dashboard for a comprehensive analysis. You can see the sales dashboard in the picture below.



Conclusion

Our sales dashboard, built from the Adidas sales dataset, empowers Lakhani's sales team with valuable insights and tools to refine their strategies. It presents key performance indicators like total sales, profit, and growth trends, while detailed breakdowns by retailer, sales method, and

product aid in critical decision-making. The dashboard's interconnectedness enables seamless exploration and analysis across various aspects, facilitating informed choices for marketing focus, optimal store locations, and product targets. This user-friendly tool is tailored to enhance Lakhani's sales management and strategy implementation.

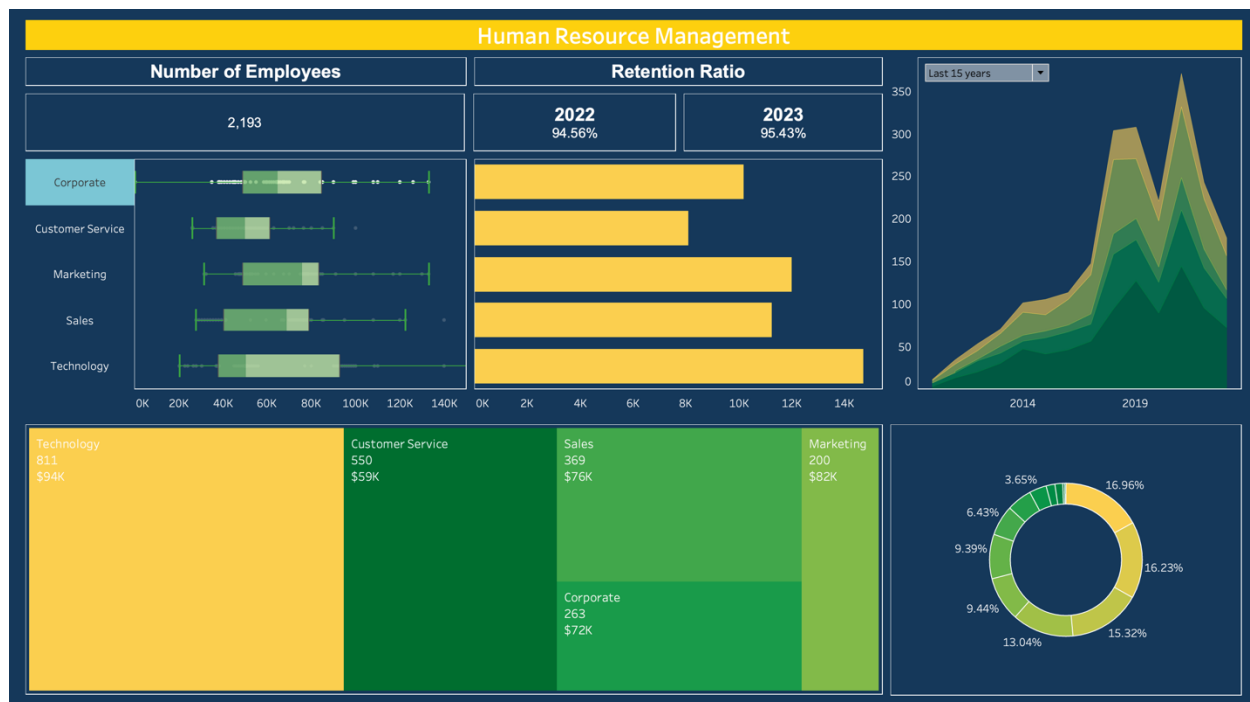
4.2. Human Resource Management

Overview

Lakhani Shoe Company can aim to harness the power of business intelligence and data-driven insights for their human resource (HR) management. Utilizing the Nike human resource dataset in Tableau, we intend to create a comprehensive HR management dashboard for Lakhani. This dashboard will visually represent crucial HR metrics, retention rate, employee salary and bonus, HR policy analysis, and workforce demographics. By leveraging this approach, Lakhani can gain valuable insights into employee engagement, recruitment strategies, training needs, and overall workforce management to make informed, impactful decisions that drive their HR initiatives forward.

BI Solution

Our HR dashboard is designed to be accessible and insightful for Lakhani's HR team. Using the Nike HR dataset, we illustrate how effective HR management impacts a company's workforce, sales, and overall success. The dashboard's key charts provide essential HR metrics: current employee count and retention rates for the past two years. Understanding employee needs is crucial for satisfaction and retention, showcased through salary ranges per department in a box chart and bonus distributions in a bar chart. Additionally, a tree map displays department sizes and values, aiding in budget allocation decisions. Analyzing non-retained employee trends over time per department in an area chart helps assess the effectiveness of HR policies. For instance, at Nike, the rising trend indicates the need for revised retention strategies. Lastly, a pie chart visualizes employee loyalty by showcasing their tenure, valuable for understanding if investments in workforce training contribute to long-term employee retention. This comprehensive dashboard guides Lakhani in making informed decisions to enhance their HR management effectively. You can see the HR dashboard in the picture below.



Conclusion

In summary, our HR dashboard, crafted from the Nike HR dataset, equips Lakhani's HR department with actionable insights crucial for managing and enhancing their workforce. By focusing on key metrics like employee count and retention rates, as well as salary distributions and departmental values, this user-friendly tool aids in understanding and meeting employee expectations. Insights gleaned from trends in non-retained employees and tenure data assist in refining HR policies for better retention strategies. This comprehensive dashboard empowers Lakhani to make informed decisions, ensuring a more effective and valuable management of their human resources.

4.3. Customer reviews sentiment analysis

Overview

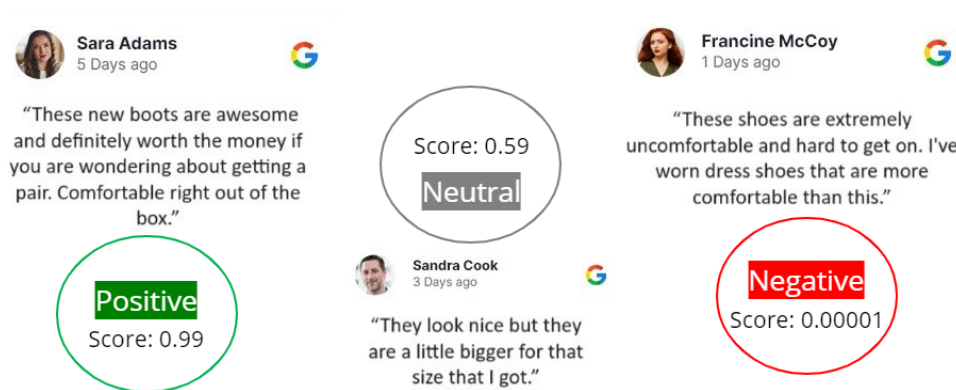
Since Lakhani is just starting to expand the online presence, the datasets were used from the Lakhani's key competitor in the US market - Nike. Nike is using the customer feedback data very confidently, not only in determining what is important for the end user, but also involving them in the product co-creation. While for Lakhani there is a long way to go, yet a simple solution can provide the initial insight and build the confidence in using the BI for the company's goals.

BI solution

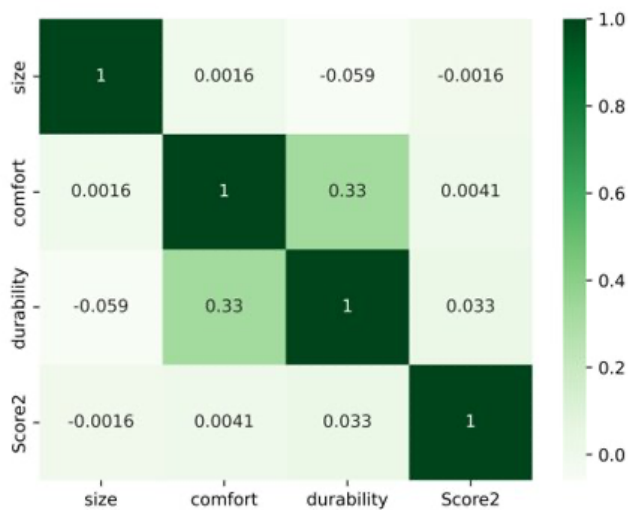
As part of the Customer Review analysis, the customer review male and female shoes dataset were merged, cleaned and prepared for the visualization. We have also used an Azure ML model to perform the sentiment analysis for the selected data set, assigning a class of "positive", "negative"

and “neutral” to each data entry, as well as a sensitivity score of [0,1], where the 1 corresponds to “positive” and 0 corresponds to “negative”. Finally, we have provided the visualizations as well as distribution statistics to capture the customer satisfaction. A correlation matrix was presented, which allows us to see the relations between the different features. Lastly, the Word Cloud was implemented to demonstrate what are the key words or phrases used in the reviews with the highest frequency.

- Sentiment analysis:



- Correlation matrix:



- [illegible]

The correlation matrix indicates a low correlation between size, comfort, durability, and customer satisfaction scores. However, the sentiment analysis from customer reviews highlights 'comfort' as a significant factor influencing customer satisfaction, guiding Lakhani to prioritize this attribute in product development. On average, there are more positive reviews - around 80%, which can be a good benchmark for the customer satisfaction for the Lakhani.

The benefit of the customer reviews analysis is not only the demonstration of BI capabilities, but also using the competitor's data to provide some market information and gain advantage. The proposed solution is a simple tool for Lakhani to start using without much prior expertise, and with time can be scaled and developed into a more complex one.

5.1. Key implementation phases

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- **Identify Existing Data Sources:** Lakhani Should Collaborate with stakeholders from sales, HR, and management to gather comprehensive data for analysis and decision-making purposes.
- **Inventory of Data Sources:** Document all sources of information within the company, ensuring a thorough understanding of available data.
- **Define Data Quality Standards:** Establish clear criteria for data accuracy, completeness, consistency, and reliability. Ensure that data is error-free and trustworthy.

2. Infrastructure Development

- **Data Warehouse Implementation:** Deploy a SQL-based data warehouse system to centralize and organize data for easy accessibility and analysis.
- **ETL (Extract, Transform, Load) Process Establishment:** Develop an efficient ETL process to extract, transform, and load data from various systems, ensuring consistency and coherence in the collected information.

3. Data Analysis and Visualization

- **Utilization of Advanced Analytics Tools:** Employ cutting-edge analytics tools and techniques, such as Tableau or Power BI, to perform in-depth analysis of collected data.
- **Visualization Techniques:** Present analyzed data through visualizations, aiding representatives in understanding market trends, popular products, and consumer preferences.

4. Empowering Decision-Making

- **Real-Time Insights:** Enable access to real-time insights derived from the BI system. Provide decision-makers with actionable information regarding popular shoe designs, market trends, and product preferences in the United States.

5.2. Kotter's Eight Step Model

1. Create a Sense of Urgency: Despite lacking detailed data, emphasize the potential of the US footwear market based on available information, industry reports, and trends. Highlight the importance of acquiring real-time data to make informed decisions swiftly, leveraging market research tools or engaging third-party experts for immediate insights.

2. Form a Powerful Coalition: Assemble a cross-functional team that includes data analysts, IT specialists, market researchers, and business strategists. Collaborate to devise methods to gather, organize, and analyze data effectively for the US market expansion plan.

3. Create a Vision for Expansion: Outline the aspirations for entering the US market based on the available information. Define objectives that rely on acquiring and analyzing real-time data. Focus on initial steps, like gathering consumer preferences, market trends, and competitor analysis, as key targets.

4.Communicate the Vision: Emphasize the importance of data-driven decision-making. Despite the current limitations, stress the necessity of transitioning from spreadsheet-based information to a robust data analytics system to support the US market entry strategy.

5.Remove Obstacles: This may involve issues with data collection methods, technological limitations, or lack of analytical tools. Begin exploring data gathering technologies, potential partnerships with data providers, or investing in analytics software.

6.Create Short-Term Wins: Initiate a phased approach to data enhancement. Start with small-scale improvements like implementing data collection systems or conducting basic market surveys to begin building a foundation for future analysis.

7.Build on the Change: Continuously evolve data gathering and analysis processes. As new data becomes available, refine strategies, expand data sources, and start structuring for more comprehensive analysis.

8.Anchor Changes in Corporate Culture: Encourage a culture that values data literacy and analysis. Promote the importance of data in decision-making, offering training and resources to upskill employees in data analysis techniques.

5.3. Potential challenges for adopting BI:

1. **System Development and Integration:** Implementing BI involves integrating various data sources, systems, and software. In Lakhani Company, this might mean combining data from sales, inventory, customer service, and more. Challenges could arise from different data formats, legacy systems, or incompatible software. The need for a seamless integration process and ensuring that the BI system works harmoniously with existing systems can be a major hurdle.
2. **Cost Benefit and Issues and Justifications:** Implementing BI requires a significant investment in technology, tools, manpower, and training. For Lakhani Company, demonstrating the tangible benefits—such as improved decision-making, cost savings through optimized operations, better insights for market strategies—is crucial. Justifying this investment to the management involves showcasing the potential ROI, outlining how BI will enhance productivity, reduce operational costs, and eventually contribute to revenue growth.
3. **Legal issues:** In India, data privacy laws and regulations (such as the Personal Data Protection Bill) govern how companies collect, store, and utilize customer data. Implementing BI involves handling sensitive information, which necessitates compliance with these laws. Lakhani Company would need to ensure that their BI practices adhere to legal frameworks, including data protection, confidentiality, and consent mechanisms for data usage.
4. **Ethical Issues:** BI often involves analyzing large datasets that might contain personal information. Ethical considerations arise concerning the responsible use of this data. In the case of Lakhani Company, ensuring data accuracy, avoiding bias in analysis, and respecting

customer privacy are vital ethical aspects. This includes establishing transparent policies on data collection, usage, and providing customers with control over their data.

5.4. Future Opportunities:

1. **Enhanced Market Understanding:** Through BI, Lakhani gains a deep understanding of the US market, including customer preferences, competitor strategies, and market trends, enabling them to make informed decisions for expansion and growth.
2. **Strategic Expansion:** With comprehensive market insights, Lakhani can strategically target specific regions, demographics, or market segments within the US where their products have the most potential for success.
3. **Optimized Operations:** BI facilitates operational efficiency by streamlining processes, optimizing inventory management, and improving supply chain logistics based on real-time data insights.
4. **Agile(quick) decision – making:** Faster access to accurate and relevant data enables agile decision-making, allowing Lakhani to respond swiftly to market changes, customer demands, and competitive challenges.
5. **Competitive Advantage:** Utilizing BI effectively positions Lakhani Shoes ahead of competitors by leveraging data-driven insights for product innovation, marketing strategies, and customer satisfaction.
6. **Innovation Opportunities:** BI can uncover trends, patterns, and customer preferences that may lead to innovative product designs, new features, or services tailored specifically for the US market.
7. **Sustainable Growth:** BI-driven strategies not only support immediate market penetration but also lay the foundation for sustained growth by continually refining approaches based on ongoing data analysis.
8. **Improved Customer Experience:** By analyzing customer data and behavior, Lakhani can personalize marketing campaigns, enhance customer service, and tailor products to meet the specific needs and preferences of US customers.
9. **Customer Retention & Loyalty:** Understanding customer preferences and behavior enables Lakhani to build stronger relationships with customers, fostering loyalty and increasing repeat purchases.

6. Summary and Conclusion

The final project for the Business Intelligence course involved assisting Lakhani, an Indian shoe company, in expanding into the U.S. market. The main challenges addressed were understanding the different consumer behaviors and market conditions in the U.S. and adopting a data-driven decision-making approach using Business Intelligence (BI) tools. The project deliverables included developing comprehensive dashboards and analyses using datasets from established U.S. players like Adidas and Nike, focusing on sales, human resources, and consumer market analysis. The outcome equipped Lakhani with strategic tools and insights for

successful market entry in the U.S., highlighting the importance of BI in understanding market dynamics and consumer trends.

6.1. Recommendations

Lakhani Shoe needs to move quickly if they want to fully utilize data analytics. It is crucial to start an organized Business Intelligence (BI) implementation plan from the top down. This entails providing thorough training so that staff members from different departments can use Tableau and other tools with expertise. Providing decision-makers with these abilities is essential, particularly for effectively navigating the US market. Adopting tools is only one aspect of the problem; another is creating a culture that values and depends on data-driven insights. In this changing market environment, this cultural shift will play a critical role in guiding strategic decisions and guaranteeing sustained growth.

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