MARKET BASED INSIGHTS – Unveiling Customer Behavior through Association Analysis

INTRODUCTION:

In today's fast-paced and ever-evolving business landscape, gaining a competitive edge is more crucial than ever. To navigate the complex web of consumer preferences, industry trends, and economic fluctuations, organizations are increasingly turning to market-based insights. These insights are the key to informed decision-making, enabling companies to identify opportunities, mitigate risks, and tailor their strategies to meet the demands of an ever-changing market.

Market-based insights encompass a wide range of data-driven techniques and approaches that provide a deep understanding of market dynamics.

DESIGN THINKING OF THE IDEATE PROTOTYPE TEST

EMPHATHIZE

What the user

Says: Direct quotes and statements from customers during interviews or surveys.

What the user Thinks: The inner thoughts, concerns, and motivations of customers.



What the user

Feels: Emotional responses, such as frustration, excitement, or satisfaction.

What the user

Does: Observable behaviors, actions, and interactions.

MARKET BASED INSIGHTS

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Define:

Problem Definition:

The problem is to build an AI-powered diabetes prediction system that uses machine learning algorithms to analyze medical data and predict the likelihood of an individual developing diabetes. The system aims to provide early risk assessment and personalized preventive measures, allowing individuals to take proactive actions to manage their health.

Association analysis

Data Selection:

Using Kaggle dataset to predict the customer needs.

Data Cleaning:

- ❖ Identify and handle missing values in the dataset. You can choose to impute missing data or remove incomplete records, depending on the nature and extent of missingness.
- ❖ Detect and address duplicates or redundant entries to maintain data integrity.
- ❖ Correct any inconsistent data formats, typographical errors, or outliers that may affect the analysis.

Data Transformation:

- * Convert categorical data (e.g., product categories, customer segments) into numerical formats using techniques like one-hot encoding or label encoding.
- * Standardize or normalize numerical data to ensure that different variables are on a similar scale. This prevents certain variables from dominating the analysis due to their magnitude.

***** Handling Outliers:

❖ Identify and decide how to handle outliers, which are data points that significantly deviate from the norm. Options include removing, transforming, or imputing outliers based on the specific context.

Data Sampling:

• If the dataset is large and computationally expensive, consider data sampling techniques to work with a representative subset of the data. Ensure that the sample accurately reflects the characteristics of the entire dataset.

Handling Imbalanced Data:

If dealing with imbalanced classes (e.g., a majority of non-purchases and a minority of purchases), apply techniques such as oversampling, undersampling, or using synthetic data to balance the dataset.

Data Splitting:

Divide the dataset into training, validation, and test sets to assess model performance and generalization.

Ensure that the data split is stratified, especially when dealing with classification problems, to maintain class distribution proportions.

Data Scaling:

Standardize or normalize the data within each split separately to avoid data leakage and ensure that the model performs consistently across different subsets.

Handling Time-Dependent Data:

• For time-dependent insights, consider creating rolling windows or lag features to capture temporal dependencies and seasonality.

Data Validation:

• Continuously validate data preprocessing steps to ensure that they remain appropriate as the dataset evolves or as new data is collected.

Documentation:

• Keep detailed records of data preprocessing steps, transformations, and decisions made during the process. This documentation is valuable for reproducibility and future reference.

Interpretation and Insights:

Review the discovered association rules to gain market-based insights. Some insights that can be derived from association analysis include:

- * Product Affinities: Identify which products are often purchased together. This information can inform cross-selling and bundling strategies.
- * Customer Behavior: Understand common shopping patterns and behaviors among customer segments. For example, do certain customer segments consistently purchase specific sets of products?
- * Promotion Planning: Determine which products are likely to benefit from joint promotions or discounts.
- *Inventory Management: Optimize stock levels based on the association between products to ensure that complementary items are readily available.
- **Customer Segmentation:** Use association results to refine customer segmentation strategies. Customers who frequently buy certain combinations of products may form distinct segments.

Insights generation

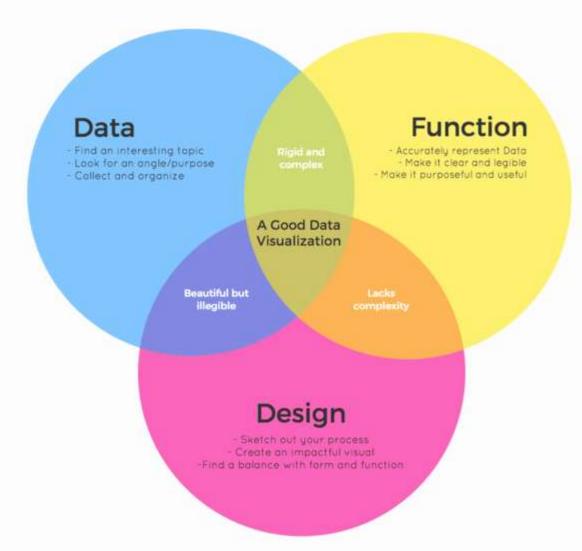
* Insights generation is a crucial step in turning data into actionable knowledge. It involves the process of extracting valuable, meaningful, and often unexpected information or patterns from data that can guide decision-making and drive business strategies.

Data Analysis Techniques:

- ❖ Select appropriate data analysis techniques based on your objectives and hypotheses. Common techniques include:
 - * Descriptive statistics to summarize data.
 - ❖ Inferential statistics for hypothesis testing.
 - * Machine learning algorithms for predictive modeling.
 - * Data mining and pattern recognition to uncover hidden insights.
 - * Time series analysis for temporal data.
 - * Natural language processing (NLP) for text data.
 - * Clustering and segmentation for customer behavior analysis.

What Makes A Good

DATA VISUALIZATION



Business Recommendation

Certainly, here are some general business recommendations that can apply to a wide range of industries and contexts. These recommendations aim to improve overall business performance, efficiency, and profitability:

- 1. Customer-Centric Approach:
- 2. Data-Driven Decision Making:
- 3. Market Research and Competitive Analysis:
- 4. Market Research and Competitive Analysis:
- 5. Supply Chain Optimization:

CONCLUSION

- ❖ In conclusion, market-based insights are invaluable assets for businesses striving to thrive in today's dynamic and competitive landscape. By delving into data-driven analyses and customer-centric approaches, companies can uncover hidden patterns, consumer behaviors, and market trends that drive informed decision-making and sustainable growth.
- ❖ In a world where data is abundant, businesses that harness market-based insights effectively gain a competitive edge. However, it's essential to maintain a commitment to ethical data practices, privacy, and ongoing analysis to stay relevant and responsive to evolving market dynamics.