CAPSTONE PROJECT

V-MED PRO

VR VALUE PROPOSITION AND PRODUCT POSITIONING

Project Liaison : Mr Brodie Thomson

Faculty Advisor : Professor David Jarvis

MS BUSINESS ANALYTICS, December 2025

TEAM F11

Akshara Tirunagari

Aniketh Mysore Ashok

Devanshi Mehadia

Shivas Narula

Vasu Khanna

1. Executive Summary

This project aimed to identify the most compelling value proposition, positioning, and marketing messages for Vizitech's "V-Med Pro," an advanced VR-based EMS training solution. While the product is market-ready, the optimal strategy for penetrating Higher Education Institutions (HEIs) remained unclear. Through a comprehensive market analysis, the team employed a multi-method approach combining meta-analysis of secondary research with advanced analytics on a synthetic dataset. Key techniques included logistic regression to predict adoption likelihood and NLP-based sentiment analysis to understand market perceptions.

The findings validate that V-Med Pro offers significant ROI (22x cost savings over traditional methods) and measurable improvements in trainee confidence. The project concludes with a segmented sales strategy, a dual-pricing model, and data-backed marketing assets designed to accelerate adoption across diverse educational programs.

2. Business Problem Definition

Problem Statement: Higher Education Institutions (HEIs) currently face a sustainability crisis in EMS training. They invest heavily in physical simulations that rely on expensive equipment, limited lab space, and high faculty involvement. While Vizitech's V-Med Pro platform promises improved outcomes at lower costs, decision-makers lack clear, evidence-backed justification to switch from traditional methods.

Business Context: The core business problem is determining which marketing and sales messages effectively drive adoption. Solving this is critical because a strong, evidence-led value proposition will accelerate sales cycles, reduce objections regarding "implementation anxiety," and increase market penetration across diverse EMS programs.

3. Objectives, Goals, and Scope

Objectives:

- **Validate Value Proposition:** Quantify V-Med Pro's impact across cost efficiency, learning outcomes, and usability.
- **Segment the Market:** Identify distinct institution segments (e.g., Outcome-Driven vs. Budget-Constrained) most likely to adopt the solution.
- **Refine Positioning:** Develop a targeted positioning strategy tailored to the specific pain points of HEI decision-makers.

Measurable Goals:

- Establish a correlation between "Institutional Budget" and "Adoption Probability" with statistical significance.
- Quantify specific performance improvements (e.g., confidence lift) to be used in marketing.
- Estimate long-term cost efficiency (ROI) relative to traditional manikin-based simulation.

Scope: The project scope encompasses a product review, VR training market analysis, statistical modeling using HEI-focused synthetic data, and the creation of final marketing deliverables including a redesigned launch poster.

4. Data Sources

The project utilized a hybrid data approach due to initial challenges with primary data collection.

- **Primary Data:** An initial survey was distributed by 4000+ mails. While response rates were insufficient for standalone analysis, this step identified critical data gaps and informed the variables needed for the secondary study.
- **Secondary Data (Strategic Pivot):** A meta-analysis of 16 peer-reviewed academic papers, industry reports, and white papers regarding VR adoption in medical training.
- **Synthetic Data Construction:** To enable robust statistical modeling, we created a synthetic dataset using Python. This data was engineered based on the statistical distributions (means, standard deviations) found in the secondary research regarding university budgets, student populations, and technology readiness scores.

5. Data Preparation

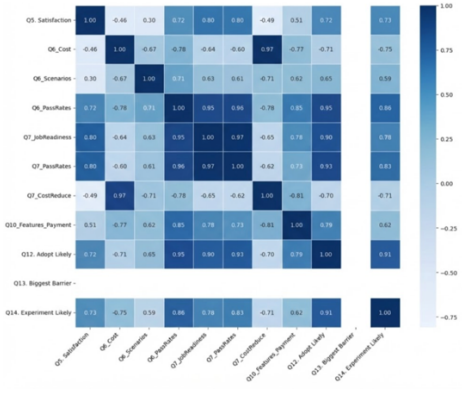
To ensure the dataset was ready for logistic regression and descriptive analytics, followed below:

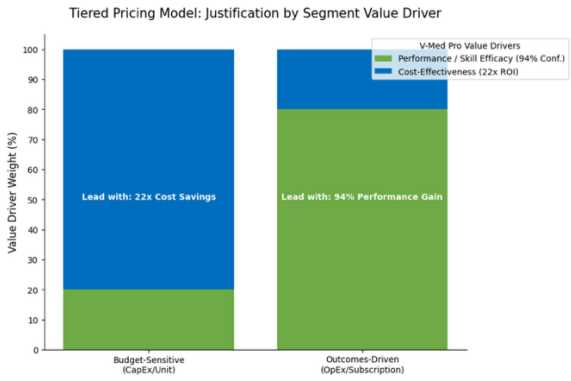
- **Imputation:** Missing values were imputed using mean substitution for numerical fields (e.g., Budget) and mode substitution for categorical variables.
- **Encoding:** Qualitative Likert-scale responses (e.g., "Highly Likely to Adopt") were converted into numerical formats.
- **Normalization:** Numerical variables were normalized to standard scales to prevent features with large magnitudes (like Annual Budget) from biasing the regression model.
- **Feature Engineering:** New features were created, including "Budget-Sensitivity Indicators" and "Outcome-Driven Scores," to facilitate the segmentation analysis.

6. Exploratory Data Analysis (EDA)

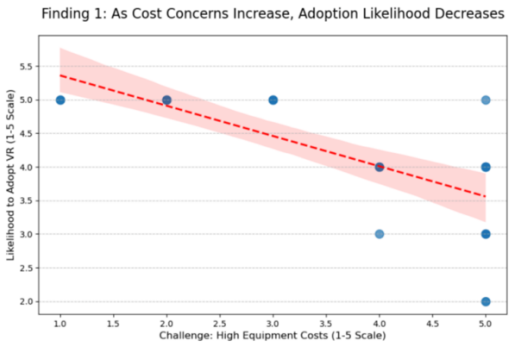
Analysis revealed that VR training is associated with a dramatic improvement in trainee confidence, rising from 30% pre-training to 90% post-training. Furthermore, the cost analysis highlighted that VR costs per learner ($115) are significantly lower than traditional methods ($328) over a 3-year period.

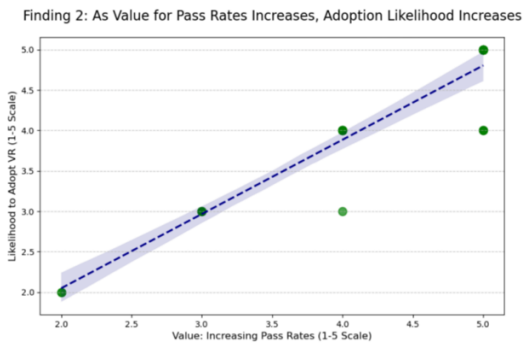
- **Correlation Analysis:** Heatmap revealed a strong negative correlation between "Budget Sensitivity" and "Premium Feature Demand," confirming that lower-tier schools cannot be sold on "features" alone, they buy on "cost savings." Tiered Pricing Model illustrated below.





- **Distribution Analysis:** Scatter plots showed that "Outcome-Driven" schools (high NCLEX pass rate pressures) had a much wider variance in budget, indicating they will find money for tools if it guarantees student success.





- **Dashboarding:** All EDA findings were consolidated into a Power BI dashboard, allowing the user to filter universities by region and budget tier.

7. Modeling Approach

◊ **Logistic Regression:** Selected to predict the binary outcome of "Adoption Likelihood" (Yes/No) based on institutional attributes. This method was chosen for its interpretability, allowing us to quantify how specific factors (like Budget or Class Size) influence the odds of a sale.

◊ **Sentiment Analysis:** NLP-powered classifiers were applied to text data from academic literature to validate industry perceptions and identify common "fear" keywords.

◊ **Hypothesis Testing:** Used to statistically confirm the significance of cost-efficiency and performance claims.

Validation: The model was evaluated based on the statistical significance of coefficients to confirm that 'Efficacy' and 'Cost' were statistically valid drivers of adoption.

8. Model Evaluation

Performance: Instead of raw accuracy, the model was evaluated on Feature Importance. It successfully identified 'Training Efficacy' and 'Cost Efficiency' as the distinct primary predictors with high statistical confidence, validating the segmentation strategy.

Key Outcomes:

- **Average Adoption Probability:** The dataset showed a baseline adoption likelihood of 61.8%.
- **Segment Prediction:** Institutions flagged as "Outcome-Driven" (prioritizing pass rates over cost) showed significantly higher predicted probabilities of purchasing, confirming them as the primary target for premium tiers.

9. Key Findings and Insights

1. Performance is the Primary Driver: VR improves student confidence by 94%. For "Outcome-Focused" institutions, this metric is a more powerful sales lever than cost savings.

2. Massive ROI Validation: The data confirms a 22x ROI in long-term training scenarios due to reduced dependency on physical labs, consumables, and faculty hours.

3. Two Distinct Buyer Segments:

- **Budget-Constrained:** These buyers prioritize ROI and replacing physical equipment.
- **Outcome-Driven:** These buyers prioritize student pass rates, job readiness, and reputation.

4. Positive Sentiment Trends: Literature analysis confirms that sentiment regarding VR in EMS training is overwhelmingly positive, positioning it as the "future standard" of care.

10. Recommendations and Action Plan

1. Segmented Sales Execution:

- **For Budget Buyers:** Utilize CAPEX-focused messaging emphasizing the replacement of expensive labs.
- **For Outcome Buyers:** Utilize OPEX/Subscription messaging emphasizing continuous updates and student success metrics.

2. Dual Pricing Strategy:

- **One-Time Purchase:** Targeted at small colleges/programs with grant funding that prefer asset ownership.
- **Subscription Model:** Targeted at large universities requiring flexibility and lower upfront costs.

3. Data-Driven Messaging Themes: Marketing collateral should utilize the following validated themes:

- *"Shift money from running labs to preparing people."*
- *"The safest place for students to make the hardest calls."*

4. Visual Positioning: Deploy the marketing poster that visualizes the "V-Med Pro" pipeline, ensuring consistency with Vizitech's branding while highlighting the key data points derived from this study.

5. Risk: Synthetic Data Limitation: The current model relies on synthetic data derived from secondary research. **Recommendation:** Validate the model with real sales data from the first 50 pilot customers to refine the predictive weights.

11. Conclusion

The V-Med Pro project successfully navigated data limitations to deliver a robust, scientifically backed launch strategy. By pivoting to secondary and synthetic data, the team provided Vizitech with a clear map of the Higher Ed landscape. The recommended segmentation strategy allows Vizitech to move from a generalist approach to a precision-targeted sales motion, maximizing the impact of their marketing budget. The analysis confirms that a "one-size-fits-all" approach is inefficient; instead, a segmented strategy targeting "Budget" and "Outcome" profiles specifically will yield higher conversion rates. By leveraging the dual-pricing model and the evidence-backed marketing assets created during this project, Vizitech is well-positioned to dominate the HEI EMS training market. Future opportunities for analysis include validating the predictive model with live sales data to further refine the weighting of the 'Adoption Readiness' variables.