

Uncovering MBA Program Themes Through BERTopic:

A Text Analysis of Student Reviews

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Abstract

For students intending to pursue an MBA, choosing the most suitable business school remains a complex and highly personalized decision. Existing decision-support tools mostly rely on structured admissions data, such as academic performance, work experience, or employment statistics. However, these objective indicators often fail to reflect subjective experiential factors such as course quality, campus atmosphere, or student satisfaction. To bridge this information gap, this study proposes a novel analytical approach using Natural Language Processing techniques to conduct topic modeling and semantic clustering on online reviews from students and alumni of ten top U.S. business schools. Unlike traditional machine learning methods that rely on objective data for prediction, this project focuses on sentiments and opinions expressed based on real experiences, revealing elements that applicants care about but are difficult to obtain from official sources. The findings show significant differences among schools in areas such as career support, academic rigor, social environment, and sense of community. This study aims to provide future applicants with a more nuanced and meaningful reference for school selection, serving as a valuable complement to existing quantitative analysis tools.

Keywords: MBA program selection, NLP, topic modeling, student reviews, business schools, decision support

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Introduction & Problem Statement

The competition in the MBA education market has always been intense, making the choice of the right business school and MBA program crucial for applicants' career development and personal growth. Traditional school selection is largely based on structured data, such as GMAT scores, GPA, work experience, and acceptance rates. While these methods are somewhat effective in assessing academic and career fit, they often overlook the more subjective and nuanced aspects of the student experience, such as classroom atmosphere, social environment, campus culture, and personal growth.

This study introduces a novel data perspective and methodological approach by employing topic modeling algorithms within Natural Language Processing to conduct in-depth analysis of text-based reviews written by MBA students on forums and educational platforms. The research focuses on ten top U.S. business schools and collects approximately 200 representative reviews from current students and alumni via public platforms such as GMAT Club and Niche. Unlike models that rely on quantitative indicators, this project directly analyzes unstructured textual data to uncover common themes and emotional tendencies, thereby revealing authentic experiences related to teaching quality, career support, and sense of cultural belonging across different institutions.

In terms of specific algorithms, the study utilizes the BERTopic algorithm for topic modeling. This model integrates word embeddings, dimensionality reduction, and clustering techniques to automatically identify core semantic structures in the text and generate interpretable topic labels. Compared to traditional LDA models, BERTopic is more sensitive to textual context and word combinations, making it well-suited for analyzing the diverse and complex user-generated content in this study.

The core objective of this research is to provide MBA applicants with a complementary school selection framework, enabling them to make more perceptive and targeted decisions based on the real experiences of others. At the same time, the study validates the feasibility and practical value of NLP techniques in educational decision-support scenarios.

Literature Review

The application of Natural Language Processing and machine learning technologies in the education sector is becoming increasingly widespread, particularly in the areas of student feedback analysis and admissions evaluation.

Zaitseva et al. (2022) pointed out that the quantitative surveys commonly used in traditional higher education often struggle to fully and accurately capture the nuances and emotions of students' learning experiences. To address this, they proposed using text mining as a supplementary approach to more deeply capture the subjective feelings in student feedback, thereby providing more precise guidance for improving educational quality. For example, the research team utilized the automated text analysis tool NVivo to quickly analyze students' free-text comments, identifying key issues of concern. Additionally, they applied STM to teaching evaluation texts, successfully uncovering latent gender bias issues hidden within student evaluations. This approach not only improves the efficiency of feedback analysis but also precisely identifies complex phenomena and sensitive issues that quantitative surveys often overlook.

Kanojia et al. (2018) focused on predicting graduate admissions outcomes by analyzing applicants' Statements of Purpose. They employed a SVM classifier, leveraging word embeddings and document similarity features to achieve highly accurate predictions of admission success rates (up to 92% accuracy). This study demonstrated that with effective text feature extraction and model training, it is possible to objectively quantify a school's actual expectations of applicants, providing valuable data support for admissions decisions.

Gupta et al. (2025) explored the use of machine learning in the school selection process for K-12 education, designing a platform that combines collaborative filtering and content-based recommendation systems. This platform assists parents in making objective school choices based on data such as family preferences, academic performance, and extracurricular involvement. The study emphasized the

importance of feature selection and data preprocessing techniques, providing detailed insights into the application of collaborative and content filtering models.

Shahane et al. (2024) proposed a machine learning-based student admission ranking prediction system, aimed at helping students more accurately estimate their chances of admission to different universities based on their academic performance. The study utilized Naïve Bayes and Q-learning algorithms to build an interactive chatbot that provides personalized educational counseling and admissions guidance. This approach not only improved the accuracy of admission predictions but also significantly enhanced user experience and satisfaction.

While these studies primarily focus on using objective data to predict admissions outcomes or optimize school selection processes, this research uniquely focuses on extracting valuable insights from subjective evaluation data through NLP sentiment analysis. As demonstrated by the work of Zaitseva et al. (2022), using NLP to analyze student feedback for educational improvement is both feasible and impactful. Therefore, this project not only addresses practical needs but also fills gaps that traditional quantitative analyses often miss, offering a fresh research perspective and technical pathway for MBA admissions evaluation.

Data

The data used in this study were sourced from publicly accessible student review platforms. To ensure the authority of the sample and the practical relevance of the research, the top ten MBA programs in the United States were selected as the focus of analysis. Based on the 2025 U.S. News Best Business Schools Rankings, the schools include:

- University of Pennsylvania (Wharton)
- Northwestern University (Kellogg)
- Stanford University

- University of Chicago (Booth)
- Massachusetts Institute of Technology (Sloan)
- Dartmouth College (Tuck)
- Harvard University
- New York University (Stern)
- Columbia University
- Yale University.

These institutions have long been ranked among the world's leading business schools, offering abundant admissions data and extensive student feedback, making them suitable for cross-school comparative analysis.

For data collection, this study gathered student reviews related to the selected schools from two websites: "GMAT Club" and "Niche." These platforms are commonly used by MBA applicants and are known for their wide coverage and high credibility. GMAT Club is a global MBA forum where applicants and students share insights on admissions, academics, and career resources. Niche, by contrast, places greater emphasis on students' subjective feedback regarding campus life, community culture, and overall satisfaction. By integrating data from both platforms, the study aims to capture a more comprehensive view of each school's performance.

To ensure the quality and accuracy of the analysis, original reviews underwent manual screening. Approximately 20 reviews were collected per school, totaling around 200. During the collection process, comments that were vague, redundant, or low in informational value were excluded. Instead, priority was given to reviews that provided detailed experiences, substantive evaluations, or comparative insights, in order to enhance the semantic depth and interpretability of the analysis.

Methods

To gain deeper insights into students' subjective evaluations of top U.S. MBA programs, this study adopts the BERTopic model as the primary tool for topic modeling. Compared to traditional LDA models, BERTopic offers stronger expressiveness and interpretability for short and unstructured texts. As such, BERTopic was selected as the initial algorithm for this study and applied throughout the topic analysis process.

Before training the model, the original review texts underwent systematic data cleaning and preprocessing, divided into three main steps. The first step was standard normalization, which involved converting text to lowercase, removing punctuation, and using NLTK's WordNetLemmatizer along with a standard English stopwords list to simplify the content. The second step involved custom stopwords filtering, eliminating frequently used but low-information words in the MBA application context, such as "program," "school," "really," and "very," which lack meaningful differentiation. The third step was synonym normalization using a mapping table that grouped semantically related terms to reduce noise and improve topic clarity, such as grouping 'alumni', 'networking', and 'social' into 'network', and 'internship', 'recruiting', and 'offer' into 'job'.

After completing these steps, each review was transformed into a semantically clear and structurally consistent sentence, which was then input into the BERTopic model for training. Each review was assigned a topic label, facilitating subsequent statistical and visual analyses of topic distribution across different schools.

Results

After training the model using BERTopic, this study successfully identified ten semantically coherent latent topics.

Topic	Keyword 1	Keyword 2	Keyword 3	Keyword 4	Keyword 5	Keyword 6	Keyword 7	Keyword 8	Keyword 9	Keyword 10
Topic 0	job	finance	class	location	consulting	network	investment	experience	professor	investment finance
Topic 1	community	class	location	job	experience	network	support	team	time	faculty
Topic 2	job	community	consulting	class	network	location	activity	international	classmate	finance
Topic 3	class	location	job	experience	classmate	culture	strong	location job	major	network
Topic 4	location	weather	class	snow	dining	earth	fact	fun	live offcampus	rain
Topic 5	class	job	team	leadership	activity	time	work	skill	marketing	helpful
Topic 6	professor	international	classmate	class	experience	learn	new	nobel prize	prize	knowledge experience
Topic 7	entrepreneurship	community	venture	network	tech	there	learn	resource	team	seriously
Topic 8	hard	community	team	grade	hour	classmate	varsity	put	day	class
Topic 9	entrepreneurship	class	super	job	try	new	become	tech	away	expected

Table 1. Top 10 Keywords for Each Topic Generated by BERTopic

To clearly display the keywords and their weights within a given topic, the project produced a visualized bar chart for individual topic keywords.



Fig 1. Top Keywords per Topic with Relative Weights

Preliminary results show that the review content spans multiple dimensions, including course quality, career development, teaching resources, and community support. Topic 0 primarily focuses on

“finance” related content, with keywords such as “finance” and “investment banking” appearing frequently. Topic 1 emphasizes “community” and “team support,” while Topic 2 relates to the “consulting” industry. Topic 4 concerns geographic location and climate, with commonly occurring words like “location,” “weather,” “snow,” and “dining.”

To enhance the clarity and interpretability of semantic expression, the results were further optimized through topic merging. Specifically, Topics 3 and 5 both addressed course quality, academic challenge, and leadership development, and were thus combined under the “class quality” category. Similarly, Topics 7 and 9, which both focused on entrepreneurship-related themes, were merged into the “entrepreneurship” category. The remaining topics were renamed based on the semantics of their main keywords, resulting in the following eight topic labels: finance, community, consulting, class quality, location, professor, entrepreneurship, and course difficulty.

To better understand how different schools are represented across these topics, the assigned topic labels were merged back into the original dataset and aggregated by school to calculate topic distribution proportions. As shown in Figure, a heatmap was used to visually represent each school’s relative focus across the various topics.



Fig 2. Topic Distribution Heatmap by Business School

The heatmap reveals that schools like Columbia, Dartmouth, UPenn, and NYU have a higher proportion of comments associated with the “finance” topic, reflecting their traditional strengths and strong brand recognition in the finance sector. In contrast, reviews for Dartmouth and Stanford focus more on “location” and “professor,” indicating heightened student attention to academic resources and faculty quality.

Regarding the “community” topic, Yale, Northwestern, and MIT show relatively higher proportions, suggesting a stronger sense of campus culture and student experience. Harvard and UChicago exhibit higher proportions in the “class quality” category, reflecting students’ strong impressions of curriculum design, academic rigor, or learning pressure.

For entrepreneurship-related themes, Stanford and Harvard lead in the “entrepreneurship” category, aligning with their established positions in innovation and entrepreneurship. Lastly, “course difficulty,” as an indicator of academic challenge, is notably represented in schools like UPenn and MIT, likely due to their intensive course structures.

Analysis and Interpretation

To gain a more layered understanding of the topic distributions generated by the BERTopic model and their underlying semantic features, this study further grouped the eight final topics into five core dimensions for in-depth analysis:

1. Employment and Career Development (including finance and consulting)
2. Entrepreneurship
3. Academic Experience (class quality, professor, course difficulty)
4. Campus Life and Community
5. Location

These five categories reflect the core concerns commonly shared among MBA students and help relate topic differences among schools to their program positioning, geographic characteristics, and institutional traditions.

1. Employment and Career Development

In employment-oriented topics, Columbia (0.54), NYU (0.50), and UPenn (0.45) showed particularly high proportions of finance-related comments. This aligns closely with their geographic advantage, as all are located in New York City—the global financial hub. These programs naturally attract applicants aiming for careers in investment banking, asset management, private equity, and other finance-related fields, and they offer abundant resources and alumni networks. As a result, keywords such as "finance," "job," and "investment" appear far more frequently than at other schools.

Meanwhile, in the consulting topic, Northwestern and Yale also show relatively high proportions. Student reviews suggest this is partly due to Kellogg's strength in management and organizational behavior and Yale's increasing emphasis on Social Impact curriculum. Interestingly, although UChicago and Northwestern are both located in Chicago, Booth's reviews related to finance and consulting are more evenly distributed—perhaps reflecting Booth's curriculum diversity and more balanced student feedback.

2. Entrepreneurship

The entrepreneurship topic appears most frequently in reviews of Stanford (0.30) and Harvard (0.27), which aligns with both schools' prominent positions in the entrepreneurial ecosystem. Stanford, at the center of Silicon Valley, is closely connected to the startup and venture capital ecosystem and supported by a strong network of entrepreneurial alumni. Although Harvard is not in a tech hub, its global alumni network, interdisciplinary resources, and innovation-driven academic environment provide strong support for entrepreneurship.

However, the keyword "resource" frequently appears in entrepreneurship-related reviews, suggesting that not all students are fully satisfied with the accessibility or effectiveness of entrepreneurial resources. This highlights a potential gap between the availability and the usability of such support.

3. Academic Experience

In topics related to academic quality, Harvard, UChicago, and MIT stand out. Harvard's high score under the professor topic (0.27) is closely associated with its renowned case method. Reviews frequently mention "professor," "discussion," and "case," reflecting a highly interactive teaching style that demands strong communication and quick thinking. Some students also express stress and discomfort, indicating that the method may not suit everyone.

UChicago shows the highest proportion in class quality (0.36), consistent with its long-standing emphasis on academic rigor and theoretical depth. However, some reviews describe the curriculum as "challenging" or "stressful," suggesting that it may not appeal to applicants seeking a balanced lifestyle.

MIT stands out in both professor and course difficulty topics, indicating that Sloan's STEM-oriented courses are both academically demanding and well-delivered.

4. Campus Life and Community

The community topic appears more frequently in reviews of Yale (0.27), Northwestern (0.23), and MIT (0.18). Yale SOM is known for its mission-driven and inclusive culture, and student comments often include words like "team," "support," and "inclusive," demonstrating strong community cohesion. Kellogg has long been regarded as a model of collaborative culture, with students frequently described as "friendly" and "collaborative"—a reputation consistently reinforced by reviews.

In contrast, while schools like Harvard and Columbia are highly competitive in academics and career outcomes, they show relatively lower proportions in the community topic. This may be due to the

competitive nature and fast pace of their programs, which could negatively impact students' sense of belonging and campus engagement.

5. Location

The location topic has the highest proportion in reviews of Dartmouth at 0.43—the highest among all ten schools. Located in the small town of Hanover, New Hampshire, Tuck is the only program among the ten situated in a non-urban area. Student opinions on its location are clearly polarized: some describe it as "peaceful" and "great for focus," appreciating the quiet, immersive learning environment and community culture. Others use terms like "isolated," "limited access to city life," and "hard to network beyond campus," pointing to the potential drawbacks of being far from major business hubs, which could affect internship access, social resources, and lifestyle convenience. Tuck's location is a key part of its program identity, reinforcing its close-knit community image while shaping expectations around adaptability and personal fit.

Stanford also shows a relatively high proportion for the location topic (0.30). Reviews frequently mention terms like "Bay Area," "Silicon Valley," "tech hub," and "startups," indicating that geography is deeply intertwined with Stanford's entrepreneurial identity. For many, the location itself is a key reason for choosing Stanford, offering access to practical experience, investor networks, and a vibrant tech culture.

By contrast, schools located in the Northeast or Midwest, such as MIT and Northwestern, often receive emotionally toned feedback on location, with comments referencing "cold," "winter," "harsh weather," and "gray." Some students express dissatisfaction with the long winters in Boston and Chicago, using phrases like "hard to stay motivated," revealing how climate can negatively affect student well-being and engagement. While not indicating curriculum flaws, such feedback highlights how geography and climate can shape the MBA experience, especially for students from warmer regions who may struggle with winter weather and higher living costs.

Conclusions

Compared to traditional school selection models based on quantitative indicators, this study emphasizes extracting emotions and key concerns from real user-generated texts, providing prospective applicants with a warmer and more experience-oriented reference framework.

By training and processing 200 reviews, the model identified ten topics, which were ultimately categorized into five core dimensions: employment and career development, entrepreneurial orientation, academic experience, campus life and community atmosphere, and geographic location. The study found significant differences in the distribution of comments across topics among different schools. These differences are closely related to the school's geographic location, teaching style, cultural atmosphere, and industry resources. For instance, Columbia and NYU have a higher proportion of comments related to finance, clearly benefiting from New York's geographical advantage; Harvard and UChicago show a higher proportion of academic-related comments, although some students expressed mixed feelings about teaching methods or academic pressure; Dartmouth's location emerged as a double-edged sword influencing student feedback.

The results suggest that students' evaluations of MBA programs go beyond feedback on teaching or employment data—they reflect a comprehensive expression of various factors such as environment, community, and values. Through text mining, we can systematically uncover the common themes and emotional tendencies behind this unstructured information. Future MBA applicants can use the distribution of these themes to more accurately match their preferences with program characteristics, thereby making more personalized school selection decisions.

Directions for Future Work

First, in terms of data, the current sample size is about 20 reviews per school. While it offers a certain level of representativeness, there are still limitations. Future studies could expand the sources of reviews to achieve broader corpus coverage. In addition, incorporating a temporal dimension would allow

researchers to observe how topic distributions in student reviews change over time, and whether there are long-term trends between institutional positioning and student experience.

Second, future research could introduce background variables of applicants or students, such as work experience, nationality, or industry direction, to further explore whether different groups have distinct focal points in their comments. This would support more fine-grained recommendations and matching.

Lastly, the methodology of this study could be extended to other educational programs or academic domains, such as undergraduate or PhD programs, to test its applicability and scalability within a broader educational evaluation framework.

In summary, Future research can further improve data, methods, and applications to enhance analytical accuracy and support practical use of NLP in educational decision-making.

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Data Availability

The dataset used in this study, consisting of student reviews from GMAT Club and Niche for ten top-ranked U.S. MBA programs, is available at:

<https://github.com/ryanzhou425/bertopic-mba-program-analysis/data>

Code Availability

All source code for data preprocessing, topic modeling using BERTopic, and visualization is publicly accessible at:

<https://github.com/ryanzhou425/bertopic-mba-program-analysis/code>

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