

The Digital Voice of Students: Analysing Emerging Themes in a Corpus of University Reviews

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Abstract

For higher educational institutions, reviews on Google Maps offer a free and easily accessible platform for students to express their needs and voice their concerns voluntarily. Such a platform can be valuable for capturing a wide range of academic and non-academic aspects that may not be manifested via traditional feedback instruments such as surveys. Accordingly, this study explores the themes that emerge in a corpus of online reviews collected from Google Maps of 29 Saudi public universities while also highlighting how such reviews form a public discourse shaped by the medium itself. To this end, this research employed an NLP advanced technique, namely BERT, to categorise the reviews into themes based on their semantic similarity. Then, a thematic analysis was conducted to reveal six main recurrent themes in the corpus: location and accessibility, facilities and infrastructure, academic quality and teaching, student support services, religious sentiment and gratitude, and community and social environment. The findings indicate that while Google Maps reviews capture a number of cultural and social aspects of university life, they inherently foreground physical (e.g., amenities) and logistical (e.g., location) dimensions. The paper also demonstrates how online reviews provide students with a platform to raise issues related to both micro-level (e.g., specific courses, amenities) and macro-level concerns (e.g., inclusivity), hence their potential value in contributing to the evaluative discourse on higher education institutions. These results suggest the need for a systematic engagement with online feedback platforms to promote continuous institutional improvement and cultivate an inclusive, student-centred educational environment.

Keywords: Corpus, online reviews, higher education, Saudi universities, text clustering in online reviews

1. Introduction

For higher educational institutions, student feedback is an important component in assessing and enhancing student experiences. These institutions have traditionally utilised structured surveys to formally gain an overview of student experiences, particularly with regard to teaching practices, course content, and overall student satisfaction (Hattie & Timperley, 2007; Nicol, 2010); however, the scope of such instruments is often limited by several factors. For instance, the structured nature of surveys seems to constrain the range and scope of student responses because the surveys often focus primarily on academic aspects while potentially overlooking other important facets related to student experiences (Gibbs, 2010; Sharpe, 2019). Moreover, response rates tend to be low, and the lag between data collection and results may impede the timely implementation of improvements (Kandiko et al., 2021). As a result, a growing question arises regarding whether complementary, more dynamic platforms can offer a broader and more immediate understanding of student experiences (Carless, 2019; Klemenčič & Chirikov, 2015).

With the advent of digital technologies and platforms like Google Maps, the methods for gathering student feedback have undergone significant shifts. Students can share their perspectives freely and voluntarily using these platforms, thus offering better insight into matters significant to students, such as academic issues, administrative services, campus facilities, and social aspects of university life (Alismaiel et al., 2022; Manca & Ranieri, 2016). In light of this, recent research (e.g., Janathanan, 2024; Lahlou, 2023; Santoso et al., 2024) has contributed to the growing importance universities place on online reviews, particularly as institutions begin to acknowledge the richness and depth of online feedback as a source of authentic information concerning student experiences (Cramarenco, 2023). Nonetheless, research on this form of feedback is still lacking.

As such, this study attempts to address this gap by compiling and analysing a corpus of online reviews collected from Google Maps of 29 Saudi public universities, aiming to explore how these reviews capture recurrent themes that students choose to discuss on this platform. Because the corpus consists of unstructured data, the analysis

involved two stages. The first stage entailed using advanced natural language processing (NLP) techniques, particularly bidirectional encoder representations from transformers (BERT), which is capable of organising unstructured data into clusters based on their semantic similarities (Devlin et al., 2018). As for the second stage, thematic analysis is used to identify recurrent themes and interpret student feedback, providing deeper exploration of the data. Overall, the study proposes that Google Maps reviews, despite being informal, provide meaningful engagement with authentic, freely available student feedback, thus contributing to the broader discourse on student evaluation of higher educational institutions.

The implications of this research are related to both theory and practice. From a theoretical standpoint, the study provides deeper understanding of how digital platforms function as active spaces for public discourse, shaping and redefining the ever-evolving relationship between students and universities (Dabbagh & Kitsantas, 2012; Selwyn, 2014), thereby challenging how we think about these digital interactions and their role in transforming feedback practices in education. Practically, the findings offer key observations for universities, demonstrating how thematic patterns in online reviews can guide institutional improvements and foster a more inclusive, responsive educational environment. Generally, this study highlights the importance of incorporating online feedback into institutional strategies for continuous development and student-centred decision-making, particularly given the increasing engagement of students with digital platforms.

1.1 Importance of the Research

This exploratory research presents analysis of unstructured digital feedback, particularly Google Maps reviews, as a complementary supplement to traditional feedback instruments. While traditional surveys offer valuable but limited insights, real-time digital platforms allow for a more comprehensive understanding of university student experiences (Manca & Ranieri, 2016; Selwyn, 2012), increasingly required as the emphasis on education quality has grown. In the context of Saudi universities, where student engagement and institutional improvement are key priorities, the analysis of Google Maps reviews provides valuable insights for enhancing educational services and student satisfaction. In addition, this research also stands out for its use of the machine learning techniques BERT to analyse student reviews, thus contributing to the growing body of literature examining digital discourse within higher education contexts. The findings can assist institutions in tailoring their services more closely to students' needs, creating a learning environment that is both more inclusive and more attuned to the diverse expectations of students.

In particular, this research aims to investigate the recurring themes in a corpus of Google Maps reviews of 29 Saudi public universities, combining NLP-based and thematic analysis to uncover key themes in student feedback. To understand the broader role of digital feedback platforms in higher education, it is essential to review relevant existing literature. In the following section, research on digital feedback platforms in the context of higher education will be examined, with a focus on the recurring themes identified in student online reviews and practical methods to analyse such unstructured data.

2. Literature Review

2.1 Online Reviews in Higher Education

Digital platforms like Google Maps have become essential venues for student feedback, allowing users to publicly share their experiences with universities. This user-generated content provides insights into key areas such as education quality, campus facilities, and administrative services and serves as a resource for prospective students, current students, and university administrators (Santoso, 2024; Shah et al., 2020). Such feedback also offers a valuable resource for understanding student experiences (Herring, 2004).

Studies examining online reviews of universities often highlight recurring themes, regardless of the geographic location of the institutions analysed. Many studies have focused on individual universities (Janathanan, 2024; Lahlou, 2023) or broader national contexts (Santoso, 2024; Shah et al., 2020), revealing shared concerns among students. Key issues frequently discussed include the following:

- **Curriculum and course design:** Students often comment on course design, the relevance of the curriculum to the job market, and the quality of academic content. For instance, Santoso (2024) and Shah et al. (2020) identified concerns related to the alignment of courses with professional skills, highlighting a need for curriculum updates to meet current job market demands.
- **Campus facilities:** Another prevalent theme is the quality of campus facilities, such as libraries, laboratories, fitness centres, and learning spaces. Reviews frequently highlight both positive and negative aspects of these facilities, with students noting issues related to maintenance, accessibility, and adequacy of resources (Janathanan, 2024; Santoso, 2024; Shah et al., 2020).

- **Administrative support and student services:** Administrative efficiency is a critical area of concern for many students, with frequent complaints about unresponsive staff, delays in processing requests, and inadequate student services such as mentoring and registration assistance (Janathanan, 2024; Santoso, 2024; Shah et al., 2020). These reviews emphasise the need for universities to improve the efficiency of administrative processes and to enhance student support services.
- **Academic quality:** Feedback on academic quality often revolves around the teaching skills of professors, exam formats, and the overall effectiveness of instruction. Some reviews underscore the importance of improving teaching methodologies and providing clearer guidelines for assessments (Janathanan, 2024; Santoso, 2024; Shah et al., 2020).
- **Additional concerns:** Other topics, such as technology access, internet connectivity, cleanliness, campus maintenance and food services, were also frequently mentioned. These aspects significantly impact students' day-to-day experiences and contribute to their overall satisfaction with their university (Lahlou, 2023; Santoso, 2024; Shah et al., 2020).

Taken together, these reviews not only highlight specific areas of concern—such as curriculum design, campus facilities, and administrative support—but they also reflect the wide-ranging perspectives and varied experiences of the student body. Although these reviews provide insights into student experiences, analysing such unstructured data presents several challenges. To meet these challenges, researchers have employed a variety of data analysis techniques, ranging from traditional thematic and content analysis to more advanced methods, such as sentiment analysis and NLP-based clustering. These are briefly described below.

- **NLP-based clustering techniques** involve advanced text-mining methods that group text data based on semantic similarities, facilitating the categorisation of large data sets into meaningful clusters. These methods help researchers uncover hidden patterns in student feedback, providing a detailed understanding of recurring themes. For example, Pable et al. (2021) utilised thematic analysis through Leximancer, a tool that automatically identifies and categorises key themes based on semantic relationships. Their analysis revealed major themes such as teaching quality, support for international students, and campus facilities, illustrating how automated clustering can efficiently organise complex data.
- **Sentiment analysis** systematically examines the emotional tone expressed in reviews, identifying whether feedback is positive, negative, or neutral. This approach adds depth to the analysis by capturing the emotional context of student feedback, which may be overlooked in traditional thematic analysis. Santoso et al. (2024) employed Naïve Bayes sentiment analysis on Google reviews to assess student satisfaction and highlight areas for improvement, such as administrative efficiency and campus maintenance. This method allows institutions to better understand the overall sentiment of student feedback, providing useful insights into how students perceive their educational experience.
- **Traditional content analysis and manual thematic analysis** are still widely used to categorise and interpret student feedback. Lahlou (2023) utilised a manual content analysis approach to classify online reviews into several categories, followed by an analysis that identified comments as positive, negative, or neutral. This method, while time-consuming, offers a detailed and nuanced understanding of specific student concerns, such as academic quality, facilities, and administrative support. Similarly, Janathanan (2024) conducted a manual thematic analysis to identify key themes in student reviews, providing insights that inform institutional improvements.

Although early NLP techniques, such as topic modelling and sentiment analysis (e.g., Naïve Bayes), have been useful in uncovering patterns in unstructured data (Santoso, 2024), recent advancements in machine learning, such as BERT, offer improved capabilities. BERT's ability to capture context and meaning in text enables deeper and more accurate theme extraction (Devlin et al., 2018). Though prior studies may not have explicitly used BERT, its applicability to university review analysis presents a promising direction for this research. Therefore, this study adopts BERT to enhance the precision of thematic clustering, building on traditional NLP methods, as can be seen in the method section.

2.2 Student Feedback in Saudi Higher Education

It is important to assess student satisfaction and institutional quality for the higher education system, especially in the Kingdom of Saudi Arabia, as most universities strive to improve their services to correspond with international standards. A number of research studies have examined the impacts of various dimensions of service quality on student satisfaction through well-established models such as the Service Quality (SERVQUAL; Parasuraman et al., 1988) and Culturally Influenced Higher Education Performance (CUL-HEdPERF) models (Ali et al., 2005).

SERVQUAL is a widely used model that measures service quality along five dimensions: tangibility, reliability,

responsiveness, assurance, and empathy. Within the realm of higher education, the model is then applied to measure how well an institution meets student expectations of teaching quality, administrative support, and campus facilities. In a study conducted by Sibai et al. (2021) on a private medical college in Saudi Arabia, the authors used the SERVQUAL model to evaluate student satisfaction. Responsiveness, assurance, and tangibility were identified as key predictors of student satisfaction, highlighting the need for service provision to be timely and effective as well as have a tangible presence, like well-maintained facilities. Alkuwaiti (2020) also considered the nature of factors influencing students' perceptions regarding teaching effectiveness in Saudi dental schools. His findings, which also emphasised the importance of quality interactions between students and faculty, align with those of Sibai et al. (2021). Both studies reveal that delivering consistent and reliable services and encouraging strong relationships between teachers and students significantly contribute to improving student satisfaction in Saudi universities.

In contrast, the study conducted by Ramzi et al. (2022) on standardisation of service quality through the CUL-HEDPERF scale addressed cultural context within higher education. The CUL-HEDPERF framework is highly relevant in the context of Saudi Arabia, where cultural values and expectations play a vital role in shaping student satisfaction. Ramzi et al. (2022) emphasised that professionalism and cultural sensitivity were key to meeting student expectations, suggesting that institutions must adapt their services according to cultural norms and values.

Although these models exist, it is important to understand that other feedback instruments such as course evaluations and student surveys are equally important for gathering these insights. Rubaish (2011) identified student rating items as a useful resource for programme evaluation surveys, so that the institution could spot areas for improvement and make precise modifications.

The feedback instruments examined in this section can be used to understand the dimensions that universities should pay attention to when creating effective curricula that match students' expectations and needs, accommodate cultural differences between different student populations, and maintain and improve service quality and student satisfaction levels. Having established the fundamental role of online reviews in capturing student experiences and the advanced methodologies suitable for their analysis, the following section outlines the specific methodological framework employed in this study to uncover emerging themes in a corpus of Google Maps reviews of Saudi universities.

3. Method

This section presents the methodological approach to this exploratory research in terms of data collection, pre-processing, and analysis. Ethical considerations are also elaborated on, given that the method involves the collection of publicly available online data.

3.1 Data Collection and Pre-Processing

This study is exploratory in nature and aims to explore individuals' (Note 1) evaluative online discourse on higher education institutions. The focus of this study is on the Saudi context. Google Maps reviews of all Saudi public universities ($n = 29$) were scraped up to April 2024. The data comprises 34,613 reviews, with a total word count of 791,795 words. The reviews were saved in CSV format, with each row representing an individual review, and prepared for data pre-processing.

3.2 Ethical Considerations

Because this paper focuses on identifying recurring themes in online reviews, only the text of the reviews was retained, while all other details, such as university names and personal information (e.g., names, usernames, and specific geographical information), were removed via Python libraries. This step was taken to ensure anonymity and privacy in line with data usage guidelines (Markham & Buchanan, 2012). The study followed established internet-based research protocols by using publicly available Google Maps reviews, which were voluntarily posted with the understanding that they would be publicly accessible, meaning individual consent was not required.

The research also adhered to principles set by the Association of Internet Researchers (AoIR), which emphasises respecting the privacy expectations of individuals who create content online. During the pre-processing stage, the data were fully anonymised to ensure users could not be identified. This step involved removing any metadata tied to user accounts, such as usernames or location data. The study also accounted for differing privacy expectations in online spaces. As noted by Markham and Buchanan (2012), publicly available data can be used for research without explicit consent, but this study took additional steps to respect the privacy of individuals by analysing the reviews collectively, focusing on overall themes rather than individual comments. By anonymising the data from the start, the research was designed to minimise any risks to privacy or unintended consequences.

3.3 Data Pre-Processing

To prepare the data for BERT clustering and thematic analysis, data pre-processing was necessary, and included the following steps:

- Tokenisation: During this stage, the textual data were split into individual tokens (i.e., words or phrases) while preserving contextual meaning. These tokens served as the basic components for the subsequent clustering process.
- Normalisation: Non-alphabetical characters, such as diacritics, punctuation, and white spaces, were removed to ensure consistency in the data. All text was converted to lowercase to standardise the input across reviews.

3.4 Embedding Generation

The BERT model (Devlin et al., 2018; Reimers & Gurevych, 2019) was used to acquire word embeddings for each review after preliminary processing. BERT was employed because it excels at embedding text into a high-dimensional vector space using context-aware word meaning. Finally, the k-means clustering algorithm was employed on these embeddings to cluster (group) reviews into semantically similar ones. K-means was selected because of its ability to handle large amounts of data efficiently (because it operates in linear time) and to minimise within-cluster variance. The clustering was intended to find common patterns among the reviews from various universities. The number of clusters was determined using the elbow method, shown in Figure 1, which indicates that the within-cluster sum of squares decreases considerably until six clusters, after which the decrease flattens, so that six clusters provide the best fit for the data.

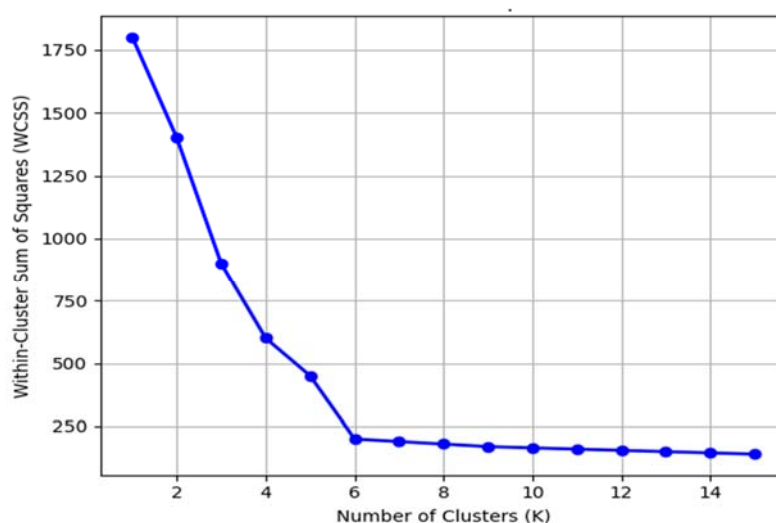


Figure 1. Elbow Method for Optimal K

3.5 Cluster Quality

To evaluate cluster quality, several measures were conducted, including the following:

- Silhouette Score (0.4685): This score ranges from -1 to 1, with higher values indicating better cluster cohesion. A score of 0.4685 is considered acceptable, indicating reasonably good clustering, with some overlap (Rousseeuw, 1987).
- Calinski-Harabasz Index (7499.3958): Higher values indicate better cluster separation, and a score above 500 is considered good. A score of 7,499.3958 indicates very good separation (Caliński & Harabasz, 1974).
- Davies-Bouldin Index (1.3157): Lower scores indicate better-separated clusters, with values above 2 considered poor. A score of 1.3157 is acceptable.

The t-distributed stochastic neighbour embedding (t-SNE) was also applied to visualise the high-dimensional data, providing a two-dimensional representation to complement the quantitative cluster evaluation metrics. The t-SNE plot, shown in the analysis section, provides a visual inspection of cluster separation and overlap.

3.6 Thematic Analysis

After grouping the data into clusters, the reviews within each cluster were closely examined to uncover themes related to the student experience. Each cluster underwent a manual review to ensure consistency and coherence in the identified themes. Following Braun and Clarke's (2006) guidelines, the thematic analysis involved becoming familiar with the data, coding, and refining them into clear themes. Location and accessibility, campus facilities, academic quality and administrative services were among the most common themes in the corpus, all reflecting essential aspects of the student experience. This method allowed for the identification of both micro-level concerns (e.g., specific courses) and macro-level issues (e.g., inclusivity), offering valuable insights into the evaluative discourse, as depicted on Google Maps, on higher education institutions in Saudi Arabia.

4. Results

The analysis of the reviews collected from Google Maps of 29 Saudi public universities revealed six major clusters, demonstrating the experiences and expectations students decide to share online. The themes representing these clusters cover areas related to academic quality and support services as well as cultural and social dimensions. However, some themes are notably present—namely, location and facilities, which seems to be influenced by the nature of the Google Maps platform itself. The platform's foregrounding of logistical and physical elements seems to shape student feedback.

The t-SNE plot in Figure 2 provides a visual representation of the thematic clusters produced by the BERT model. The plot displays well-defined clusters with some degree of overlap between adjacent ones. This suggests that while there are distinct themes within the corpus, some clusters seem to intersect, where reviews discuss more than one issue at once. For example, the overlap between Cluster 0 (Academic Quality and Teaching) and Cluster 1 (Student Support Services) indicates that reviews discussing academic quality may include references to support services available to students. Similarly, Cluster 3 (Facilities and Infrastructure) shows some overlap with Cluster 2 (Location and Accessibility), as these topics are closely linked in many reviews. However, the plot also shows clear boundaries around Cluster 4 (Religious Sentiment and Gratitude) and Cluster 5 (Community and Social Environment), indicating that these themes are more distinct and less likely to overlap with others. This visual representation complements the quantitative cluster evaluation metrics, offering better understanding of how the themes within the corpus are grouped. The relevant key findings from each thematic cluster are discussed below.

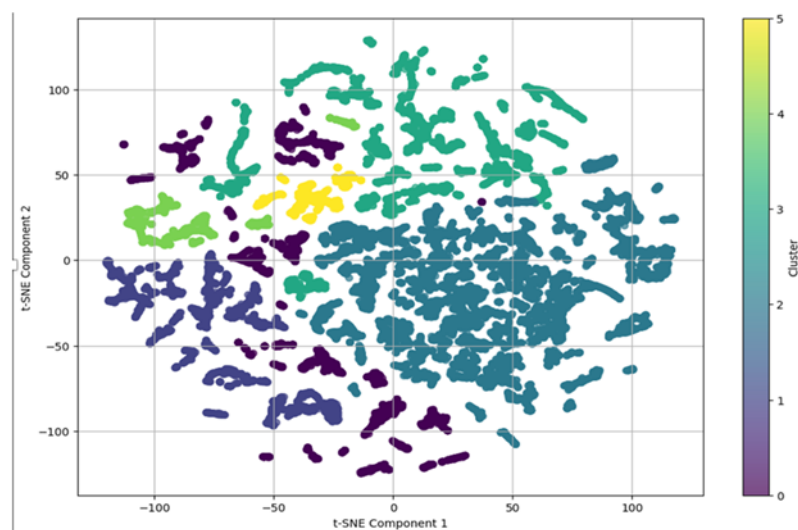


Figure 2. t-SNE Visualisation of Clusters

4.1 Cluster 0: Academic Quality and Teaching (14.13%)

Academic quality and teaching were highlighted as major areas of concern, with 14.13% of reviews referencing issues related to curriculum, teaching effectiveness, and availability of academic resources. Although many reviews expressed general satisfaction with the quality of education at the included institutions, some called for curriculum improvements. Reviewers frequently mentioned that while some courses were well structured, others felt outdated and in need of revision. These comments reflect a growing expectation that universities should keep

their programmes aligned with current industry standards and student career aspirations.

One student remarked, “The education here is of high quality, but the courses could be more diverse,” a sentiment that appeared in several other reviews. This feedback suggests that, despite the overall value placed on the education provided, university students are seeking a wider range of course offerings to reflect their diverse academic interests. Challenges pertaining to gaining access to research and academic resources were also reported in some reviews. These challenges included the procedural requirements to obtain approval to use lab facilities. Although students consistently praised the quality of these resources, the process required to access them was frequently described as cumbersome and time-consuming.

4.2 Cluster 1: Student Support Services (12.39%)

Analysing the reviews demonstrated that support services are a fundamental part of the student experience in Saudi Arabia, with 12.39% of the reviews expressing concerns related to counselling, financial aid, and administrative procedures. The reviews revealed that students generally value the availability of these services, but they also voiced concerns regarding the accessibility and responsiveness of student service departments. Counselling services were frequently mentioned, with many students feeling frustrated by how difficult it can be to reserve appointments, especially during high-stress times like exams.

Another related recurring theme in the reviews is the efficiency of financial aid services. Although students acknowledged the helpfulness of the staff, delays in processing applications were a common frustration. One reviewer commented, “The financial aid office is helpful, but the process takes too long,” reflecting a broader concern with administrative efficiency. Similarly, reviews point to challenges in dealing with university administrative services, with slow responses from administrative staff frequently mentioned.

4.3 Cluster 2: Location and Accessibility (44.82%)

Accounting for nearly half (44.82%) of the reviews, location and accessibility emerged as the most prominent theme. The prevalence of this theme in the data likely stems from the nature of the Google Maps platform, which mainly provides information regarding the physical and logistical attributes of a given place. This specific feature of the platform encourages reviews that are focused on this theme. It is therefore unsurprising that many of the reviews centre around these factors.

For many students, the central location of their university is a key advantage. As one reviewer noted, “The university is centrally located, making it convenient for commuting students.” However, this convenience is not universal, as students without private transportation face difficulties accessing the campus. One reviewer remarked, “It’s hard to reach the campus without a car, and there aren’t enough public transport options,” underscoring the need for better public transportation infrastructure to ensure equitable access for all students. Additionally, some students raised concerns about the external environment, such as noise pollution from nearby traffic, which can affect the learning experience.

4.4 Cluster 3: Facilities and Infrastructure (21.11%)

The quality of physical infrastructure emerges as a significant factor in shaping the student experience, with 21.11% of the reviews highlighting aspects related to facilities such as housing, classrooms, and study areas. Many students conveyed their satisfaction with the modernity of the campus buildings and the provision of well-equipped classrooms, which they perceived as fostering an effective learning environment. However, logistical concerns, such as overcrowded libraries during peak usage times and delays in addressing maintenance requests, were frequently noted.

One student expressed particular appreciation for the campus facilities, stating, “The buildings are beautiful, and the technology in the classrooms is modern and easy to use.” This sentiment illustrates the positive regard students have for the university’s infrastructure, though challenges related to space management—such as difficulties finding seating in the library during examination periods—suggest that improvements are still necessary in this area. Additionally, recurring complaints regarding delays in maintenance services, especially in student housing, point to a need for more streamlined facility management practices.

4.5 Cluster 4: Religious Sentiment and Gratitude (4.12%)

Religious sentiment and expressions of gratitude are prominent in 4.12% of the reviews, reflecting cultural practices in Saudi Arabia. Students often used religious language to express their appreciation for the university and its leadership. This theme reveals the cultural dimension of student feedback, where satisfaction with the university’s efforts is often framed through expressions of religious praise.

For example, one reviewer stated, “May God bless the leadership for their continuous improvements,” highlighting

the cultural norms of expressing gratitude within a religious context. However, some reviews expressed concerns about religious accommodations or practices at the university. For instance, a reviewer noted, "I wish there were a larger mosque to accommodate all students." This feedback illustrates that while many students appreciate the university's contributions to their lives, they also call for improvements in facilities that support their religious needs. Generally, these reviews often extend beyond specific services and demonstrate an appreciation for the university's overall impact on students' lives.

4.6 Cluster 5: Community and Social Environment (3.28%)

The theme pertinent to the last cluster covers the social atmosphere and sense of community within the university, accounting for the least frequent concern at 3.28%. While not as frequently discussed as other themes, the community and social dimensions remain essential in the student experience. Analysing this cluster demonstrates that students were often satisfied with the social environment they experienced at the given institutions. Students often referenced the value of extracurricular activities and peer support in enhancing their university experience.

For example, one review described the campus as "a second home," reflecting the strong emotional connection many students feel towards their university community. Extracurricular activities, such as student clubs, are often mentioned as key contributors to this sense of belonging, with students noting these activities provide valuable opportunities for social engagement and personal growth.

In summary, analysis of the corpus highlights that Location and Accessibility (44.82%) and Facilities and Infrastructure (21.11%) dominate student discussions, pointing to the strong emphasis placed on the physical and logistical factors. The findings emphasise how crucial these elements are in shaping students' everyday university experiences. Meanwhile, themes such as Academic Quality and Teaching (14.13%) and Student Support Services (12.39%) shed light on students' academic and non-academic expectations, reflecting their broader needs beyond the physical environment. Cultural factors also surface in the Religious Sentiment theme, while the Community and Social Environment theme underlines the importance of social engagement in enhancing student satisfaction. Altogether, these themes offer a balanced perspective on the student experience. They highlight the need to address logistical and infrastructural issues while improving student support systems, ultimately fostering a more comprehensive and satisfying university experience.

5. Discussion

The findings of this study provide significant insights into how students use Google Maps reviews as a platform to express a wide range of concerns related to academic quality, infrastructure, and the broader social environment of Saudi public universities. Unlike traditional feedback instruments, which often focus solely on structured academic issues, the reviews examined here reflect both micro-level (e.g., specific courses, amenities) and macro-level concerns (e.g., institutional inclusivity, administrative efficiency). The results also highlight the extent to which public discourse on higher education institutions is shaped by the nature of the platform itself, which emphasises physical and logistical dimensions.

5.1 Micro-Level Concerns

At the micro level, students provide detailed feedback on specific elements of their university experience, often centring around academic quality and support services. Similar to findings from previous studies (Santoso, 2024; Shah et al., 2020), students frequently comment on the curriculum's relevance to the job market and the quality of teaching, indicating that academic standards are a top priority. The feedback highlights the need for continuous improvement in course offerings, with students suggesting updates to ensure that programmes remain aligned with industry demands (Janathanan, 2024; Santoso, 2024).

In addition to academic concerns, micro-level feedback touches on the day-to-day experiences that shape students' perceptions of their universities. For example, reviews discussing housing facilities, classrooms, and study spaces emphasise the importance of an environment conducive to learning. Similar themes have been identified in the literature, with students valuing modern infrastructure and well-maintained facilities (Alashwal, 2020; Azam, 2018). However, logistical challenges, such as overcrowded libraries and slow maintenance services, present ongoing issues that negatively impact student satisfaction (Alashwal, 2020).

5.2 Macro-Level Concerns

At the macro level, the reviews reveal broader concerns that extend beyond individual experiences. Students often critique the accessibility of administrative services, pointing to systemic inefficiencies that hinder their overall university experience. For instance, delays in accessing financial aid or booking counselling appointments reflect broader challenges in university resource allocation, as noted in previous studies (Alashwal, 2020; Gao, 2020). These issues suggest that while universities are making progress in providing essential support services, there is

still a gap in ensuring timely access to these resources.

Furthermore, the discourse around inclusivity—though not always explicitly mentioned—emerges in students' feedback on social dynamics and administrative responsiveness. Similar to Ramzi et al.'s (2022) findings, which highlighted the importance of culturally sensitive services in Saudi universities, students frequently reference how their interactions with administrative and academic staff shape their overall satisfaction. This finding underscores the need for institutions to foster a more inclusive and supportive environment that accommodates the diverse needs of their student body.

The macro-level concerns also align with the SERVQUAL dimensions discussed in the literature, particularly reliability and responsiveness. As Sibai et al. (2021) and Ramzi et al. (2022) have demonstrated, the efficiency and cultural appropriateness of administrative services are critical predictors of student satisfaction. Addressing these systemic issues requires a holistic approach to institutional policy-making, ensuring that administrative processes are streamlined and that cultural considerations are integrated into service delivery. This comprehensive approach can bridge the gap between current service provisions and student expectations, fostering a more inclusive and efficient educational environment.

5.3 Platform-Driven Public Discourse

A key contribution of this study is its exploration of how Google Maps as a platform shapes the nature of student feedback. As the results indicate, Location and Accessibility emerged as the most dominant theme, accounting for 44.82% of the reviews. This finding reflects the platform's geospatial nature, which emphasises physical and logistical aspects of the university experience. Other examples of platform bias can be seen in reviews related to campus facilities, where students frequently comment on parking availability, the ease of navigation, and even the cleanliness of common areas. These aspects, which might be secondary in traditional feedback mechanisms, gain prominence on Google Maps due to its visual and location-centric design. Similarly, student complaints about limited transportation options often overshadow more complex academic concerns, further demonstrating how the platform itself shapes the nature of the feedback. Similar to Manca and Ranieri's (2016) discussion of the role of digital platforms in shaping public discourse, this study demonstrates that students are more likely to comment on campus facilities and accessibility when using a tool designed for spatial navigation. The prominence of themes related to facilities and infrastructure (21.11% of reviews) further supports the idea that the platform encourages discourse centred on the physical dimensions of university life, a trend noted in other platform-focused studies (Selwyn, 2014).

This platform-specific bias also raises interesting questions about the extent to which the medium influences the content of feedback. Unlike structured institutional surveys, which may prompt responses about academic services or course content, platforms like Google Maps facilitate discussions on logistical concerns. This finding aligns with Selwyn's (2012) work on the role of digital platforms in higher education, which highlights how the nature of the platform can shape the type of discourse that emerges. Although Google Maps reviews provide valuable insights into students' experiences with infrastructure and accessibility, they may underrepresent concerns related to teaching quality or institutional policies, which are traditionally explored in more structured feedback mechanisms.

5.4 Implications for Higher Education Institutions

From the results of this research, it is clear how digital feedback platforms like Google Maps can provide universities with a rich source of information on student experiences, both academic and non-academic. Gikandi et al. (2011) argued that unstructured feedback can be especially valuable for institutions aiming to understand the nuances of student satisfaction. This research emphasises the need for universities to move towards a systematic approach when reviewing and responding to online feedback. Doing so would allow them to address issues like administrative efficiency, library capacity, and mental health appointment availability in a timely manner, resulting in a student-centred approach to feedback integration.

Furthermore, this study reveals how public platforms help shape the image of an institution. Although reviews on Google Maps often focus on logistical aspects, like location and accessibility, they may overlook more complex social or academic challenges. Therefore, universities could combine these reviews with other tools such as surveys or focus groups. Likewise, implementing frameworks like SERVQUAL and CUL-HedPERF, as suggested by Ramzi et al. (2022) and Sibai et al. (2021), can also help universities take a more structured approach to service improvement. Connecting these models to the digital feedback data will enable institutions to address specific student concerns.

This study also underlines cultural context as an important factor in student experiences, as a number of reviewers

expressed their gratitude via religious sentiments, and others inquired or commented on the availability of mosques. Singh and Alshammari (2021) similarly noted that cultural sensitivity plays a critical role in developing effective policies in the context of higher education. To develop a more welcoming higher education community, universities should apprise themselves of culture-related issues via such research so they can tailor their policies to meet their students' expectations.

5.5 Limitations

Having discussed the results of the research, it is important to mention its limitations. The first limitation is related to the data, which were collected solely from Google Maps, hence introducing platform bias; as mentioned previously, the Google Maps platform seems to encourage students to comment on the logistical and physical aspects of an institution, whereas academic or social experiences receive less attention. Another constraint stems from the voluntary nature of review participation, which presents potential sampling bias. Students who feel strongly, whether positively or negatively, are likely more inclined to leave reviews, resulting in an imbalanced reflection of the student body's overall sentiments. A further limitation is tied to the data collection time frame, which concluded in April 2024. As a result, any recent changes or improvements in student experiences that have occurred since then are not captured in this analysis, leaving a gap in understanding current trends. Methodologically, although BERT and thematic analysis proved effective in identifying key themes, there is a risk of oversimplification or misclassification of complex student sentiments. Moreover, the findings are grounded in the context of Saudi public universities, which may limit their generalisability to private institutions or those in different cultural or geographic settings. In spite of these shortcomings, this research presents a detailed thematic exploration of the reviews on Google Maps in the context of Saudi public universities. Future research may explore a broader range of digital feedback sources or institutional contexts.

6. Implications

Several important implications drawn from this study bear relevance to both institutional practice and higher education policy. First, the results indicate the need for universities to embrace more adaptable and inclusive feedback mechanisms that complement the traditional, structured feedback instruments. Digital platforms such as Google Maps present a valuable source for capturing immediate, unfiltered student feedback, thus offering a comprehensive view of their experiences. Yet, as this study reveals, the platform itself influences the nature of the feedback received, often encouraging reviews on logistical matters such as campus location and infrastructure.

Digital platforms like Google Maps, which yield unstructured data, provide a rich and intricate understanding of student satisfaction, particularly concerning infrastructure and accessibility in the case of this study. Universities should prioritise efforts to enhance campus transportation, expand study areas, and implement more flexible online administrative services, as these concerns were echoed in many reviews. Assigning a dedicated team to monitor digital feedback can help address issues such as delayed maintenance or inefficiencies in financial aid processes swiftly and effectively. Doing so would eventually nurture a culture of ongoing improvement and institutional development. As universities examine student feedback more deeply, they can identify areas in need of urgent action, be that improving transportation, increasing library capacity, or streamlining administrative operations. Furthermore, institutions can tailor their services to the distinct needs of their student communities, especially in contexts like Saudi Arabia (Singh & Alshammari, 2021), by responding to the cultural elements embedded in the feedback.

The results of this research are also relevant to higher education policy because they underscore the need for transparent feedback systems that consider the diverse range of student needs and experiences. Policy-makers should also encourage universities to make use of available student feedback on digital platforms to promote public accountability. Integrating informal, real-time feedback from digital platforms into formal evaluation processes can help institutions become more transparent and responsive—qualities that are increasingly essential in today's digitally driven educational environment (Manca & Ranieri, 2016). Moreover, policy-makers should prioritise building the capacity of institutions to systematically analyse and respond to digital feedback. Through gathering student voices from different platforms, universities can implement meaningful institutional changes, ensuring a timely response to student concerns.

7. Conclusion

This exploratory study has offered a detailed look into the Google Maps reviews for 29 Saudi public universities. These reviews voiced students' academic and non-academic needs. Although students often raised concerns about specific matters, like course content or campus facilities, larger issues, such as the efficiency of administrative processes and inclusivity, also emerged in the discussions, albeit subtly. Interestingly, because the platform emphasises spatial and logistical information, themes like location and facilities dominated the reviews, reflecting

how the medium shapes student feedback.

This research also points to the need for higher education institutions to adopt digital feedback platforms as a rich source for ongoing development. Through integrating such rich sources into decision-making processes, universities can assess and improve their responsiveness to the evolving needs of students—an approach that can promote a more inclusive and student-centred academic environment that encourages dynamic communication between institutional actions and student expectations. Furthermore, because digital platforms increasingly shape public discourse on higher education, the emphasis on transparency and accountability intensifies. As these platforms continue to evolve, universities must adapt, becoming more open to student perspectives and quicker to implement meaningful changes based on the feedback they receive.

Finally, universities should look to incorporate digital feedback platforms into their formal feedback systems to help create more responsive and transparent educational frameworks. Future research can explore how other digital platforms (e.g., Discord, YouTube, Instagram) can provide better understanding of student perspectives in ways that may go beyond the traditional forms of feedback. Expanding the application of AI tools like BERT to analyse other unstructured feedback sources could significantly deepen our understanding of student reviews, enabling richer thematic analysis and more timely institutional responses. Exploring how these tools can be adapted to various digital platforms would provide a more comprehensive view of student feedback, helping institutions capture a wider range of perspectives.

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Obtained.

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Notes

Note 1. These include students, alumni, faculty, staff, visiting scholars, parents, and prospective students, among others.

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