Modeling Customer Experiences In Business Lending Apps: An Integrative Approach Based On Text Analytics and FS-QCA

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MODELING CUSTOMER EXPERIENCES IN BUSINESS LENDING APPS: AN INTEGRATIVE APPROACH BASED ON TEXT ANALYTICS AND FS-QCA

TREO Paper

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Abstract

Digital innovation in delivering financial services has emerged as a disruptive paradigm shift. This new paradigm has resulted in disintermediation through online delivery of channels like mobile apps and websites and is challenging the brick-and-mortar model. However, one of the significant challenges and focus areas for these FinTech apps remains in understanding customer experience in these mobile app-based lending because of the complexity of various interacting factors that shape customer experience. The traditional regression-based approach falls short of explaining the complexity of customer experiences. We wish to address this challenge by proposing a methodological framework for modeling customer experiences in app-based business lending using text analytics and fs-QCA.

Keywords: FinTech, Customer Experience, Topic Modelling, fs-QCA.

1 Introduction

The Proliferation of AI, Machine Learning, Cloud Computing, Mobile Technology, and Robotic Process Automation has resulted in a paradigm shift in financial services. This new paradigm of digital innovation in finance has spurred various internet-based business models like app-based business lending. However, one of the significant challenges and focus areas for these Fintech apps is understanding customer experiences. Business users post their experiences with these apps as reviews, and these post-usage experiences reflect usability, service quality, recommendation behavior, and continuation behavior (Ali & Marisetty, 2023). The traditional approach to understanding customer experience in app-based services relies on regression-based statistical methods in survey-based and text-mining approaches. However, customer experience in FinTech lending is a complex interaction of various service/technical attributes rather than just the presence and absence of a factor. Therefore, we propose that customer experience in FinTech lending apps is a causal configuration of various service and technical-related attributes. By leveraging text analytics and the fs-QCA approach (Fu et al., 2023; Lee, 2022; Yijing Wang et al., 2019; Yonghong Wang & Huang, 2021), we model customer experience in business lending apps. In the next section, we propose our integrated methodological framework.

2 Proposed Methodological Framework

Consumer opinions expressed in the form of user-generated reviews are considered to be more credible as they reflect the first-hand real experiences of consumers with services or products (Grewal & Stephen, ...
2019). Consumers express their positive or negative experiences about service quality through writing opinions in the form of reviews. However, in mobile apps or mobile app-based services, consumer experience or satisfaction is not limited to app-related features but is also subjected to non-digital sources of experiences (Stocchi et al., 2022). Through text analytics methods like sentiment analysis and topic modeling, researchers have tried to model consumer experiences in app-based services. However, with the complex interaction of digital and non-digital sources, consumer experiences don’t remain unidimensional, and their overall experience becomes multi-dimensional and configurational. Traditional approaches like regression and other statistical methods suffer in capturing this configurational complexity. To address this problem, we take an integrated approach of text analytics and fs-QCA. In our research design, we perform topic modeling and multi-aspect sentiment analysis followed by fs-QCA methods. Figure 1 depicts our research approach. We will perform the following steps as part of our research design.

2.1 Data collection and preprocessing

We will collect reviews of mobile apps available for business loans at Playstore in India. We will use a Python-based review scraper to collect reviews. After the collection of the reviews, we will filter out reviews that are in English. After filtering, we will perform basic cleaning to remove HTML, extra spaces, and non-alphabetical characters.

2.2 Topic modeling

In this step, we will perform topic modeling on pre-processed review text. For performing topic modeling, we will use BERTopic technique (Grootendorst, 2022). This approach allows for modularity, and we can use customized approaches for embedding, clustering, and representation. We will fine-tune the hyperparameters based on our requirements. From this step, we will identify topics from the text. We will aggregate these topics into thematic aspects.

2.3 Sentiment analysis

In this step, we will perform multi-aspect sentiment analysis. We will calculate sentiment scores again for each identified aspect from the topic modeling step. To calculate the sentiment score, we will take a transfer learning approach and use pre-trained transformer models.

2.4 Configurational analysis using fs-QCA

In this step, we will perform fuzzy set- qualitative configurational analysis (fs-QCA). We will follow the guidelines available (Pappas & Woodside, 2021; Saridakis et al., 2022). We will calibrate data by assigning fuzzy membership and then will create a truth table and configurations. In this step, thematic aspects identified from the topic modeling step will act as conditions, and sentiment scores from the multi-aspect sentiment analysis step will serve as outcome variables.
Data Collection and Preprocessing

Collection of reviews from Google Play Store and App Store of a Business Lending App in India using Python

Removal and Filtering of Reviews

Topic Modeling

Extraction of Topics from Reviews

Distribution of Topics in Reviews

Aggerated Dimension/Theme from Topics

Sentiment Analysis

Topic-based/Aspect-based Sentiment analysis

Aggregated Sentiment Analysis (Score)

fs-QCA

Aggerated Dimension/Themes as Conditions

Customer Experience as Outcome (Very Negative, Negative, Neutral, Positive, Very Positive)

Figure 1. Proposed Integrated Framework.
3 Proposed Contribution

We believe this work will serve both theoretical and managerial contributions. The theoretical contribution of this work will lie in the extension of understanding customer experience in FinTech lending from the complexity lens. Another intended contribution of this work is its methodological novelty, which can serve as a decision support system (DSS) for FinTech managers to understand customer experience through reviews.

References


