

A Study of Personal Finance Practices. The Case of Online Discussions on Reddit

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Abstract

Financial literacy is an important part of personal finance practices that can provide human well-being. Recent studies covered topics on financial decision-making, yet few papers showed the problems people discuss in online communities related to finances. The goal of our pilot study is to find out which problems people face in financial management and what is the context of those problems. We did this using computational text analysis techniques in an attempt to reveal the essential problems people ask for personal finance advice on social media. The work contributes to a discussion of studies of personal finance practices by exploring the problems and assessing their prevalence and sentiment in user communication.

Keywords

Financial literacy, personal finance, online communities, netnography, Reddit

1. Introduction

Online discussions create huge amounts of information on a variety of topics. This data can be used by researchers for various purposes - for example, to identify topics that users discuss most and further analyze them. One of the topics that are widely discussed on social media platforms is personal finance. Often, the level of financial literacy of people is not enough to make any serious financial decisions, and therefore they ask for help in social networks or forums. Thus, huge sets of texts on finance and related topics are formed, the analysis of which can help to identify the immediate problems of concern to people and stimulate the development of products aimed at solving them.

In this study, we explored the topics of finance discussed in the Personal Finance subreddit, which is completely dedicated to this area. Also, within each topic discussed, we have identified the sub-topics related to it, as well as the immediate issues that people in this community share and discuss. Subsequently, such an approach can contribute to the development of products aimed at improving people's financial literacy and helping in such situations.

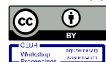
2. Background

Reddit is an online platform that consists of channels, or subreddits, where users discuss various topics online, from sports to health issues. Personal Finance is a subreddit where users discuss saving, investing, retirement planning, and other practices connected to money management. It is the largest online community on Reddit which consists of more than 14,5 million members and has existed since February 2009. Each post is assigned to a category like "credit", "taxes" and other related terms. This subreddit was chosen to extract not only general topics mostly discussed in terms of personal finance practices but also specific subtopics inside each broad category and reveal problems that people face in money management.

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3. Related Work

3.1. Personal Finance Practices

This research is focused on studying personal finance practices: how people manage finances, and how their knowledge corresponds with their behavior. Financial practices are part of a larger concept — financial capability, which refers to the ability to apply appropriate financial knowledge and perform desirable financial behaviors to achieve financial well-being [1]. Robb and Woodyard [2] suggested that financial behavior is influenced by subjective and objective financial knowledge, income, education, age, race, ethnicity, and financial satisfaction. However, this list can be continued. Analyzing money management problems which people express in different ways, for example, online as in our case, can reveal other connections. The ability to study the contents of the texts by subreddits allows identifying what difficulties people have regarding particular spheres of their money use.

According to the literature, self-assessment of financial literacy and observed financial behavior do not always correlate [3], [4]. Our method can be useful in giving an outer view on money decisions because the problems discussed online can be observed in relation to each other. As readers, we may also be less subjective when evaluating these decisions because we are not aquated with some previous posts of the author.

Once again, financial practices are tightly connected with financial literacy. Higher levels of both are associated with people sharing similar characteristics, like patience, superior numerical abilities, motivation to deal with personal finances [4], [5]. These characteristics are not easy to grasp. This issue can be considered in the opposite direction. As the purpose of this study is to reveal problems in money management practices, we are interested in the characteristics which unite people who experience these problems. And that leads us to the concept of online communities.

3.2 Financial Literacy in Online Communities

Despite the extended research on personal finance practices, there are few papers on the interaction between financial management and online advice. Poston et al. [6] confirm that people who are less confident in their ability to make good investment decisions based on online technology are more eager to accept online financial advice. Also, they argue that people give the same value to the advice given by humans and computers, and people trust credible experts with expertise more while making the final financial decision. The latter may be applicable to our research in a way that people trust the advice in comments more if the users who left them write of themselves as experts in a field. On the other hand, Cwynar et al. showed that Facebook users who were more confident in their financial literacy about debt were more inclined to seek advice [7].

Social media was proven to serve as a good tool to improve personal finance practices which led to positive financial results [8] and increased financial knowledge [9]. Zhu et al. [10] showed that members of the online community produced more risky financial behaviors than nonparticipants, whereas submissions by traders on the social trading platform were confirmed to be replicated by followers [11].

Social media are used to discuss financial issues despite not being specialized platforms for this like Twitter which was utilized as a financial forum for online discussions in times of important financial events [12]. Way et al. [13] confirmed that on the Internet, people mainly discuss financial topics aimed at improving the ability to produce good financial behaviors, and some competing points of view were found on social media. One of them is the contradiction to the claim by the Financial Literacy and Education Commission to start saving early and living on their earnings. In comments, people argued it was not always possible due to reasons they could not influence like a crisis. Also, users of online forums mentioned that financial planning was not always possible due to the expectations of others and that financial knowledge was usually inapplicable to financial decision-making in practice. The paper by Way [13] covered some aspects people discussed in online forums dedicated to financial practices. In our work, we want to dive deeper into the topic of financial issues people worry about and discover, what problems people describe related to personal finance practices in online discussions on Reddit?

4. Methodology, Data, and Method

4.1 Methodology

Netnography as a research methodology was chosen to study practices of money management. This approach combines both qualitative and quantitative methods of studying online communities by the use of ethnography with participant observation and systematic analysis of large amounts of quantitative data [14]. Such a hybrid type of research is helpful in studying numerous digital traces left by members of online communities. As it is hard to go through all user-generated data by hand, the qualitative part is used. The digital data is gathered and analyzed by computational text analysis and similar techniques to find the major patterns of the community. After they are identified, the researcher applies qualitative methods to illustrate these patterns by the most distinctive examples like posts by particular users and following discussion in comments.

In our research, we identified problems that users face in everyday life connected to money management practice reported by the members of the Personal Finance community on Reddit. It was done by the computational text analysis and other data analysis techniques along with a manual examination of quantitatively chosen data. The existing problems and topics discussed by users were illustrated by the examples of posts and comments to confirm their existence and peculiarity from each other. Also, by qualitative analysis, it was found that major posts include several rather than one topic as the tags of posts in the community stated.

All data were retrieved from the public platform meaning users who left their submissions on the page agree to share their opinions which are freely viewed by other people.

4.2 Data

The dataset consists of 237 unique posts from 21.09.2018 to 09.02.2021 with a total of 3,939 comments from the Personal Finance subreddit. To obtain the text corpus, the RedditExtractoR package and R programming language were used.

4.3 Method

The text analysis was conducted on all text data where a post and a comment were separate units. After primary data preprocessing by the use of computational methods of text analysis, the RAKE was used for keywords extraction. This is a Rapid Automatic Keyword Extraction (RAKE) [15] algorithm that omits delimiters and stopwords and takes into account the word co-occurrences and their frequency in the text. By this, we extracted top-200 keyword phrases by the number of times they appeared in unique texts, posts, or comments, consisting of simple noun phrases.

Then we manually filtered phrases and transformed similar phrases to the same form, manually divided them into broad 12 topics and for each defined subtopics. Overall, we had 44 subtopics which are more specific problems users discussed in online discussions. For each topic and subtopic, the sentiment was gained via the vader package which works well with slang and texts of online communication. For each topic and subtopic, median and mean compound scores were calculated which is a normalized unidimensional measure for sentiment to evaluate the emotional attachment of a particular topic. Then, we extracted examples of financial problems that people describe in messages from discussions by searching for keywords of each topic in these texts.

5. Analysis and Results

The most frequent topics of discussion are 'credit, loans and dealing with banks' (1266 texts related to this topic), 'money management' (1174), and 'real estate issues (car, house)' (880). The first consists of 7 subtopics including 'credit history', 'bank account', 'credit', etc. 'Money management' is the broadest topic with 12 subtopics such as 'saving', 'personal finance system', and 'minimization of costs'. The last includes 4 subtopics of 'type of insurance' and 'borrowing money'. The full list of topics and corresponding subtopics is provided in Table 1.

Table 1

Example of the problems for each topic

Topic	Number of Texts	Median Compound Score	Examples of Problems
Credit, Loans, and other Banking Operations	1266	0.67	Bad credit history, high fee account, late payments
Money Management	1174	0.74	Lack of knowledge to make a financial plan and increase income
Real Estate and other Types of Property (car, house)	880	0.73	Choice of mortgage type, paying off a car loan
Advice in Financial Management	563	0.84	Advice on investing, teaching financial literacy at school
Taxes	317	0.69	Maximizing an Individual Retirement Account (Roth IRA) contributions, bad understanding of the tax system
Life Insurance	292	0.80	Securing money, lack of knowledge about social security benefits
Retirement Issues	255	0.81	Maximization of retirement savings, retirement planning
Investment	245	0.73	Choice of a financial service, lack of knowledge to start investing, maximizing income from investments
Student and School Payments	182	0.78	Need for advice on student loans, taxes for international students
Employment Issues	132	0.78	Choice between highly-paid and satisfactory job, too low salary to cover regular expenses
Criminal Activities and Investigation	66	-0.14	Protection from fraudulent charges, parents spoiling kids' credit history
Business	49	0.86	Precondition to start a business, managing business experience

Among the problems we highlighted in discussions on 'credit, loans and dealing with banks', people talk about how to open a bank account, how to improve credit score, whether student credit cards as a payment tool is a good way to start gaining financial literacy, etc. Within the 'money management' topic, such problems as managing finances and getting out from living paycheck to paycheck, lack of

knowledge on investment, efficient contribution to retirement funds, and so on. Finally, among the ‘real estate issues (car, house)’ discussions, there are problems of choosing an efficient mortgage type and obstacles to applying for credit.

Most topics have a positive mean or median sentiment with a value above 0.65 on (-1;1) scale. The only negative topic is related to criminal activities and investigation with a mean compound score of -0.08 and a median of -0.14. The most positive topics are related to business (mean: 0.68; median: 0.86), advices in financial management, teaching and learning (0.61, 0.84) and retirement issues (0.63, 0.81). The most neutral topics are ‘credit, loans and dealing with banks’ (0.46, 0.67) and taxes (0.47, 0.68).

Out of the subtopics, ‘passive income’ turned out to be the most positive subtopic discussed with an average compound score of 0.9 and a median of 0.97. Among the subsequent positive subtopics, ‘business services’ and ‘financial education’ also stand out. The only subtopic with negative central tendency measures was ‘crime and money’ (-0.08, -0.14) as the only one included in the ‘criminal activities and investigation’ topic. Others were revealed to be mostly positive with scores above 0.05.

6. Discussion and Conclusion

In this study, we broadened the field of online discussions research and showed how they could contribute to the understanding of people's real-life problems. First of all, since we work with a part of the social network where people discuss pressing issues and questions that interest them, the topics and subtopics themselves can be extracted for a preliminary analysis of what bothers people and what is most important. Sentiment analysis can serve as an auxiliary tool for understanding not only what topics people discuss, but also which ones cause them more or fewer emotions - positive or negative, which also gives an understanding of how acute the topic is.

Highlighting the problems within each topic and analyzing them can give a focus on certain aspects of people's financial life, which can later be used to develop products aimed at helping people in these areas. In the case of the study, the conducted analysis of phrases and their frequencies will be used further to define user pains and jobs-to-be-done, and sentiment analysis will help us to explore situations that people are very emotional about and understand user pains better.

Thus, services with online discussions like forums or social networks can serve as a strong basis for making strategic decisions to develop in-demand products that can help people make the right decisions and improve their financial literacy. This approach can also go beyond the topic of discussion of finance, expanding opportunities for the study and development of products designed to help with identified problems in many other areas of life.

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