Journal of Behavioral and Experimental Finance: A bibliometric overview

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[Author Accepted version]

Abstract

Behavioral science has made a considerable contribution to finance. To gain an understanding of the scientific contributions emerging from all fields of finance with a behavioral perspective, this paper reviews the content of the major journal dedicated to behavioral finance, the *Journal of Behavioral and Experimental Finance* (*JBEF*), since its foundation 8 years ago. For this purpose, we employ bibliometrics and content analysis to shed light on the publication trends and intellectual structure of the *JBEF*, obtaining numerous intriguing findings. First, the *JBEF* is still a young journal, and its numbers of publications and citations have grown significantly since its inception. Second, though there are contributions from all parts of the world, the United States is acknowledged as contributing the most to the *JBEF*. Diverse authors have contributed to the journal, but those affiliated with the University of Innsbruck and Macquarie University lead the list. Third, most of the studies have used the theoretical underpinnings of behavioral theory and prospect theory. Methodologically, most of the studies are empirical and primarily based on quantitative research designs, archival data and regression analysis. Fourth, the *JBEF*'s contributions concern eight intellectual clusters—namely *personal characteristics and national cultures*; *psychological factors, financial literacy and robo-advising*; *investor sentiment and stock market volatility*; *asset market experiments*; *overconfidence and the disposition effects in the stock market*; *externalities (COVID-19) and financial markets*; *socially responsible investing*; and *herding behavior in financial markets*. Finally, "behavioral finance" is the most prominently used author keyword in the *JBEF*'s publications, followed by "financial literacy". All in all, these findings should offer readers a retrospection of scholarly contributions from the *JBEF*.

Keywords: *Journal of Behavioral and Experimental Finance*; bibliometrics; thematic structure analysis; behavioral finance; citations; experimental finance

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1. Introduction

The ascent of behavioral finance over the last three decades has been palpable in the area of finance and economics. Several scholars have captured the effects of either rational or irrational facets of human decision making (Hirshleifer, 2015). Nevertheless, a contemporary understanding of the domain of finance requires a grounding in psychological and rational mechanisms. The growth of behavioral finance research has been bolstered by the inability of the traditional models to decipher many empirical trends in fundamental topics such as financial behavior, money management, corporate investment and stock market bubbles (Ritter, 2003). Though finance is an independent field, psychology has primarily driven its growth. Psychology has pointed out various biases that can influence financial decision making. Psychological bias is a distinctive element in the paradigm of behavioral finance. Thus, behavioral finance has grown out of its infancy and is now widely recognized as a core discipline in mainstream finance. A robust novel trend in behavioral economics and finance has been to carry out laboratory and field experiments similar to the decision context assumed in the financial model. Indeed, the investigation of imperfect rationality and its effects, such as noise trading or sentiment, is nothing but the scrutiny of human beings' psyche, which sheds light on the meaningful contributions of psychology to finance. Such contributions are most apparent in journals committed to the knowledge dissemination of behavioral finance.

The *Journal of Behavioral and Experimental Finance* (*JBEF*) is a prominent inter-disciplinary peer-reviewed journal with a focus on the rapid dissemination of high-impact research in the area of behavioral finance and experimental finance. The *JBEF* epitomizes how we can view financial decision making. It is a leading outlet that usually covers investigations of biases, the role of various neurological markers in financial decision making, the impact on financial decision making of the national and organizational culture, sentiment and asset pricing, the design and implementation of experiments to investigate financial decision making

and trading, methodological experiments and natural experiments. It also encourages the innovative ideas of young minds in finance research informed by psychology. Since commencing publication in 2014, the *JBEF* has progressed as a well-recognized and prominent outlet for groundbreaking research in behavioral and experimental finance.

The *JBEF* ranks high on discipline-based journal ranking lists (JRLs), with a rank of "A" in the Australian Business Deans Council (ABDC) JRL 2019 and a rating of "1" in the Chartered Association of Business Schools (CABS) Academic Journal Guide (AJG) 2018. An "A" ranking is the second-highest quality ranking, applying to 15 to 20% of business and management journals. According to Scopus, the *JBEF*'s CiteScore is 3.0, meaning that its articles published between 2017 and 2020 received, on average, 3.0 citations.

As the field gained momentum and the journal progressed, researchers' natural curiosity has prompted them to investigate periodically the scholarly trends of the journal and its intellectual structure (García-Lillo et al., 2019). Retrospective studies using available data can provide state-of-the-art knowledge in the research field (Chan et al., 2009; Martínez-López et al., 2018). There have been numerous attempts to offer systematic retrospections, generally using bibliometrics (Baker, Kumar, Goyal and Sharma, 2021; Baker, Kumar and Pattnaik, 2021; Donthu, Kumar, Mukherjee, Pandey and Lim, 2021; Donthu, Kumar, Pattnaik and Lim, 2021; Goyal and Kumar, 2021; Kumar, Pandey, Burton and Sureka, 2021; Mukherjee et al, 2022; Kumar, Pandey and Mukherjee, 2022 and Rialp et al., 2019).

A retrospect of one journal in the field of behavioral finance, the *Journal of Behavioral Finance* (*JBF*), provides a snapshot of the behavioral finance field (Calma, 2019). The *JBEF* is close to the *JBF* as both journals publish research on behavioral finance. Although both are fairly new journals, it is noteworthy that, while they deal with similar topics, they are dissimilar. This increases the need for retrospection on the variety of research undertaken in this area.

Against this backdrop, we conduct a retrospective review of the *JBEF*, with the intention of mapping its scientific work and bringing to light the most promising avenues for behavioral finance research. To the best of our knowledge, this is the first comprehensive review mapping the overall knowledge structure of the *JBEF* to date. Based on a pool of 441 documents published between 2014 and 2021, we conducted a bibliometric analysis coupled with a manual content analysis (Donthu, Kumar, Pandey, Pandey and Mishra, 2021b) to gain a comprehensive insight into the *JBEF*'s scientific performance to date while also unfolding its knowledge structure. To this end, we shed light on its publication trends, the major theories used, the intellectual structure, prominent studies, the authorship network and important keywords. In sum, our primary goal is to provide a review of the *JBEF* between 2014 and 2021. This fundamentally descriptive study focuses on the journal's progression, current standing and trajectory. Thus, we base our inquiry on the following research questions (RQs), which will be approached through bibliometrics and manual content analysis:

RQ1. What are the publication trends over time, citation records and authorship patterns in the *JBEF*?

RQ2. What are the major theories, sample countries/regions and research methodologies employed in *JBEF* studies?

RQ3. What is the intellectual structure of the *JBEF*?

RQ4. What are the *JBEF*'s prominent research topics based on keywords?

Hence, our study contributes to the literature in the multiple ways. First, this bibliometric analysis is supplemented by content analysis which is a value adding aspect of this study and offers insights into prominent theories and methodologies for research on behavioral and experimental finance. Further, it identifies the *JBEF*'s publication, citation and authorship records between 2014 and 2021. Knowledge of such trends can be pivotal in

discerning the overall research portrait of behavioral finance. We find that the *JBEF*, a young journal, had published 441 articles by 2021, signaling a high growth trajectory in the years to come. Its citations have also increased substantially over time. Identifying the topics and trends may provide scholars with an insight into the domain of behavioral finance microscopically and target the *JBEF* as a publication outlet. In this review, we analyze publications, collaboration, and thematic patterns over time, which provide additional insights into *JBEF*'s growth. The *JBEF* is one of emerging journals in the field of behavioral finance and is one of few journals that stand at the confluence of finance and behavioral science research areas. This uniquely positions the *JBEF* to influence the research in many areas of finance and economics, psychology, management, and behavioral science, among others.

The remainder of this article is structured as follows. We begin with a description of the publication trends in the *JBEF*, its citation records and its authorship patterns, followed by an assessment of the major theories and research methodologies applied in *JBEF* articles. Subsequently, we highlight the intellectual themes based on the clusters of scholarly work of the *JBEF*. Next, we delineate the crucial topics of interest based on the keywords used in *JBEF* literature. Finally, we conclude the study.

2. Methodology

2.1. Data identification and retrieval

We retrieved the metadata for this study from Scopus, a voluminous pool of peer-reviewed research data for quantitative analysis (Baker, Kumar, Goyal and Sharma, 2021; Bartol et al., 2014; Donthu, Kumar, Mukherjee et al., 2021; Donthu, Kumar, Pattnaik and Lim, 2021; Norris and Oppenheim, 2007). There has been ample discussion comparing the suitability of different platforms, such as Scopus, Web of Science and Google Scholar, for carrying out bibliometric analysis (Franceschet, 2010; Levine-Clark and Gil, 2008). Of course, each platform has its

advantage. Following a rule of thumb, all the platforms should be used, but doing so would demand huge data cleaning and merging of all the databases (Corbet et al., 2019).

There are several reasons for our choice of Scopus over Web of Science and Google Scholar as our database source. First, the breadth of coverage in Scopus is relatively greater, with citation data on over 15,000 peer-reviewed titles (Levine-Clark and Gil, 2008). Second, Scopus allows a more extensive investigation than Google Scholar. For example, Google Scholar offers limited bibliometric information execution of the bibliometric study. Third, several bibliometric studies have used Scopus as their data source (Baker, Kumar and Pandey, 2021; Baker, Kumar and Pandey, 2021a; Baker, Kumar and Pattnaik, 2021; Kumar, Lim, Pandey and Westland, 2021; Kumar, Marrone, Liu and Pandey, 2020).

We searched for the "Journal of Behavioral and Experimental Finance" using source title Scopus in December 2021, identifying 453 documents published between 2014 and 2021. Including only articles and reviews reduced the final number of *JBEF* documents used for our analysis to 441. We typically refer to these documents as articles throughout the paper.

2.2. Methods of study

Bibliometric analysis has captured the attention of scholars recently (Donthu, Kumar, Pandey, Pandey and Mishra, 2021; Donthu, Kumar, Pattnaik and Campagna, 2020; Kumar, Lim, Pandey and Westland, 2021). Such attention can be attributed first to its ability to handle a vast amount of data and second to its suitability for various types of software, such as Gephi and VOSviewer, and different data sources, such as Scopus and Web of Science. Researchers use bibliometric analysis to unfold the current trends of a journal or a topic, its authorship patterns and its citation trends and to portray the intellectual structure of a specific field (Donthu, Kumar, Mukherjee, Pandey and Lim, 2021; Donthu, Kumar, Pattnaik and Lim, 2021). Bibliometrics uses statistical techniques to investigate the scientific contributions in books,

articles and other publications (Pritchard, 1969). The bibliometric methodology helps in investigating the performance of a research field (Cobo et al., 2011; Ramos-Rodríguez and Ruíz-Navarro, 2004), undertaking a retrospective review of a journal's literature (Baker, Kumar and Pandey, 2021; Baker, Kumar and Pattnaik, 2021; Donthu, Kumar, Mukherjee et al., 2021; Donthu, Kumar, Pattnaik and Lim, 2021; Kumar et al., 2022; Mukherjee et al., 2021 and Viglia, Kumar, Pandey and Joshi, 2022) and presenting the state of the art of specific research topics (Goodell et al., 2021; Goyal and Kumar, 2021; Kumar, Pandey, Lim, Chatterjee and Pandey, 2021; Mukherjee et al., 2022; Sureka et al, 2022). This study employed bibliometrics to determine the publication trends, citation records, co-authorship patterns, intellectual structure and keyword network (Hoffman and Holbrook, 1993; Martínez-López et al., 2018). Bibliometric analysis was performed on 441 articles, enabling us to identify their publication trends, citation records, most influential articles, authorship patterns, intellectual thematic clusters and main keywords.

The nature of literary work can be ascertained through the thematic map, and an analysis of intellectual structure can exhibit studies' referencing patterns (Donthu, Kumar, Mukherjee, Pandey and Lim, 2021; Donthu, Kumar, Pattnaik and Lim, 2021). Therefore, we applied bibliographic coupling (Kessler, 1963), using VOSviewer and Gephi applications (Baker, Kumar and Pandey, 2021a; Donthu, Kumar, Pattnaik and Campagna, 2020), to establish the magnitude of intellectual connections among cited documents based on the degree of their common references (Kessler, 1963). Bibliographic coupling relies on associations or overlaps between the cited documents. Additionally, we conducted keyword analysis to map the main author keywords present in the *JBEF*'s literature and the most significant group of keywords within the network. We used VOSviewer and Gephi applications for this purpose.

In addition to examining the intellectual structure and keyword networks, we performed a co-authorship analysis to highlight co-authorship trends in the *JBEF* (Baker,

Kumar, Goyal and Sharma, 2021). We discerned the authors who had contributed most frequently to the *JBEF*. Measuring the collaboration among researchers indicates the scientific association (Cisneros et al., 2018; Goyal and Kumar, 2021). We used the VOSviewer and Gephi applications for this purpose (Baker, Kumar and Pandey, 2021; Donthu, Kumar, Pattnaik and Campagna, 2020; Donthu, Kumar, Pattnaik and Lim, 2021).

Further, we complemented the bibliometric analysis with manual content analysis to synthesize the literature available in the *JBEF*. An exploration of the theoretical nuances in behavioral finance and the methodological nature of the scholarly work published in the *JBEF* was not possible using bibliometrics. Following Donthu, Kumar, Pandey, Pandey and Mishra's (2021) approach, the classification of literature based on the sample and methodology was performed using manual content analysis. Accordingly, the authors reviewed each article to find the theories, the country of the sample and the research methodology used, identifying the research methodology (empirical, literature review/conceptual, field experiments and laboratory experiments), research design (qualitative, quantitative and mixed), data collection methods (case study, survey, archival, etc.) and data analysis method (descriptive, correlation, regression, etc.).

3. Publication trends, citation record and authorship patterns in the *JBEF*

3.1. Publication trends over time

Our first research question (RQ1) deals with the publication trends in the *JBEF* over time. The segregation of research papers by time period exhibits the pace of advancement in a research field (Donthu, Kumar, Mukherjee, Pandey and Lim, 2021). Fig. 1 contains a breakdown of the *JBEF*'s publications between 2014 and 2021. As depicted, there has been a considerable increase in publications, from just 22 in 2014 to 126 in 2021. This shows that the *JBEF* has been gaining visibility as a favored outlet for behavioral finance research and increasingly garnering the attention of scholars working in related domains.

[Insert Fig. 1 here]

3.2. Citation record

Secondly, our first research question (RQ1) pertains to the citation records and the most influential articles of the *JBEF*. Table 1 shows that the number of publications increased from 22 in 2014 to a peak of 126 in 2021, while the number of citations per year rose from 302 in 2014 to 1142 in 2020 and subsequently declined to 110 in 2021. A total of 305 of the 441 publications (around 70%) have received at least one citation. The total citations per publication (TC/CTP) peaked in 2014 at 13.73, the *JBEF*'s first year of publication. The total citations per cited publication (TC/TCP) reached a peak of 25.82 in 2018. Overall, the *JBEF* experienced substantial growth in its total publications and citations over the first 8 years of its publication journey. It shows an upward trend in annual publications but noticeable variability in yearly citation trends.

[Insert Table 1 here]

Table 2 lists the 20 most frequently cited *JBEF* articles. Palan and Schitter (2018) top the list with 456 citations. The authors discussed the advantages and challenges of online experiments and established the suitability of www.prolific.ac for the requirements of social and economic science experiments. Al-Awadhi et al. (2020), with 316 citations, examined the impact of contagious diseases like COVID-19 on stock market returns. Finally, Chen et al. (2016), with 232 citations, discussed the importance of oTree as open-source and online software for implementing interactive experiments in a laboratory, online, in the field or in combinations thereof.

[Insert Table 2 here]

3.3. Authorship trends

Our first research question (RQ1) also concerns the authorship trends in the *JBEF*. Table 3 shows the authors with the most *JBEF* publications between 2014 and 2021. Andreas Hellmann

has the most publications, with seven, Kelmara Mendes Vieira has six, and Kiridaran Kanagaretnam has five. An exciting finding from Table 3 is that the authors who have published more frequently in the *JBEF* are not necessarily more influential in citations. Among the top *JBEF* contributors, Gustav Tinghög and Daniel Västfjäll have the most citations, 111 each, followed by Kelmara Mendes Vieira (65), Mei Wang (54) and Xuan Vinh Vo (51). Gustav Tinghög and Daniel Västfjäll have the highest number of citations per publication, with 27.75 each. Table 3 reveals that the *JBEF* has attracted some authors whose work has gained influence over time.

[Insert Table 3 here]

Table 4 presents the institutions most affiliated with *JBEF* authors between 2014 and 2021. Authors from the University of Innsbruck have the most publications (13), followed by authors from Macquarie University (12) and York University (7). Authors affiliated with the University of Innsbruck also have the most citations (497), followed by authors from Linköping University (111) and Tilburg University (80).

[Insert Table 4 here]

Table 5 presents a list of countries with which *JBEF* authors are most often affiliated between 2014 and 2021. US-affiliated authors have the most publications (91) and citations (392). Germany follows, with 48 and 205, respectively. As Table 4 shows, however, the top institution with which *JBEF* authors are affiliated, namely the University of Innsbruck, is not from the United States. Nevertheless, many top institutions are from the US. This finding suggests that the US-affiliated authors come from many institutions, not just a few. Other prominent countries associated with *JBEF* authors are Australia, China and the UK. Thus, US-affiliated authors dominate those from other countries regarding publications and citations. Therefore, Table 5 suggests that the *JBEF* welcomes contributions from authors around the globe.

[Insert Table 5 here]

Fig. 2 presents the network of the most frequently published *JBEF* authors. The node size indicates an author's connectedness in the network, while the link between authors represents the degree of co-authorship (Baker, Kumar, Goyal and Sharma, 2021). Although many prominent *JBEF* authors are visible in the network, they are not necessarily the most frequent contributors. Thus, an author's number of *JBEF* publications may not always imply the author's importance in the collaboration network. As Fig. 2 illustrates, however, based on node size, Andreas Hellmann is one of the network's most influential authors and most frequent contributors. Conversely, Mei Wang appears to be just as influential as Andreas Hellmann in the network but has fewer *JBEF* publications.

[Insert Fig. 2 here]

The co-authorship network provides an understanding of the collaboration dynamics of what some researchers have referred to as "invisible collages" (Crane, 1969). A visual collage refers to the networks established when authors combine their intellectual attributes with quality work. Fig. 2 shows that an author's prominence within the network does not necessarily rest on that person's productivity but instead relies on the person's ability to collaborate with other authors. The thickness of the edges represents the link strength between individual *JBEF* authors. The network also shows that Kelmara Mendes Vieira and Ani Caroline Grigion Potrich have worked together more frequently than others in the network, as have Gustav Tinghög and Daniel Västfjäll.

Fig. 3 presents the network of institutions affiliated with *JBEF* authors. Unsurprisingly, the results here match those of the author network in Fig. 2. Again, institutions such as the University of Nottingham, McMaster University, Hofstra University, the University of Reading and the University of Georgia appear prominently in the network. Although some

authors who are affiliated with these institutions are among the top *JBEF* contributors, the same statement is not valid for others. Thus, the central institutions in the collaboration network are not always associated with the most prominent *JBEF* authors.

[Insert Fig. 3 here]

Fig. 4 presents the network of countries affiliated with *JBEF* authors. This figure shows that the authors affiliated with the United States, the United Kingdom and Germany are prominent in the network. At the same time, France, China, Australia, Malaysia, the Netherlands and Canada are important. In addition, Asian countries, like South Korea, Singapore and Vietnam, play an essential role. However, the link between US authors and those from other countries, like China and Canada, appears to be strong.

[Insert Fig. 4 here]

4. Major theories, sample countries/regions and research methodologies employed in the *JBEF*

Our second research question (RQ2) deals with the contextual characteristics of *JBEF* literature. To delve into the scholarly work of the *JBEF* to identify its significant characteristics in terms of the theories used, the countries/regions from which samples are taken and the research methodology employed, we reviewed each study through manual content analysis.

4.1. Theoretical perspectives adopted

Throwing light on the various theories applied and tested in a particular research domain may be helpful in creating new contextual theories or extending the current theories (Whetten, 1989). Table 6 lists the theories that have been applied, though the list is inexhaustive. Instead, it provides a snapshot of the significant theories that can be traced to the extant studies. Our content analysis of 441 studies shows that authors have applied diverse theories to build a ground for empirical inquiry in the field of behavioral and experimental finance. Behavioral

and behavioral finance theories are the most prominent, having been applied in 121 research papers; these are followed by prospect theory, which was used in 62 papers. The theory of behaviorism or behavioral psychology aims to explain human behavior by investigating the antecedents and consequences present in one's environment and the learned connections that one has acquired through experience (Angell, 2013). It is a theory of learning that states that all behaviors are learned through interaction with the environment through conditioning. Thus, behavior is simply a response to environmental stimuli. This theory, to a large extent, explains investment behavior (Bouteska, 2019), risk preferences (Ranganathan and Lejarraga, 2021), herding behavior (Babalos et al., 2015), stock market volatility (Bash and Alsaifi, 2019), financial behavior (Strömbäck et al., 2017) and financial market behavior, particularly during the outbreak of COVID-19 (Haroon and Rizvi, 2020). Several scholars have used experimental approaches to investigate differences in individuals' financial behavior and their response to financial literacy (Hermansson and Jonsson, 2021). Thus, our study provides a synthesis of academic events that substantiate the presence of behavioral biases, their underlying psychology and their effect on financial markets and financial behavior.

Experimental evidence has suggested that individuals do not obey the expected utility axioms (Tversky and Kahneman, 1974). Prospect theory is based on a two-level choice process: framing and valuation. In the framing phase, the decision maker constructs a representation of the acts, uncertainties and outcomes relevant to the decision. In the valuation phase, the decision maker assesses the value of each prospect and chooses accordingly. Best and Grauer (2016) explored the relationship between prospect theory and portfolio selection. Prospect theory also explains the preference for gold over risk-free assets (Baur and McDermott, 2016). The novel coronavirus disease (COVID-19) rapidly evolved from a health crisis into a global financial meltdown. In this regard, prospect theory could investigate the

impact of this colossal health crisis on major stock markets and commodity markets to gain a better understanding of investors' responses (Ali et al., 2020).

Another emerging theory found in the literature of the *JBEF* is a standard economic theory. It is based on the assumption that consumers make decisions rationally and aim to maximize their utility. A rational person will know what is best for them (selfish motive) and will not be influenced by emotions or other external factors while making a decision (Neurath, 1987). Various studies have tested the theoretical framework based on economic theory relating to asset markets (Powell and Shestakova, 2016), household investment behavior (Fajardo and Dantas, 2018) and betting behavior (Buhagiar et al., 2018). Our findings also reveal that the most prominent theories draw their intellectual roots from the allied fields of behavioral science, psychology, economics and finance, and sociology.

[Insert Table 6 here]

4.2. Sample country/region

The analysis revealed that, of the total number of studies under review (n=441), 296 studies derived their samples from single countries. Furthermore, 67 studies were based on data collected from multiple countries, and 78 were not country-specific (see Table 7), meaning that the studies were either purely conceptual or reviews or did not use a country-specific sample. After delving further into the geographical location of the sample used in each study (n=441), it was found that most of the studies were conducted in the American region (n=112) followed by the European region (n=93) and the Asian region (n=79). This finding also indicates that the research in behavioral finance is slightly skewed toward developed countries, like the US and the United Kingdom (UK). Less attention has been paid to Asia, Australia and Africa. The results highlight the need to study behavioral finance in developed and developing economies as the subject holds importance across the globe.

[Insert Table 7 here]

4.3. Types of research methods applied in the JBEF corpus

To perform the manual segregation of studies based on their research methodology, we used a similar classification approach to that adopted by Goyal et al. (2021). This section manually classifies the studies according to the research method, research design, data collection method and data analysis approach (Table 8). Appendix 1 offers the definitions of these classifications.

Of the 441 studies in our sample, 402 are empirical and 39 are conceptual or reviews. This finding reveals that the preference has been given to empirical work that uses field data, qualitative and quantitative surveys and other evidence-based data types. Behavioral finance research has primarily focused on empirical evidence showing how real humans behave (Illiashenko, 2017). Extant theoretical works have revealed that isolated behavioral bias could result from an interplay of different factors (Nickerson, 1998). Some biases are not unitary but represent a collection of different effects and vice versa. Despite most empirical studies focusing on one behavioral phenomenon or a small population sample, there is growing evidence that certain groups of individuals are more prone to exhibit behavioral biases than others. This is the probable reason for researchers' increasing interest in conducting empirical studies. Of 402 empirical studies, 364 used quantitative research designs, 36 used qualitative methods and two adopted a mixed-method approach (qualitative and quantitative methods). We note the dearth of conceptual studies and reviews in the *JBEF* corpus.

Through further comprehensive analysis, we found that most empirical studies drew on archival data (n=202), followed by laboratory experimentation (n=93) and survey data (n=57). Considering the primary focus on quantitative, rather than qualitative, research designs, it is recommended that more qualitative studies are carried out based on primary data to understand the paradigm of behavioral finance.

Classifying articles according to data analysis approaches, we found that regression (n=117) and time series analysis (n=160) are the most frequently applied techniques. Very few

researchers have used structural equation modeling (SEM) (n=9), whereas studies that have used techniques such as analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA) are scant. Other seldom-used analysis techniques are event study, sentiment analysis and bibliometric analysis.

[Insert Table 8 here]

5. Intellectual structure of the *JBEF*

We proceed to our next research question (RQ3), which is pertinent to mapping the intellectual structure of the *JBEF*. In addition to investigating data concerning influential *JBEF* studies, we explored their prominent themes by applying the bibliographic coupling proposed by Kessler (1963). Using VOSviewer and Gephi tools, we segregated the *JBEF* themes into thematic clusters. In a network, nodes can be segregated into clusters in which the weight of edges is greater between the nodes in a cluster than those of other clusters (Leydesdorff, 2017). The articles in the same cluster share a common theme and differ from articles in other clusters. Clustering enables a thematic analysis of the network (Xu et al., 2018). Fig. 5 depicts the clusters within the bibliographic coupling network. Out of 441 articles, 438 are connected in a node network. Table 9 lists the eight prominent themes (clusters) of 438 articles published between 2014 and 2021 and the most cited articles published on these themes.

[Insert Table 9 here]

[Insert Fig. 5 here]

5.1. Cluster 1: Personal characteristics and national cultures

This cluster contains 79 articles with 406 citations. The articles in this cluster focus on the role of personal characteristics, such as gender, age, perception, and so on, in the behavioral biases in financial decisions. Another central theme arising from this cluster is national cultural dimensions' role in finance and accounting scholarship. Over the period, authors have

investigated issues such as the national culture and dividend policy in the banking industry, the relationship between religiosity and risk taking in banking and financial distress predictions based on cultural dimensions.

The most cited work in this cluster is by Gonzalez and Loureiro (2014), who explored the effects of lender and borrower personal characteristics (perceived attractiveness, age and gender) on online peer-to-peer lending decisions. Baur and McDermott (2016) argued that the decision to buy gold is rooted in behavioral biases linked with gold's history as a currency, a store of value and a haven. Zheng and Ashraf (2014) provided empirical evidence that banks in countries with high uncertainty avoidance, high long-term orientation and low masculinity pay lower dividends and are less likely to pay dividends. The fourth most cited article is by Aggarwal and Goodell (2014) and pointed to an important gap in the literature in that both the accounting and the finance field make limited use of cultural dimensions in scholarship. It is followed by Nawrocki and Viole's (2014) study, which reviewed behavioral finance's consistent role in portfolio theory and market theory through utility theory.

5.2. Cluster 2: Psychological factors, financial literacy and robo-advising

This cluster contains 72 articles, which have been cited 404 times. These studies have primarily focused on the effects of behavioral factors such as self-control, materialism, risk perception, money values and financial literacy on financial behavior and financial well-being. The authors have mainly explored the gender differences in financial literacy. Another prominent theme of this cluster is the role of robo-advising and fin-tech in enhancing consumers' financial literacy.

A highly cited article in this cluster is that of Strömbäck et al. (2017), which explored differences in self-control and other non-cognitive factors in financial behavior and financial well-being. Following this are the articles by Potrich et al. (2018), which analyzed the gender differences in financial literacy and found that the proportion of men is larger among those with a high level of financial literacy, and Potrich et al. (2015), which developed a model to

measure financial literacy and compared the level of financial literacy among genders. The fourth most cited study in the cluster is by Bhatia et al. (2020), who offered an in-depth understanding of the ability of robo-advising to mitigate behavioral biases from the perspective of experts. This study is followed by Brenner and Meyll (2020), who investigated whether robo-advisors reduce investors' demand for human financial advice offered by financial service providers.

5.3. Cluster 3: Investor sentiment and stock market volatility

This cluster contains 67 articles with 378 citations to date. The articles in this cluster have primarily focused on the influence of investor sentiment on stock market volatility. The authors have explored the momentum effects on the stock market, the influence of worship intensity in the form of a holy day on stock market returns and the Friday the 13th effect on stock returns.

The most highly cited article in this cluster is by Bukovina (2016), who investigated whether investors' sentiment or the public mood in social media influences asset pricing and capital market volatility. Following this is Kumari and Mahakud's (2015) article, which probed the influence of investor sentiment, like noise traders' pessimism, on the predictability of Indian stock market volatility. Hudson and Green (2015) explored sentiment's tendency to be a more significant factor determining returns in the run-up to a crisis than at other times. The fourth most cited article in the cluster is that by Al-Ississ (2015), which used Muslim holy days to explore the underlying mechanism behind the holiday effect. Following it is the study by Zaremba (2016), which investigated whether market-wide measures of investor sentiment and arbitrage constraints affect the performance of cross-country stock market anomalies.

5.4. Cluster 4: Asset market experiments

This cluster comprises 67 articles with 955 citations. The articles in this cluster delved into the literature on online software like oTree, used for implementing interactive experiments, or

Prolific.ac, as a platform for online experiments. The cluster also includes reviews based on asset market experiments.

The most frequently cited article in this cluster is by Palan and Schitter (2018), who presented www.prolific.ac and discussed its suitability for recruiting subjects for social and economic science experiments. Following this is Chen et al.'s (2016) article, which discussed the usefulness of oTree as open-source and online software for implementing interactive experiments in a laboratory, and Breaban and Noussair's (2015) study results from an asset market experiment, in which they inquired into the relationship between traders' risk aversion, loss aversion and cognitive ability and their trading behavior and market outcomes. The fourth most cited article in this cluster is by Powell and Shestakova (2016), who reviewed the latest research on experimental asset markets, and this is followed by Powell (2016), who used the concept of numeraire independence to identify a unique measure of mispricing.

5.5. Cluster 5: Overconfidence and the disposition effects in the stock market

This cluster consists of 58 articles with 235 citations and focuses on the relationship between investors' confidence and trading, overconfidence among individual stock investors and the investor's disposition effect.

The most often cited article in this cluster is the article by Hoffmann and Post (2016), which revealed that more confident investors change their beliefs more firmly, providing more reason to trade. Following this is Tekçe and Yilmaz's (2015) article, which investigated how common overconfidence is, which factors affect overconfidence and how overconfidence relates to investor return performance, and the study by Talpsepp et al. (2014), who conducted an experiment and suggested that the risk attitude in losses, together with wishful thinking and misperception of the price process, such as gambler's fallacy, may contribute to the observed disposition effect. The fourth most cited article is the article by Best and Grauer (2016), which examined prospect theory portfolios in asset allocation settings that include risk-free lending

and borrowing, subject to margin constraints, and short-sales restrictions on risky assets. Aspara and Hoffmann (2015) follow it; their article tested the role of factors related to personal responsibility in reversing individuals' susceptibility to the disposition effect.

5.6. Cluster 6: Externalities (COVID-19) and financial markets

This cluster contains 46 articles with 1107 citations, making it the most influential theme. The articles in this cluster focused on the impact of coronavirus (COVID-19) on stock market returns.

Al-Awadhi et al.'s (2020) article, which investigated the impact of contagious infectious diseases on the Chinese stock market, is the most often cited article in this cluster. This is followed by Ali et al.'s (2020) article, which examined the reaction of financial markets worldwide in terms of their decline and volatility as the coronavirus epicenter moved from China to Europe and then to the US, and Haroon and Rizvi's (2020) article, which analyzed the relationship between the sentiment generated by coronavirus-related news through media coverage and the volatility of equity markets. The fourth most cited article is that of Ashraf (2020), which examined the expected economic impact of government actions by analyzing the effect on stock market returns. Next is Salisu's (2020) article, which considered the global fear index (GFI) for the COVID-19 pandemic to investigate its predictive power in predicting commodity price returns during the pandemic.

5.7. Cluster 7: Socially responsible investing

This cluster consists of 27 articles with 191 citations and focuses on the effects of social preferences on investment behavior and decision making and the relevance of the theory of planned behavior to investment intentions.

The most often cited article in this cluster is that by Borgers and Pownall (2014), which investigated the variation in attitudes toward proposed social investment. They found

that individuals have difficulties making financial decisions while simultaneously taking their non-financial preferences into account. Following this is Warsame and Ireri's (2016) article, which explored the significance of the theory of planned behavior and revealed that attitude has a significant and positive effect on the behavioral intention relating to investment decisions, and Warsame and Ireri's (2018) article, which aimed to investigate the impact of M-Shwari financial services on small-scale traders in Kenya and concluded that the interaction between behavioral intention, age and gender influences the use of M-Shwari loan services. The fourth most cited article is the article by Apostolakis et al. (2016), which examined the linkage between attitudes toward impact and socially responsible investments and willingness to pay for socially responsible choices. The article by Königstorfer and Thalmann (2020) follows it; this article reviewed the applications of artificial intelligence (AI) in commercial banks and the challenges of implementing AI.

5.8. Cluster 8: Herding behavior in financial markets

In this cluster, there are 22 articles with 178 citations. These articles focus on the herding behavior and contagion in the cryptocurrency market and the real estate and equity markets.

The most often cited article in this cluster is the article by da Gama Silva (2019), who investigated herding behavior and contagion phenomena in the cryptocurrency market. Following this is Babalos et al.'s (2016) article, which provided novel evidence on the herding behavior of US-listed real estate investment trusts (REITs) and revealed a shift from negative herding behavior during low- and high-volatility regimes to positive herding behavior under the crash regime for almost all REITs sectors, and Stavroyiannis and Babalos's (2019) article, which offered new insights into the herding behavior of cryptocurrencies and identified the asymmetric nature of cryptocurrencies' returns due to such behavior. The fourth most cited article is by Vo and Phan (2017), who provided evidence of herding behavior in the Vietnamese stock market. The article by Youssef and Mokni (2018) follows it; this article tested whether

herding behavior affects the dependence structure between stock markets and found a negative effect in low herding regimes and a positive effect in high herding periods.

6. Thematic progression of the *JBEF* based on keyword analysis

Our last research question (RQ4) deals with the thematic progression of the *JBEF* based on keywords used in the extant literature between 2014 and 2021. We conducted keyword co-occurrence analysis for this purpose with the help of the VOSviewer and Gephi software. Author keywords signify the intellectual topics in scholarly studies (Strozzi et al., 2017). Such an analysis can appropriately explore the themes, structures and development of research fields (Callon et al., 1983) by mapping the co-occurrence of keywords to examine the content of an article. Table 10 presents the most frequently used keywords between 2014 and 2021. Fig. 6 presents a graphical visualization of *JBEF* author keywords between 1993 and 2020 to delineate the journal's research topics based on the interconnectedness between the articles.

During the first 8 years of the *JBEF*'s journey, the article keyword used the most frequently was "behavioral finance." This finding is in line with the aim and scope of the journal to publish scientific works on behavioral finance. The next most frequently used keyword is "financial literacy." The centrality of financial literacy in rational decision making is justified (Rodrigues et al., 2019). New theoretical approaches to behavioral finance are changing the conceptual understanding and the subject area of financial literacy (Loerwald and Stemmann, 2016). Therefore, there is an emerging body of literature on the consequences of current behavioral finance research for financial education. The third most often used keyword is "COVID-19". The COVID-19 pandemic vastly disrupted financial markets and the real economy worldwide. Recognizing the unprecedented nature of the shock, the academic community has produced an impressive amount of research during the last year (Djalilov and Ülkü, 2021; Goldstein et al., 2021). Researchers have widely examined the impact of the pandemic on stock markets (Al-Awadhi et al., 2020), financial behavior and financial well-

being (Barrafrem et al., 2021) and the suddenly increased adoption of Fin-tech in the era of COVID-19 (Daragmeh et al., 2021). Another primary keyword used in the *JBEF*'s articles is "behavioral biases", which are a distinctive feature of behavioral finance. Behavioral finance refers to the application of psychology to finance, focusing on individual-level cognitive biases (Hirshleifer, 2015). Next, "experiment" is a frequently used keyword by the authors of articles published in the *JBEF*. Since it is an experimental finance journal, it publishes a wide array of experiment-based research (Palan and Schitter, 2018; Powell and Shestakova, 2016). The emerging themes in the *JBEF* based on author keywords are overconfidence, disposition effect, stock market returns and so on.

As shown in Fig. 6, which provides a visualization of the connectedness between the keywords (themes), the most prominent link exists between "oTree" and "experimental economics". oTree has been discussed as an essential online platform for experimentation (Chen et al., 2016). Thus, behavioral and experimental finance takes advantage of insights from varied research fields.

[Insert Table 10 here]

[Insert Fig. 6 here]

7. Discussion and conclusion

In 2021, the *JBEF* completed its eighth year of publication. The current study aimed to analyze the progression of the *JBEF* as an essential outlet for behavioral finance scholarship. During its journey, the *JBEF*, though young, has shaped itself into one of the foremost journals in behavioral and experimental finance. We employed bibliometric analysis and manual content analysis to analyze the *JBEF*.

Our study contributes to the literature in the following ways. First, it identifies the *JBEF*'s publication, citation and authorship records between 2014 and 2021. Knowledge of such trends can be pivotal in discerning the overall research portrait of behavioral finance. We

find that the *JBEF*, a young journal, had published 441 articles by 2021, which signals a high growth trajectory in the years to come. Its citations have also increased substantially over time. We further identified the most influential *JBEF* articles and the most prominent contributing authors. US authors are its most frequent contributors. Various authors have contributed to the journal, but those affiliated with the University of Innsbruck and Macquarie University lead the list. Second, we distinguished the significant theories applied in *JBEF* articles. We found that the majority of the studies have used the theoretical underpinnings of behavioral theory and prospect theory. Based on the sample, the majority of the studies have been conducted in the context of a single country, and most of the samples have been taken from the US. While delving into the research methodology of each of the *JBEF*'s published articles, we observed that most of the studies were empirical and primarily based on quantitative research designs, archival data and regression analysis. Third, we determined the intellectual structure of the *JBEF*. We concluded that the main themes of interest among the *JBEF*'s contributors are (1) the role of personal characteristics and national cultural dimensions in behavioral finance scholarship; (2) the role of psychological factors, financial literacy and robo-advising in financial behavior; (3) investor sentiment and stock market volatility; (4) asset market experiments; (5) overconfidence and the disposition effect in the stock market; (6) the impact of COVID-19 on financial markets; (7) attitudes toward socially responsible investment; and (8) herding behavior in financial markets. Finally, we identified the primary keywords used in *JBEF* articles based on keyword analysis. We found that behavioral finance is the most prominently used author keyword in the *JBEF*'s publications, followed by financial literacy.

RQ1 focused on the publication trends in the *JBEF* during the last three decades. We discovered that the journal has made impressive progress in terms of publications and has received publications from all over the world. RQ1 also explored the citation record of the *JBEF* and the most influential studies based on citations. The most impactful study discussed

the advantages and challenges of online experiments and advocated the suitability of www.prolific.ac for the requirements of social and economic science experiments. Dealing with the authorship trends in the *JBEF*, we discovered that, although significant contributions have come from the US, the shares of UK and Asian authors have also seen modest growth over the years. The collaboration culture has seen a progressive trend over the years across the globe. The research also showed that pairs of authors have frequently authored IBR articles together. Among the countries represented, the US, China and Australia have collaborated most often to contribute authorship to the journal.

RQ2 involved an in-depth examination of the theories used in *JBEF* articles and revealed a plethora of approaches, with prospect theory as the most prominent. Further, this analysis showed an assortment of related concepts in behavioral finance and highlighted the inter-disciplinary nature of the journal. Most of the samples in *JBEF* studies have been taken from the United States. Regarding the methodologies adopted by *JBEF* authors, it was found that empirical studies have dominated the *JBEF* research platform, with the number of conceptual studies being considerably low. In addition, quantitative techniques have been most common in the journal. Qualitative and mixed research techniques have been gaining attention over time.

Our third research question (RQ3) dealt with the intellectual structure of the *JBEF*. Based on thematic clustering, we found eight significant themes across the *JBEF*. The journal has emphasized (1) personal characteristics and national cultures; (2) psychological factors, financial literacy and robo-advising; (3) investor sentiment and stock market volatility; (4) asset market experiments; (5) overconfidence and the disposition effects in the stock market; (6) externalities (COVID-19) and financial markets; (7) socially responsible investing; and (8) herding behavior in financial markets.

RQ4 dealt with the *JBEF* research topics based on the keywords used by authors in the *JBEF* articles. There are various topics of *JBEF* scholarship, as signaled by our keyword analysis. While "behavioral finance" was the most prominent topic of *JBEF* research from 2014 to 2021, "financial literacy" and "COVID-19" are other topics that are significantly visible. Nonetheless, the *JBEF* has produced emerging topics that add to its novelty in contributions with each passing year.

9.1. Contributions of the study

Our comprehensive bibliometric analysis contributes to the scholarship in multiple ways. First, we carried out a retrospective analysis of the journal. This could help the editorial team to track the journal's productivity. The mapping analysis of the journal's performance may aid the editorial team in discovering ideas for the journal's global expansion. Studying the methodologies and theories used in journal articles may assist the editorial board in diversifying the issues on which the journal publishes contributions. The authorship analysis showed that the journal has been expanding toward greater collaboration. As the *JBEF* is one of the leading journals in its domain, these results may apply to the entire field. Future researchers can explore this question. Moreover, the article's contribution lies in its analysis of central themes and the journal's development regarding the research topics covered. Future behavioral finance scholars will be able to identify the current issues and receive guidance on the way forward in their research.

Through the thematic analysis, we recommend the direction of future research in *JBEF*. First, the field of cultural finance has already made a significant contribution (Aggarwal and Goodell, 2014). This is evidenced by the number of cultural-finance-related papers published in international business publications. However, cultural finance is now prepared to launch fresh groundbreaking investigations. We conclude that by exposing and supporting the

relevance of national culture in finance research, the Journal of Behavioral and experimental finance can play an essential role in financial research. Second, when examining economic theories, researchers are frequently confronted with a large quantity of behavioral heterogeneity. The purpose of behavioral and experimental economics is to better understand human behavior via observation so that economic theories can be improved (Strömbäck et al., 2017). One method to handle this heterogeneity is to realize that decision makers differ fundamentally from one another, and that these differences contribute to observable financial behavior differences. Therefore, future research must be directed towards understanding differences in behavior. Behavioral finance theories also bring other intriguing topics for further research where individual investor behavior is evident or societal opinion can influence institutional investors (. Initial public offerings, mergers and acquisitions, or the consequences of social connections on investing (e.g., herding behavior) are examples of issues where sentiment is inherent and social media big data can be a valuable source of information (Bukovina, 2016). More research is also needed to identify the underlying mechanism explaining the relationship between investor confidence and trading (Hoffmann and Post, 2016). As keyword analysis suggests, the emerging topics of research are “financial crisis”, “financial knowledge”, “financial well-being”, “stock markets”, etc. Thus, future researchers may focus on such topics as well.

9.2. Limitations

Like all other studies, our study is not free from limitations. The first limitation is related to the source of data extraction. This study retrieved its data only from Scopus, making the source data susceptible to errors. However, we tried to minimize the mistakes through data cleaning, but mistakes that are inbuilt in the source could still have affected the study to some extent. It

is suggested that future researchers use multiple databases to retrieve data for their studies. Moreover, while we have analyzed methodologies and theories, there is still room for further theme-based systematic literature reviews and topic-based bibliometric reviews to gain a better understanding of each behavioral and experimental finance topic separately and independently.

[Insert Appendix 1 here]

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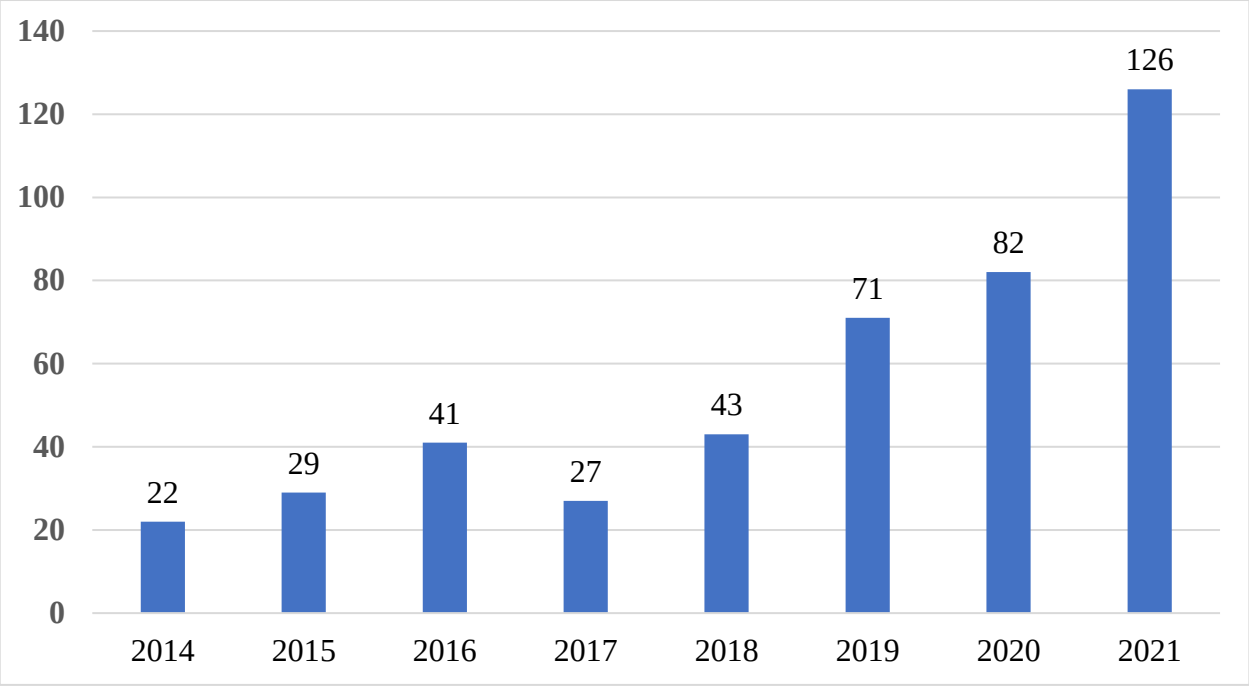

Fig. 1. Year wise publications of *JBEF*.

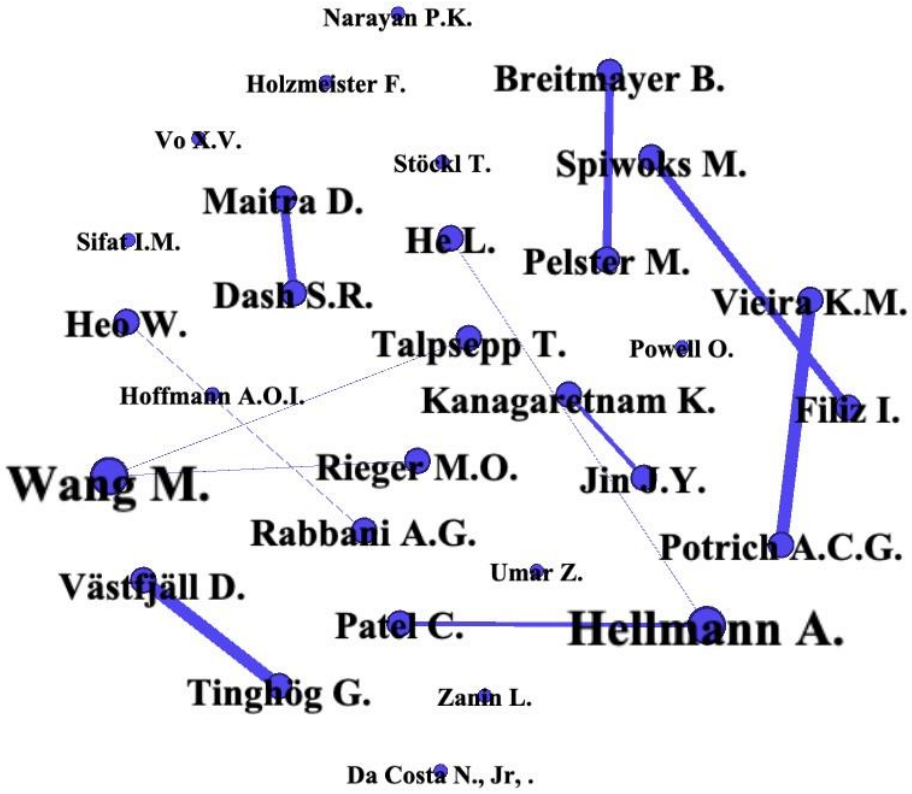

Fig. 2. *JBEF* author network.

This figure presents the collaboration network of authors who contributed at least three *JBEF* publications. The thickness of the edges represents the link strength between individual *JBEF* authors.

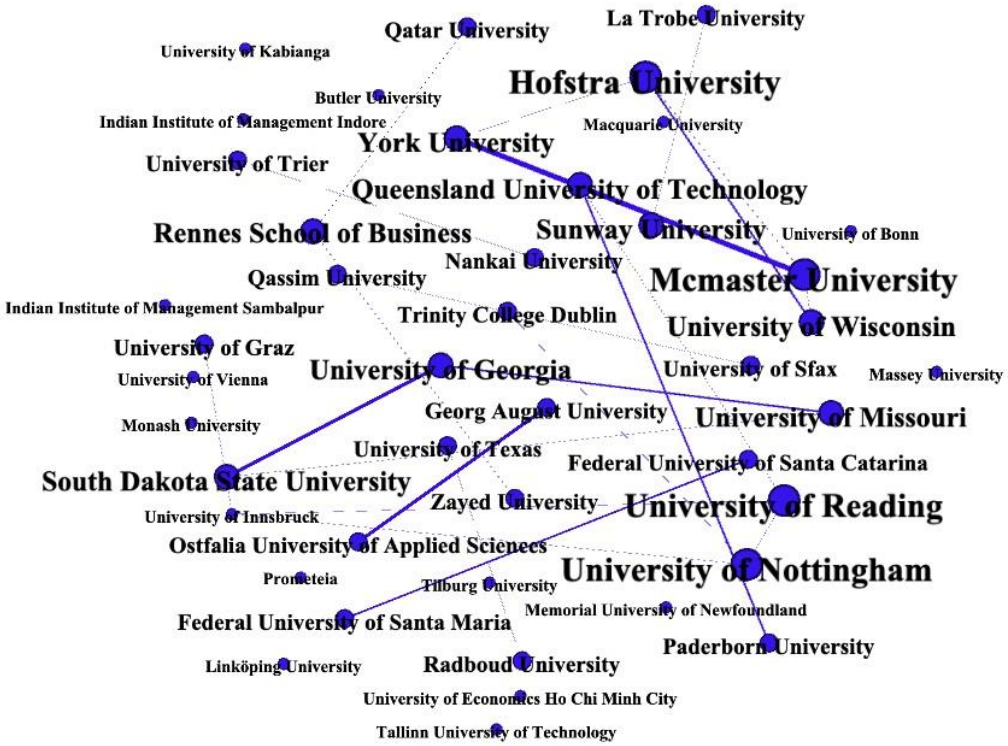

Fig. 3. The institutional network of *JBEF* affiliated authors.

This figure presents the collaboration network of institutions contributing at least three *JBEF* publications. The thickness of the edges represents the link strength between individual institutions.

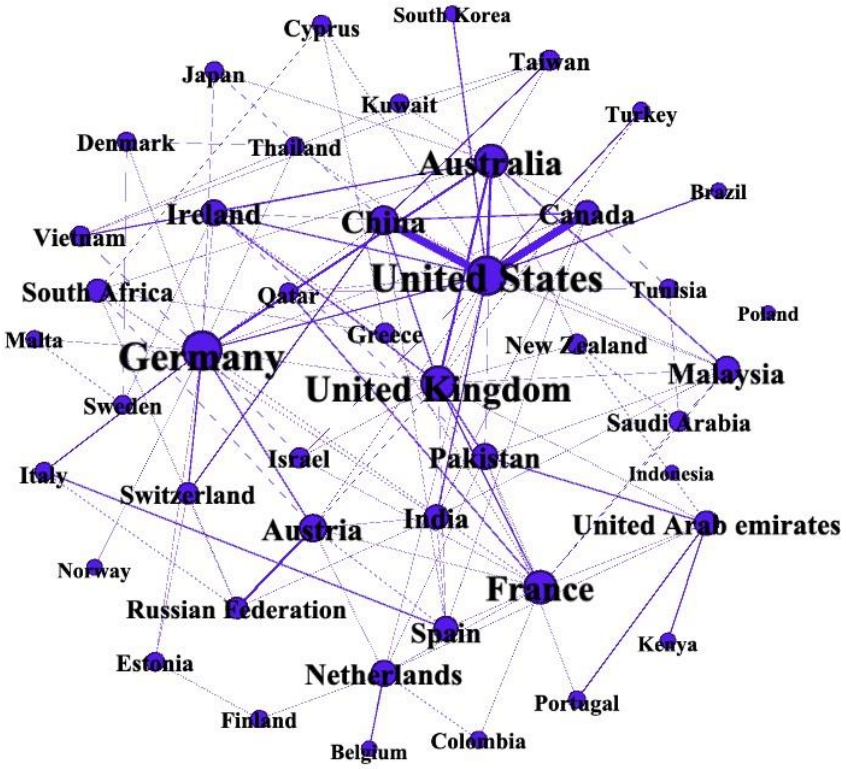

Fig. 4. The country network of *JBEF* affiliated authors.

This figure presents the collaboration network of countries with two thresholds. The thickness of the edges represents the link strength between individual countries.

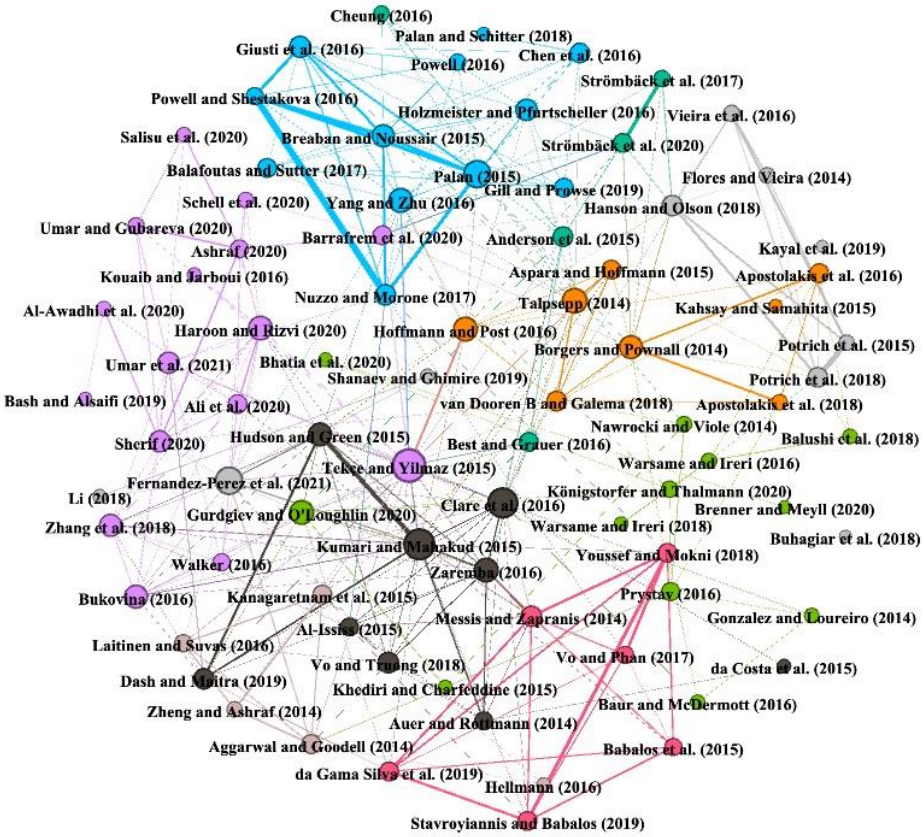

Fig. 5. The bibliographic coupling network.

This figure shows Bibliographic coupling of *JBEF* articles published between 2014 and 2021. Nodes depict *JBEF* articles, colour of the nodes and edges suggests the intellectual cluster, and thickness of the link joining two nodes is an indicator of the degree of similarities in the referencing pattern of the articles.

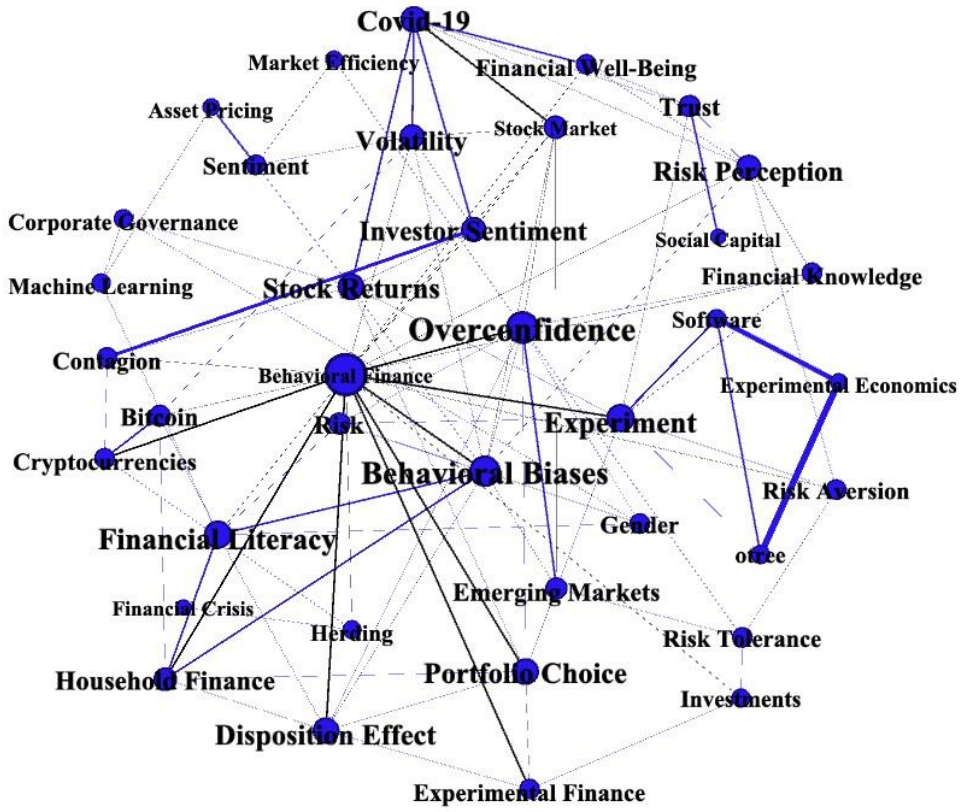

Fig. 6. Author keyword co- occurrence network of *JBEF* publications between 2014 and 2021.

The figure presents the author keyword co-occurrence network of *JBEF* publications during 2014–2021.

Table 1. Annual publications and citations trends of *JBEF* documents between 2014 and 2021

Year	TP	CTP	TCP	TC	TC/CTP	TC/TCP
2014	22	22	22	302	13.73	13.73
2015	29	51	28	339	6.65	12.11
2016	41	92	39	675	7.34	17.31
2017	27	119	25	242	2.03	9.68
2018	43	162	28	723	4.46	25.82
2019	71	233	55	334	1.43	6.07
2020	82	315	65	1142	3.63	17.57
2021	126	441	43	110	0.25	2.56

Notes. This table reports the annual publications and citations structure of *JBEF* documents between 2014 and 2021. TP = total publications, CTP = cumulative total of publications, TCP = total cited publications, TC = total citations, TC/ CTP = total cites per publication, TC/TCP = total cites per cited publication. The total cited publications and the citations are for a given year.

Table 2. The most often cited articles published in *JBEF* between 2014 and 2021

R	**TC**	**ACPY**	**Title**	**Author (s)**	**Year**
1	456	152.00	Prolific.ac—A subject pool for online experiments	Palan S., Schitter C.	2018
2	316	316.00	Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns	Al-Awadhi A.M., Alsaifi K., Al-Awadhi A., Alhammadi S.	2020
3	232	46.40	oTree-An open-source platform for laboratory, online, and field experiments	Chen D.L., Schonger M., Wickens C.	2016
4	178	178.00	Coronavirus (COVID-19) — An epidemic or pandemic for financial markets	Ali M., Alam N., Rizvi S.A.R.	2020
5	141	148.00	COVID-19: Media coverage and financial markets behavior—A sectoral inquiry	Haroon O., Rizvi S.A.R.	2020
6	135	135.00	Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets	Ashraf B.N.	2020
7	88	22.00	Does self-control predict financial behavior and financial well-being?	Strömbäck C., Lind T., Skagerlund K., Västfjäll D., Tinghög G.	2017
8	76	10.86	When can a photo increase credit? The impact of lender and borrower profiles on online peer-to-peer loans	Gonzalez L., Loureiro Y.K.	2014
9	50	10.00	Social media big data and capital markets-An overview	Bukovina J.	2016
10	48	48.00	The COVID-19 global fear index and the predictability of commodity price returns	Salisu A.A., Akanni L., Raheem I.	2020
11	48	9.60	Why is gold a safe haven?	Baur D.G., McDermott T.K.J.	2016
12	45	22.50	Herding behavior and contagion in the cryptocurrency market	da Gama Silva P.V.J., Klotzle M.C., Pinto A.C.F., Gomes L.L.	2019
13	40	6.67	Does investor sentiment predict the asset volatility? Evidence from emerging stock market India	Kumari J., Mahakud J.	2015
14	35	35.00	A time–frequency analysis of the impact of the Covid-19 induced panic on the volatility of currency and cryptocurrency markets	Umar Z., Gubareva M.	2020
15	34	4.86	National culture and dividend policy: International evidence from banking	Zheng C., Ashraf B.N.	2014
16	32	32.00	This time is indeed different: A study on global market reactions to public health crisis	Schell D., Wang M., Huynh T.L.D.	2020
17	31	5.17	Trader characteristics and fundamental value trajectories in an asset market experiment	Breaban A., Noussair C.N.	2015
18	27	4.50	Herding behavior in real estate markets: Novel evidence from a Markov-switching model	Babalos V., Balcilar M., Gupta R.	2015
19	27	4.50	Is investor sentiment contagious? International sentiment and UK equity returns	Hudson Y., Green C.J.	2015

20	27	3.86	National cultural dimensions in finance and accounting scholarship: An important gap in the literatures?	Aggarwal R., Goodell J.W.	2014

Notes. This table reports the 20 most often cited articles published in *JBEF* between 2014 and 2021. TC = total citations and ACPY = average citations per year

Table 3. Most frequently published *JBEF* authors between 2014 and 2021

Author	TP	TCP	TC	TC/TP	TC/TCP
Hellmann A.	7	6	36	5.14	6.00
Vieira K.M.	6	4	65	10.83	16.25
Kanagaretnam K.	5	5	27	5.40	5.40
Tinghög G.	4	4	111	27.75	27.75
Zanin L.	4	4	18	4.50	4.50
Rabbani A.G.	4	3	13	3.25	4.33
Potrich A.C.G.	4	2	38	9.50	19.00
Västfjäll D.	4	4	111	27.75	27.75
Rieger M.O.	4	3	11	2.75	3.67
Patel C.	3	2	4	1.33	2.00
Vo X.V.	3	3	51	17.00	17.00
Hoffmann A.O.I.	3	3	33	11.00	11.00
Powell O.	3	3	50	16.67	16.67
Da Costa N., Jr,	3	3	6	2.00	2.00
He L.	3	2	6	2.00	3.00
Stöckl T.	3	2	12	4.00	6.00
Talpsepp T.	3	2	18	6.00	9.00
Jin J.Y.	3	2	5	1.67	2.50
Maitra D.	3	3	24	8.00	8.00
Pelster M.	3	3	6	2.00	2.00
Wang M.	3	3	54	18.00	18.00
Umar Z.	3	3	47	15.67	15.67
Dash S.R.	3	3	24	8.00	8.00
Sifat I.M.	3	2	10	3.33	5.00
Heo W.	3	3	19	6.33	6.33
Holzmeister F.	3	2	24	8.00	12.00
Breitmayer B.	3	3	6	2.00	2.00
Filiz I.	3	1	4	1.33	4.00
Spiwoks M.	3	1	4	1.33	4.00
Narayan P.K.	3	1	5	1.67	5.00

Notes. This table shows the authors with the most *JBEF* publications between 2014 and 2021. TP = total publications, TCP = total cited publications, TC = total citations, TC/TP = total cites per publication, TC/TCP = total cites per cited publication.

Table 4. Institutions most often affiliated with *JBEF* authors between 2014 and 2021

Institutions	**TP**	**TCP**	**TC**	**TC/TP**	**TC/TCP**
University of Innsbruck, Austria	13	7	497	38.23	71.00
Macquarie University, Australia	12	8	40	3.33	5.00
York University, Canada	7	6	29	4.14	4.83
Rennes School of Business, France	6	6	12	2.00	2.00
University of Georgia, United States	6	6	37	6.17	6.17
Federal University of Santa Maria, Brazil	6	4	65	10.83	16.25
Federal University of Santa Catarina, Brazil	6	4	26	4.33	6.50
McMaster University, Canada	5	4	7	1.40	1.75
Trinity College Dublin, Ireland	5	5	34	6.80	6.80
University of Missouri, United States	5	4	19	3.80	4.75
Hofstra University, United States	4	4	9	2.25	2.25
La Trobe University, Australia	4	2	2	0.50	1.00
Linköping University, Sweden	4	4	111	27.75	27.75
Paderborn University, Germany	4	4	7	1.75	1.75
Prometeia, Italy	4	4	18	4.50	4.50
Qatar University, Qatar	4	3	22	5.50	7.33
Queensland University of Technology, Australia	4	3	6	1.50	2.00
South Dakota State University, United States	4	4	22	5.50	5.50
Tilburg University, Netherlands	4	4	80	20.00	20.00
University of Trier, Germany	4	3	11	2.75	3.67
Zayed University, United Arab Emirates	4	4	48	12.00	12.00

Notes. This table reports the top institutions affiliated with *JBEF* authors. TP = total publications, TCP = total cited publications, TC = total citations, TC/TP = total cites per publication, TC/TCP = total cites per cited publication.

Table 5. Countries most often affiliated with *JBEF* authors between 2014 and 2021

Country	TP	TCP	TC	TC/TP	TC/TCP
United States	91	64	392	4.31	6.13
Germany	48	35	205	4.27	5.86
Australia	41	26	135	3.29	5.19
China	31	20	263	8.48	13.15
United Kingdom	30	19	174	5.80	9.16
Austria	24	15	595	24.79	39.67
India	23	18	139	6.04	7.72
Canada	21	15	70	3.33	4.67
Italy	18	12	56	3.11	4.67
Brazil	17	13	145	8.53	11.15
Netherlands	17	14	147	8.65	10.50
France	16	12	281	17.56	23.42
Sweden	15	13	167	11.13	12.85
Ireland	12	10	100	8.33	10.00
Malaysia	11	8	203	18.45	25.38
New Zealand	9	6	38	4.22	6.33
Japan	8	4	6	0.75	1.50
Pakistan	8	6	333	41.63	55.50
United Arab Emirates	8	6	94	11.75	15.67
Israel	7	5	12	1.71	2.40
Spain	7	5	44	6.29	8.80
Switzerland	7	5	38	5.43	7.60
Vietnam	7	5	60	8.57	12.00

Notes. This table reports countries most often affiliated with *JBEF* authors between 2014 and 2021. TP = total publications, TCP = total cited publications, TC = total citations, TC/TP = total cites per publication, TC/TCP = total cites per cited publication. The sum of citations in the table is greater than shown in Table 1. When authors of co-authored articles have affiliations with more than one country, each country receives a citation.

Table 6. A summary of theories used/discussed/tested in the sample studies in JBEF

Theory	Articles	References
Behavioral Theory/ Behavioral Finance Theories	121	Haroon and Rizvi (2020); Strömbäck et al. (2017); Ashraf (2020); da Gama Silva et al. (2019); Hudson and Green (2015)
Prospect Theory	62	Ali et al. (2020); Baur and McDermott (2016); Zaremba (2016)
Standard Economic Theory	20	Breaban and Noussair (2015); Powell and Shestakova (2016)
Agency Theory	17	Zheng and Ashraf (2014); Kouaib and Jarboui (2016)
Expected Utility Theory	15	Holzmeister (2017); Hopland et al. (2016)
Modern Portfolio Theory	12	Suchanek (2021); Messis and Zapranis (2014)
Rational Asset Pricing Theory	8	Vo and Phan (2017); Shanmuganathan (2020)
Theory of Planned Behavior	7	Warsame and Ireri (2016); Vieira et al. (2016)
Portfolio Theory	6	Pak and Chatterjee (2016); Pyles et al. (2016)
Game Theory	5	McCannon and Minuci (2020); Chan et al. (2019)
Standard Economic Theory	5	Kahsay and Samahita (2015)
Bounded Rationality Theory	4	Ferretti et al. (2021); Rosdini et al. (2020)
Decision Making Theory	4	Timmons et al. (2019)
Market Efficiency Theory	4	Khediri and Charfeddine (2015); Grégoire (2016)
Social Capital Theory	4	Jin et al. (2019)
Auction Theory	3	Chan et al. (2019)
Dual Process Theory	3	Hoffmann and Post (2016); Israel et al. (2019)
Financial Theory	3	Potrich et al. (2015)
Neo Classical Theory	3	Mette et al. (2019); Filiz et al. (2019)
Signaling Theory	3	Zheng and Ashraf (2014)
Theory of Reasoned Action	3	Lebdaoui and Chetioui (2021)

Notes. This table shows the major theories used in 441 studies.

Table 7. Top regions and top countries in JBEF's articles based on sample segregation

	Single Country (n=296)		**Multi Country (n=67)**
Region	**Country**	**Number of Publications**	
America	US	94	
	Brazil	15	
	Canada	1	
	Mexico	2	
Europe	UK	15	
	Austria	4	
	Belgium	4	
	Estonia	1	
	Finland	3	
	France	4	
	Germany	19	
	Hungary	1	
	Ireland	1	
	Italy	9	
	Netherlands	7	
	Norway	2	
	Poland	1	
	Portugal	2	
	Romania	1	
	Russia	3	
	Spain	1	
	Sweden	11	
	Switzerland	4	
Asia	Bangladesh	1	
	China	17	
	India	16	
	Indonesia	3	
	Israel	4	
	Japan	6	
	Jordan	1	
	Korea	3	
	Kuwait	2	
	Malaysia	7	
	Oman	1	
	Pakistan	1	
	Philippines	1	
	Qatar	1	
	Singapore	1	
	Taiwan	2	

	Thailand	1
	Turkey	5
	United Arab Emirates	1
	Vietnam	5
Australia		8
Africa	Kenya	2
	Morocco	1
	Tunisia	1

Notes. This table shows the top regions and countries based on sample segregation from 441 studies.

Table 8. Classification of 441 studies of *JBEF* based on research methods, research designs, data collection approach and data analysis tools

Research Method	Research Design	Data Collection Technique	Data Analysis Approach	Example Citations
Empirical (n=402) • Field Experiments (n=6) • Laboratory Experiments (n=96) • Survey based analysis (n=61) • Empirical study based on other sources (n=239)	Quantitative (n=364)	Archival (n=202)	Descriptive (n=13)	da Costa et al. (2015); Kayal et al. (2019); Giamattei and Lambsdorff (2019); Filiz et al. (2019)
		Survey (n=57)		
		Laboratory (n=93)	Correlation (n=3)	Baur and Hoang (2021); Enkhtaivan and Davaadorj (2021)
		No Data Collected/Reported (n=10)		Agbeko et al. (2017); Peterson et al. (2015))
			Analysis of Variance (n=3)	Ashraf (2020); Ali et al. (2020); Hopland et al. (2016);
			Regression (n=117)	Biddle et al. (2018)
	Qualitative (n-36)	Case Study (n=1)	Structural Equation Modeling (n=9)	Kijkasiwat (2021)
		In-depth Interviews/Focus Groups (n=5)		
		Archival (n=5)	Factor Analysis (n=1)	Hellmann et al. (2021)
		Laboratory (n=7)	Cluster Analysis (n=1)	Łukowski et al. (2020)
		No Data Collected/Reported (n=20)	Time Series (n=160)	Haroon and Rizvi (2020); Al-Awadhi et al. (2020); Erol et al. (2020); Huber et al. (2016)
			Simulation (n=2)	Dichtl et al. (2016)
	Mixed (n=2)	Qualitative +Survey (n=2)	Mathematical Model (n=4)	Kronborg and Jarner (2015); Ellina et al. (2020)
			Others (n=88)	Bash and Alsaifi (2019); Kinyua et al. (2021)
			Multivariate Analysis of Variance (n=1)	Ewe et al. (2020)
Literature Review/Conceptual (n=39)				Palan and Schitter (2018); Chen et al. (2016)

Notes. This table shows the research methodology used in 441 studies of JBEF.

Table 9. Intellectual structure of research published in *JBEF* during 2014 and 2021

Cluster	Focus	TP	TC	Most cited articles			
				Author	**Title**	**Year**	**TC**
1.	*The role of personal characteristics and national cultural dimensions in behavioral finance scholarship*	79	406	Gonzalez L., Loureiro Y.K.	When can a photo increase credit? The impact of lender and borrower profiles on online peer-to-peer loans	2014	76
				Baur D.G., McDermott T.K.J.	Why is gold a safe haven?	2016	48
				Zheng C., Ashraf B.N.	National culture and dividend policy: International evidence from banking	2014	34
				Aggarwal R., Goodell J.W.	National cultural dimensions in finance and accounting scholarship: An important gap in the literatures?	2014	27
				Nawrocki D., Viole F.	Behavioral finance in financial market theory, utility theory, portfolio theory and the necessary statistics: A review	2014	21
				Kanagaretnam K., Lobo G.J., Wang C., Whalen D.J.	Religiosity and risk-taking in international banking	2015	20
				Kouaib A., Jarboui A.	Real earnings management in innovative firms: Does CEO profile make a difference?	2016	18
				Laitinen E.K., Suvas A.	Financial distress prediction in an international context: Moderating effects of Hofstede's original cultural dimensions	2016	16
2.	*The role of psychological factors, financial literacy and robo-advising in*	72	404	Strömbäck C., Lind T., Skagerlund K., Västfjäll D., Tinghög G.	Does self-control predict financial behavior and financial well-being?	2017	88
				Potrich A.C.G., Vieira K.M., Kirch G.	How well do women do when it comes to financial literacy? Proposition of an indicator and analysis of gender differences	2018	20

	financial behavior			Potrich A.C.G., Vieira K.M., Coronel D.A., Bender Filho R.	Financial literacy in Southern Brazil: Modeling and invariance between genders	2015	18
				Bhatia A., Chandani A., Chhateja J.	Robo advisory and its potential in addressing the behavioral biases of investors — A qualitative study in Indian context	2020	16
				Brenner L., Meyll T.	Robo-advisors: A substitute for human financial advice?	2020	16
				Hanson T.A., Olson P.M.	Financial literacy and family communication patterns	2018	16
				Flores S.A.M., Vieira K.M.	Propensity toward indebtedness: An analysis using behavioral factors	2014	14
				Vieira K.M., de Oliveira M.O.R., Kunkel F.I.R.	The Credit Card Use and Debt: Is there a trade-off between compulsive buying and ill-being perception?	2016	13
3.	*Investor sentiment and stock market volatility*	67	378	Bukovina J.	Social media big data and capital markets-An overview	2016	50
				Kumari J., Mahakud J.	Does investor sentiment predict the asset volatility? Evidence from emerging stock market India	2015	40
				Hudson Y., Green C.J.	Is investor sentiment contagious? International sentiment and UK equity returns	2015	27
				Al-Ississ M.	The holy day effect	2015	23
				Zaremba A.	Investor sentiment, limits on arbitrage, and the performance of cross-country stock market anomalies	2016	21
				Vo X.V., Truong Q.B.	Does momentum work? Evidence from Vietnam stock market	2018	19
				Auer B.R., Rottmann H.	Is there a Friday the 13th effect in emerging Asian stock markets?	2014	17
				Zhang W., Wang P., Li X., Shen D.	Twitter's daily happiness sentiment and international stock returns: Evidence from linear and nonlinear causality tests	2018	16
4.	*Asset market experiments*	67	955	Palan S., Schitter C.	Prolific.ac—A subject pool for online experiments	2018	456
				Chen D.L., Schonger M., Wickens C.	oTree-An open-source platform for laboratory, online, and field experiments	2016	232
				Breaban A., Noussair C.N.	Trader characteristics and fundamental value trajectories in an asset market experiment	2015	31

				Powell O., Shestakova N.	Experimental asset markets: A survey of recent developments	2016	26
				Powell O.	Numeraire independence and the measurement of mispricing in experimental asset markets	2016	20
				Nuzzo S., Morone A.	Asset markets in the lab: A literature review	2017	18
				Holzmeister F., Pfurtscheller A.	oTree: The “bomb” risk elicitation task	2016	16
				Palan S.	GIMS-Software for asset market experiments	2015	16
5.	*Overconfidence and disposition effect in the stock market*	58	235	Hoffmann A.O.I., Post T.	How does investor confidence lead to trading? Linking investor return experiences, confidence, and investment beliefs	2016	19
				Tekçe B., Yilmaz N.	Are individual stock investors overconfident? Evidence from an emerging market	2015	18
				Talpsepp T., Vlcek M., Wang M.	Speculating in gains, waiting in losses: A closer look at the disposition effect	2014	14
				Best M.J., Grauer R.R.	Prospect theory and portfolio selection	2016	12
				Aspara J., Hoffmann A.O.I.	Cut your losses and let your profits run: How shifting feelings of personal responsibility reverses the disposition effect	2015	11
				Anderson A., Dreber A., Vestman R.	Risk taking, behavioral biases and genes: Results from 149 active investors	2015	11
				van Dooren B., Galema R.	Socially responsible investors and the disposition effect	2018	10
				Trejos C., van Deemen A., Rodríguez Y.E., Gómez J.M.	Overconfidence and disposition effect in the stock market: A micro world based setting	2019	9
6.	*Impact of COVID-19 on financial markets*	46	1107	Al-Awadhi A.M., Alsaifi K., Al-Awadhi A., Alhammadi S.	Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns	2020	316
				Ali M., Alam N., Rizvi S.A.R.	Coronavirus (COVID-19) — An epidemic or pandemic for financial markets	2020	178
				Haroon O., Rizvi S.A.R.	COVID-19: Media coverage and financial markets behavior—A sectoral inquiry	2020	141

				Ashraf B.N.	Economic impact of government interventions during the COVID-19 pandemic: International evidence from financial markets	2020	135
				Salisu A.A., Akanni L., Raheem I.	The COVID-19 global fear index and the predictability of commodity price returns	2020	48
				Umar Z., Gubareva M.	A time–frequency analysis of the impact of the Covid-19 induced panic on the volatility of currency and cryptocurrency markets	2020	35
				Schell D., Wang M., Huynh T.L.D.	This time is indeed different: A study on global market reactions to public health crisis	2020	32
				Bash A., Alsaifi K.	Fear from uncertainty: An event study of Khashoggi and stock market returns	2019	23
7.	*Attitudes towards socially responsible investment*	27	191	Borgers A.C.T., Pownall R.A.J.	Attitudes towards socially and environmentally responsible investment	2014	25
				Warsame M.H., Ireri E.M.	Does the theory of planned behaviour (TPB) matter in Sukuk investment decisions?	2016	24
				Warsame M.H., Ireri E.M.	Moderation effect on mobile microfinance services in Kenya:An extended UTAUT model	2018	22
				Apostolakis G., Kraanen F., van Dijk G.	Examining pension beneficiaries' willingness to pay for a socially responsible and impact investment portfolio: A case study in the Dutch healthcare sector	2016	14
				Königstorfer F., Thalmann S.	Applications of Artificial Intelligence in commercial banks – A research agenda for behavioral finance	2020	13
				Balushi Y.A., Locke S., Boulanouar Z.	Islamic financial decision-making among SMEs in the Sultanate of Oman: An adaption of the theory of planned behaviour	2018	13
				Hellmann A.	The role of accounting in behavioral finance	2016	12
				Kahsay G.A., Samahita M.	Pay-What-You-Want pricing schemes: A self-image perspective	2015	12
8.	*Herding behavior in financial markets*	22	178	da Gama Silva P.V.J., Klotzle M.C., Pinto A.C.F., Gomes L.L.	Herding behavior and contagion in the cryptocurrency market	2019	45
				Babalos V., Balcilar M., Gupta R.	Herding behavior in real estate markets: Novel evidence from a Markov-switching model	2015	27

Stavroyiannis S., Babalos V.	Herding behavior in cryptocurrencies revisited: Novel evidence from a TVP model	2019	26
Vo X.V., Phan D.B.A.	Further evidence on the herd behavior in Vietnam stock market	2017	26
Youssef M., Mokni K.	On the effect of herding behavior on dependence structure between stock markets: Evidence from GCC countries	2018	11
Messis P., Zapranis A.	Herding towards higher moment CAPM, contagion of herding and macroeconomic shocks: Evidence from five major developed markets	2014	11
Aggarwal D., Chandrasekaran S., Annamalai B.	A complete empirical ensemble mode decomposition and support vector machine-based approach to predict Bitcoin prices	2020	8
Vo X.V., Phan D.B.A.	Herding and equity market liquidity in emerging market. Evidence from Vietnam	2019	6

Notes. This table shows classification of JBEF articles into eight major clusters based on thematic clustering and the most cited articles in each cluster. TP= Total Publications; TC=Total Citations.

Table 10. Major author keywords used in JBEF articles

Keyword	Occurrences
Behavioral finance	32
Financial literacy	18
Covid-19	16
Behavioral biases	15
Experiment	14
Overconfidence	14
Disposition effect	12
Stock returns	12
Experimental finance	11
otree	11
Risk aversion	11
Investor sentiment	10
Experimental economics	9
Household finance	9
Herding	8
Machine learning	8
Market efficiency	8
Software	8
Volatility	8
Bitcoin	7
Corporate governance	7
Portfolio choice	7
Sentiment	7
Stock market	7
Trust	7
Asset pricing	6
Behavioural finance	6
Cryptocurrencies	6
Emerging markets	6
Contagion	5
Financial crisis	5
Financial knowledge	5
Financial well-being	5
Gender	5
Investments	5
Risk	5
Risk perception	5
Risk tolerance	5
Social capital	5
Stock markets	5

Notes. This table shows the top keywords used *JBEF* articles and their occurrence.

Appendix 1 Definitions of methodology classification

Classification	Definition
Research method	
Conceptual	Indicates those studies which do not include any data and are primarily based on logic and discussion of theoretical frameworks
Empirical	Indicates those studies which involve some kind of empirical evidence
Literature review	Indicates those articles which are reviews of the discipline, research topic(s) and/or methodology(ies)
Research design	
Quantitative	Indicates those research designs which are based on numerical data
Qualitative	Indicates those research designs with non-numeric data
Mixed	Studies which are both quantitative and qualitative
Data collection method	
In-depth interviews/focus groups	Data collection approach consists of interviews, focus groups and various other forms of non-quantitative data collected from subjects of a study (e.g., managers, customers and/or employees)
Case study	Case study approach consists of data collection from one or more organisations (e.g., plants, business units and/or companies) over extended periods of time. Case study data often include both qualitative and quantitative components and responses from more than one individual, work groups or departments
Survey	Studies which use mail, phone or Internet surveys to collect primary data from subjects (managers, employees and/or customers) using pre-structured questionnaires
Archival	These studies involve compilation of data from existing sources of information such as government databases, financial reports and consumer reports
Laboratory	Laboratory-based studies involve researchers' collection of data from primary experiments conducted in a controlled environment
No data collected/reported	Classified those studies where no data are reported such as conceptual/ viewpoints
Data analysis approach	
Descriptive	Studies reporting only basic arithmetic or elementary statistics such as T-test, Chi-Square etc.
Regression	Studies reporting regressions such as OLS, probit, logit, multinomial regression, ordered logit, double-hurdle Heckman 2SLS, 3SLS
SEM	Studies reporting structural equation models
ANOVA/ANCOVA	Studies reporting analysis of variance or analysis of covariance
Factor analysis (EFA/CFA)	Studies reporting exploratory factor analysis and/or confirmatory factor analysis
MANOVA/MANCOVA	Studies reporting multiple analysis of variance or multiple analysis of covariance
Mathematical model	Studies on mathematical derivations
Correlation	Studies reporting correlations

Cluster analysis	Studies applying cluster analysis
Time-series analysis	Studies applying time-series analysis
Simulation	Studies using simulation techniques