

# Stock Market Liquidity: A Literature Review

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## Abstract

The purpose of this study is to identify the key aspects that have been studied in the area of stock market liquidity, accumulate their important findings, and also provide a quantitative categorization of reviewed literature that will facilitate in conducting further research. The study analyzes relevant research papers published after the global financial crisis of 2008 and finds that measurement of liquidity, factors influencing liquidity, the relationship between market liquidity and expected return, and market liquidity risk and its relationship with expected returns have been explored in the context of the stock market liquidity. Among these, the factors influencing liquidity have been prominently researched in the reviewed studies. The study concludes that the identified areas can be potentially researched concerning the emerging markets by considering the multidimensional quality of market liquidity. Also, the inter-linkages between the liquidity of emerging markets with that of the global stock markets can be further evaluated.

## Keywords

market liquidity, literature review, content analysis, stock returns, liquidity risk

## Introduction

Stock market liquidity is an essential market characteristic whose presence ensures smooth functioning of the market, whereas its absence causes uneasiness in the market. Brennan et al. (2012) refer to stock market liquidity as the ability of the market to absorb a huge volume of securities at a lower execution cost within a short period without having a significant effect on security prices. Whereas Amihud et al. (2006) indicate that market liquidity portrays the presence of willing buyers and sellers who agree to exchange a certain quantity of securities at the stated price without any time delay.

The presence of market liquidity is important for a trader as it determines the magnitude of his returns and thereby helps in devising appropriate trading strategies. Many studies (Amihud & Mendelson, 1986; Bradrania et al., 2015; Chang et al., 2010; Lam & Tam, 2011) have highlighted the significant relationship between market liquidity and stock returns. Besides, studies (Bradrania & Peat, 2014; Cao & Petrasek, 2014; K. H. Lee, 2011) have also addressed the crucial impact of changes in liquidity levels on investment decisions. In addition to this, studies (W. X. Li et al., 2012; Nadarajah et al., 2018) also state that market liquidity is an important consideration to the business firms as it influences their cost of capital and firm value by improving their corporate governance mechanisms.

Stock market liquidity is of prime importance even to the economy. Ellington (2018) emphasized that during the period of crisis, lower liquidity levels adversely hamper economic

growth. Also, Apergis et al. (2015) concluded that the future outlook for the economy depends on investor's sentiments which in turn are determined by liquidity conditions in the stock market. Moreover, Nneji (2015) evidenced that market liquidity depicts the level of strength of the market to withstand any form of economic crisis or shocks. Thereby, studies (Næs et al., 2011; Smimou, 2014) consider it as a relevant parameter in predicting the future state of the economy.

Although stock market liquidity has been investigated in earlier literary works (Amihud & Mendelson, 1986; Chordia et al., 2001; Grossman & Miller, 1988; Kyle, 1985), its relevance to the investors, corporate firms, regulators, and the whole economy was virtually realized during the financial crisis in the year 2008. To many of the world economies, rebuilding the lost confidence in the market by ensuring adequate liquidity was a major challenge to recover from the downturn. Therefore, the post-crisis period witnessed momentum in the studies relating to stock market liquidity and evidenced significant implications of dynamics in market liquidity in policy formulations and investment decisions. These studies expressed varied views and proposed refined approaches toward market liquidity across various

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data sets, market structures, and periods by duly considering the significant contributions made by previous literature and thus extended the scope of stock market liquidity.

Hence, the current study attempts to evaluate the relevant literature published during the post-crisis period on stock market liquidity and to unfold the important aspects, which have been studied concerning stock market liquidity by using qualitative and quantitative content analysis. This study will be of relevance to the researchers and policymakers to attain a coherent understanding of the concept of market liquidity, the multifaceted nature of liquidity, and the role of liquidity in the market. It will also enable researchers in delving into possibilities for further research in the existing explored areas and also in identifying new avenues that can be analyzed to extend the understanding and applicability of stock market liquidity.

The entire article is formulated as follows: The “Review of Literature” section describes the concept and relevance of conducting content analysis, summarizes the literature review articles previously published on stock market liquidity, and identifies research gap; the “Objectives of the Study” section highlights objectives of the study; the “Data and Method” section describes data and methodology used in the study; the “Analysis” section provides the qualitative and quantitative analysis of the reviewed studies; the “Conclusion” section showcases the findings and conclusions drawn from the analysis; the “Managerial Implications” section provides implications of the study; and the “Limitations of the Study” section provides limitations and scope for future research.

## Review of Literature

An understanding of the existing literature and identifying the prospective areas for future research on a specific research topic is of prime importance to a researcher. Content analysis enables in drawing meaningful conclusions from the existing research works based on which a researcher can effectively carry out further studies. Hart (1998) mentions that the review of literature enables a researcher to better understand his research topic and develop his capability to find new approaches in the existing context. Downe-Wamboldt (1992) defines it as a technique that broadens the understanding of phenomena, which further enables in making distinct and effective conclusions. Castleberry and Nolen (2018) state that by understanding the reviewed ideas from the existing work, a researcher can transform them into a unique one by analyzing the same ideas differently.

By considering the need and benefits of content analysis, the current study observed that a handful of studies have been eager in reviewing the existing literature on stock market liquidity. Benson et al. (2015) analyzed the literature available on liquidity in financial markets. The study reviewed 113 research papers on liquidity and concluded that market liquidity was essentially studied concerning

corporate finance, corporate announcements, stock returns, macro policy announcements, and investment management. Also, Amihud et al. (2006) analyzed the studies that have evaluated the effect of liquidity and liquidity risk on stock returns. The study summarized the liquidity asset pricing theories and significant results in support of these theories. Kumar and Misra (2015) evaluated 95 articles and presented a review of literature on various aspects of stock market liquidity like measurement of liquidity, determinants of liquidity, intraday movements, and liquidity effects on firm value. Recently, Díaz and Escribano (2020) reviewed 177 articles and discussed the dimensional liquidity measures which have been used by researchers over the years in determining the liquidity of equity, bond, and treasury markets.

The earlier literature review papers on stock market liquidity have considered an inconsistent number of studies from various research databases while some have examined a few studies that highlight different perspectives of stock market liquidity. Also, it has been observed that the post-crisis period articles have not been extensively reviewed. Remarkably, these studies have proposed diverse views on the viability of dynamics in market liquidity in the context of different market structures and time durations. A focused review of their empirical contributions can significantly enable a researcher to contribute further in improving the quality of work in the area of stock market liquidity that can help the benefiting stakeholders in effective policy and strategy formulations. In addition, the previous literature reviews have undertaken only a theoretical evaluation of the available literature and do not highlight the relevant contributing journals, authors, and countries, and the recent trend in publishing studies on stock market liquidity which are also important inputs for researchers to conduct further studies on this topic. Thus, the current work emphasizes reducing these gaps and provides meaningful contributions from a large number of previous researches in the area of stock market liquidity.

## Objectives of the Study

The objective of this study is to document relevant literary works undertaken on the different aspects in the area of stock market liquidity after the financial crisis of 2008 and to quantitatively analyze the literature available on stock market liquidity.

## Data and Method

### Data

For the attainment of objectives, the study has been confined to the research articles that have been published in the various journals during the recent years after the financial crisis, that is, 2009–April 2020, and was sourced from the “ScienceDirect” database. For the study, a total of 439

research papers have been selected which have appeared in 64 journals, namely, *Applied Economics*; *Applied Economics Letters*; *Borsa Istanbul Review*; *China Economic Review*; *Decision Support Systems*; *Economic Modelling*; *Economic Systems*; *Economics Letters*; *Emerging Markets Review*; *Energy Economics*; *European Economic Review*; *Explorations in Economic History*; *Finance Research Letters*; *European Research on Management and Business Economics*; *Global Finance Journal*; *Habitat International*; *International Journal of Production Economics*; *International Business Review*; *International Economics*; *International Journal of Forecasting*; *International Review of Economics and Finance*; *International Review of Financial Analysis*; *Journal of Accountancy*; *Public Policy*; *Journal of Financial Intermediation*; *Japan and the World Economy*; *Journal of Accounting and Economics*; *Journal of Asian Economics*; *Journal of Banking & Finance*; *Journal of Behavioral and Experimental Finance*; *Journal of Business Research*; *Journal of Contemporary Accounting & Economics*; *Journal of Corporate Finance*; *Journal of Development Economics*; *Journal of Econometrics*; *Journal of Economic Behavior & Organization*; *Journal of Economic Theory*; *Journal of Economics and Business*; *Journal of Empirical Finance*; *Journal of Financial Economics*; *Journal of Financial Markets*; *Journal of Financial Stability*; *Journal of International Financial Markets, Institutions & Money*; *Journal of International Money and Finance*; *Journal of Multinational Financial Management*; *Journal of Policy Modeling*; *Journal of the Japanese and International Economies*; *Journal of Accounting and Economics*; *Journal of Economic Dynamics & Control*; *Journal of Economic Theory*; *Macroeconomics and Finance in Emerging Market Economies*; *North American Journal of Economics and Finance*; *Pacific-Basin Finance Journal*; *Physica A*; *Procedia–Social and Behavioral Sciences*; *Procedia Computer Science*; *Procedia Economics and Finance*; *Research in International Business and Finance*; *Research in Economics*; *Review of Economic Dynamics*; *Review of Financial Economics*; *The Journal of Finance and Data Science*; *The Quarterly Review of Economics and Finance*; and *Transportation Research Part E*.

## Method

The research articles on stock market liquidity were sourced from the ScienceDirect database, which provides access to a wide range of articles undertaken in heterogeneous contexts in comparison with other similar databases. The reason for selecting a single database for article extraction was mainly to enable comprehensive coverage of a wide range of literary works on the topic from a single source. The research articles were accessed from the database by using the keyword “market liquidity” and the time filter of 2009 to 2020. Based on abstract reading, if stock market liquidity is highlighted as the focal point, then the article was included for review.

Finally, a total of 439 articles that were exclusively based in the area of stock market liquidity were extracted. Furthermore, the content of these articles was segregated into different categories, namely, Year of Publication, Title of the Paper, Number of Authors, Country of the Authors, Name of the Publishing Journal, Objectives of the Study, Liquidity Measures Used, Findings, and Conclusions.

Based on the objectives undertaken for study by the selected research articles, they were categorized into below mentioned four categories:

- Measurement of stock market liquidity,
- Factors influencing stock market liquidity,
- Stock market liquidity and expected returns,
- Stock market liquidity risk and expected returns.

Furthermore, to stimulate refined studies, only 91 pertinent studies were selected based on their key findings across these categories and were accordingly summarized. On the contrary, the information about the significant contributions made by the different authors, countries, and journals across 439 research articles has been depicted graphically to facilitate quantitative analysis of the available literature.

## Analysis

### Identification and Analysis of Key Aspects Studied Concerning Stock Market Liquidity

By analyzing the literature on stock market liquidity, the following key aspects have been identified relating to which the reviewed studies have been undertaken in the area of stock market liquidity:

- Measurement of stock market liquidity,
- Factors influencing stock market liquidity,
- Stock market liquidity and expected returns,
- Stock market liquidity risk and expected returns.

Figure 1 exhibits the key aspects studied concerning stock market liquidity, and also gives a quick aspect wise insight about the number of papers published and the highest count of the contribution of authors (number-wise and country-wise) and appearance of research papers in journals. It can be seen that the majority of the studies have been attentive toward evaluating the factors influencing stock market liquidity (250 papers), whereas a nominal number of studies have explored the dynamic relationship between stock market liquidity and expected returns (116 papers). Also, a handful of studies have been taken upon the measurement of stock market liquidity (46 papers) and analyzed the relationship between stock market liquidity risk and expected returns (27 papers). In addition, these aspects have been mainly studied by the authors from the United States and have been commonly published in the *Journal of Banking & Finance*.

STOCK MARKET LIQUIDITY				
	Measurement of Stock Market Liquidity	Factors influencing Stock Market Liquidity	Stock Market Liquidity and Expected Returns	Stock Market Liquidity Risk and Expected Returns
Number of Papers Published	46	250	116	27
Contribution of Authors - Number wise	03	03	02	02
Country wise Contribution of Authors	USA	USA	USA	USA
Appearance of Research Papers in Journals	1. International Review of Financial Analysis 2. Journal of Banking & Finance	1. Journal of Banking & Finance	1. Pacific-Basin Finance Journal	1. Journal of Banking & Finance

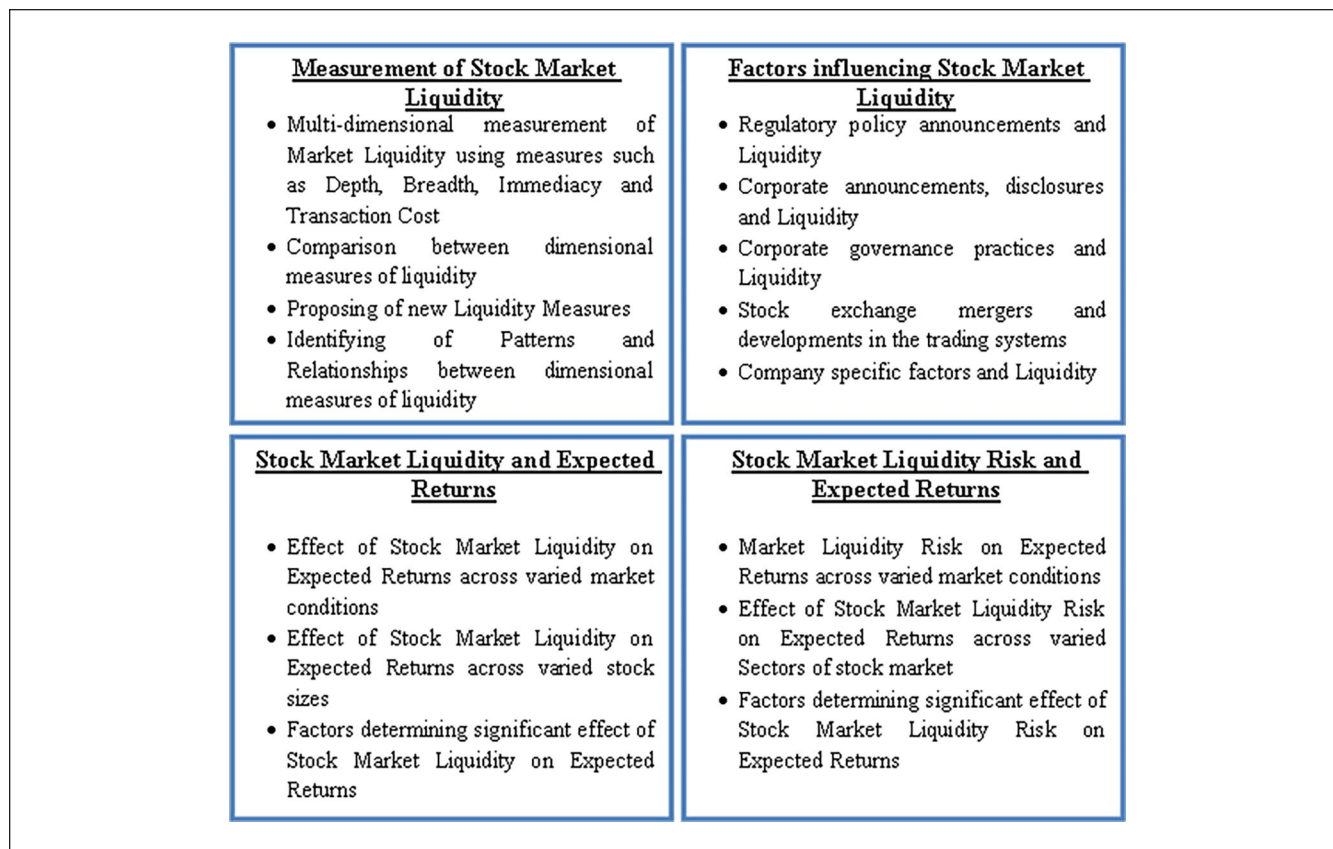
**Figure 1.** Key aspects studied concerning stock market liquidity.  
Source. Author's findings.

Furthermore, the subthemes studied (summarized in Figure 2) and the significant results that are drawn in the reviewed studies are highlighted below according to the above-identified key aspects.

**Measurement of stock market liquidity.** A liquid market is generally referred to as the market in which a large quantity is traded without any delay at lower transaction costs with minimum price impact. The previous literature proposes four main characteristics of liquidity, that is, trading quantity, execution time, transaction cost, and price impact. Thus, the reviewed studies have measured liquidity in the stock market by using a variety of liquidity measures that can fairly capture the key market liquidity characteristics, that is, depth (volume or quantity measure), breadth (price impact measure), immediacy (time or speed measure), and transaction costs (spread or transaction cost measure). Moreover, these measures were computed either based on intraday (high-frequency) data or daily, weekly, monthly, quarterly, yearly (low-frequency) data. Although measures based on high-frequency data have been mainly in practice, Goyenko et al. (2009) evidenced that the low-frequency measures can be fairly used over high-frequency ones to measure liquidity. In addition, Lee (2015) suggested that measures based on low-frequency data enable in studying liquidity over a long period and across different market structures.

The reviewed studies have tested and proposed the best performing measures of liquidity under different market systems. Spread and volume-related liquidity measures were used by Hallin et al. (2011) and evidenced that both the measures are negatively correlated and give identical information about market liquidity and thus can be used as complementary to the other. In the context of liquidity in developing markets, Marshall et al. (2013) found that Gibbs, Amihud, and Amivest measures prove to be effective measures, whereas in an emerging market, Będowska-Sójka and Echaust (2020) found that the Closing Quoted Spread measure based on daily data was the best performing liquidity measure during the periods of extreme liquidity. Furthermore, Będowska-Sójka (2018) made a comparison between different liquidity measures and concluded that the Amihud Illiquidity ratio evolves as the best transactional cost measure and Karstanje et al. (2013) proved that zero return measure is a very strong and reliable measure for determining the timing of liquidating the trading positions.

Besides this, the earlier research work has also proposed new liquidity measures that have been tested and proven as effective proxies to measure liquidity. Holden (2009) developed new spread measures, namely, Holden2 and Multi-Factor2 Model based on low-frequency data that perform better than the existing measures. Valenzuela et al. (2015) found a strong link between depth and volatility, and proposed a relative liquidity measure that captures the size and



**Figure 2.** Subthemes studied under each aspect identified concerning stock market liquidity. Source. Author’s findings.

depth in the limit orders and thereby forecasts the level of volatility which can be certainly used in designing optimal trading strategies. Z. Li et al. (2018) developed two bid-ask spread estimators based on daily high and low prices and evidenced their efficiency in accurate estimation of transaction costs across varied markets and periods. A new version of the Amihud Illiquidity measure that can be used exclusively in emerging markets was proposed by Kang and Zhang (2014). Also, a refined trading volume measure—namely, Mixture of Distribution Hypothesis (MDH) model—was developed by Darolles et al. (2015) because they were of the view that trading volume may not always provide accurate inferences about liquidity during high volatility. The MDH model facilitates in extracting that part of the volume which is exclusively affected by liquidity levels during high volatility.

Although, different measures of liquidity have been used and proposed in the literature, Chai et al. (2010) concluded that there is no best measure that can be used to measure the market liquidity because every type of measure captures different aspects of market liquidity in different market systems and conditions. Even Goyenko et al. (2009) suggest that a researcher should choose a liquidity measure depending on the objective of his study.

A handful of studies have even documented significant intraday behavior patterns and relationships between liquidity measures. Krishnan and Mishra (2013) used spread, volume, depth, and composite liquidity measures in the Indian stock market and found that demand for liquidity is high at the beginning and end of the trading session even though spread measures indicated higher transaction costs. Thus, study evidenced a positive relationship between volume and spread measures which was contradictory to an order-driven market but lacked empirical support. On the contrary, Kumar and Misra (2018) used depth and spread liquidity measures in the Indian context and observed a strong relationship between liquidity measures of individual stock and aggregate market which was attributed to a higher commonality among them. Regarding the energy sector, Sklavos et al. (2013) showed a positive interrelationship between depth, volume turnover, and breadth, and suggested liquidity persistence due to the presence of informed trading.

*Factors influencing stock market liquidity.* Researchers have shown a keen interest in analyzing the effect of different factors influencing liquidity of individual stocks and of the overall market, and have obtained significant results. The studies have revealed a significant impact of regulatory

policy announcements on liquidity. Fernández-Amador et al. (2013) found that an expansionary monetary policy announcement positively influenced stock market liquidity of small-sized stocks. Busch and Lehnert (2014) analyzed the effect of remedial measures taken for revival of the German economy from the 2008 crisis on stock liquidity levels and concluded that the measures in the form of expansionary monetary policy and imposition of short-selling bans in the stock market led to an improvement in stock liquidity, whereas the bank's guarantees given for firm's liabilities deteriorated the liquidity and such effects were more pronounced in case of low traded stocks. In addition, Hvozdyk and Rustanov (2016) found that the introduction of financial transaction tax improved market liquidity, whereas its actual implementation increased transaction cost and thereby lowered the liquidity levels. Concerning the emerging market, Reddy et al. (2017) studied and found that the Indian stock market liquidity is highly influenced by the policies announced by its government and financial institutions. On the contrary, Sensoy (2016) and Ekinci et al. (2019) documented that emerging market is very sensitive to the announcements made by developed economies. Their study revealed that announcements relating to monetary policy, interest rates, and gross domestic product (GDP) of the U.S. economy strongly determined liquidity of the Turkish stock market under study. In terms of macroeconomic variables, money supply, government expenditure, private borrowing, bank rate, short-term interest rate, and government borrowing were found to be the key determinants of market liquidity across different sectors of the stock market (Chowdhury et al., 2018). Also, Zheng and Su (2017) observed that global oil demand shocks cause a significant negative effect on the liquidity of the Chinese stock market.

Besides, market volatility has been identified as a strong determinant of stock liquidity (Bai & Qin, 2015), while Chung and Chuwonganant (2014) confirmed a similar effect even in the presence of other determinants of liquidity. Besides, Chan et al. (2013) and Ramos and Righi (2020) showed a positive impact of market-wide volatility on stock liquidity, whereas Beltran et al. (2009) found an insignificant effect of volatility on market liquidity which was mainly due to the existence of an efficient exchange trading system.

Another determining factor evaluated is trading activity by different types of investors. Jacoby and Zheng (2010) found that higher investor diversity results in a higher improvement in market liquidity. It is evident that the trading activity of institutional investors ensures stabilization in the economy during major catastrophic events (Chen et al., 2019). But even then Dang et al. (2019) found that institutional investor's trading in shock sensitive stocks has resulted in high illiquidity during the crisis of 2008. On the contrary, Pan et al. (2015) found that trading by institutional investors generates more stock liquidity as compared with the retail investors because they are well informed about the future trend of the market and use firm-specific information while

taking trading decisions. Additionally, Maher and Parikh (2013) stressed that huge buying by both domestic and foreign institutional traders result in higher market liquidity as compared with that of retail traders. Contrastingly, Ahn et al. (2014) evidenced that extensive participation by retail traders on account of low price efficiency improves market liquidity.

Studies (Debata et al., 2018) also spell out a positive influence of foreign investor's sentiments on the liquidity of emerging markets. A similar result was also observed by Jacoby and Zheng (2010) who concluded that the foreign investors foster transparency in the working of firms and thereby positively influence liquidity. Lee and Chung (2018) evidenced that foreign investors improve liquidity by reducing trading costs and creating more competition in the market, whereas Rhee and Wang (2009) concluded that foreign ownership of stocks negatively influences the future liquidity of the market.

The effects of stock exchange mergers and developments in the trading systems have been also analyzed as an influential factor of stock market liquidity. Teplova and Rodina (2016) evidenced that the market liquidity of stocks improves over a short period after the merger between the stock exchanges. Yang and Pangastuti (2016) documented that the stock exchange merger affects the liquidity of small-cap stocks over the other stocks, whereas Nielsson (2009) found that merger strongly affects stock liquidity of large stocks over the mid and small stocks. Studies (Chung & Chuwonganant, 2009; Yılmaz et al., 2015) have analyzed and found that technological upgradation and transparent order system at the stock exchanges also improve stock liquidity, whereas Hendershott and Moulton (2011) provided evidence that transparency on account of higher automation of trading floor induced traders to frame complex trading strategies which reduce immediacy in trading and thereby reduce market liquidity. Also, Anagnostidis and Fontaine (2020) demonstrated that automation of trading has amplified the use of algorithmic trading that is mainly based on complex and common strategies that were found to adversely influence trading during the stress periods.

Studies have also evidenced that the corporate announcements and disclosures enhance transparency about the prospects of the firm and thus contribute to improving stock liquidity. Siikanen et al. (2017) documented that in addition to scheduled announcements even non-scheduled announcements significantly improve stock liquidity on account of information leakages during the pre-announcement period. In terms of earnings announcements, So and Wang (2014) observed a significant decrease in stock liquidity before the earnings announcement due to increased holding costs as a result of higher uncertainty, while a similar liquidity effect was found by Levi and Zhang (2015) after earnings announcements on account of the heavy selling of stocks during the pre-earnings announcement. Besides, split announcements were also found to be effective in improving

stock liquidity as they signal positive prospects of the company (Huang et al., 2009; Lin et al., 2009). Pavabutr and Sirodom (2010) revealed that stock splits attract higher retail trading and thereby raised stock liquidity. Moreover, Hillert et al. (2016) showed that stock liquidity improved on account of announcements relating to share buybacks and evidenced that companies mainly formulate the buyback policies in confirmation with the liquidity levels for its securities in the market. Besides, disclosures relating to intangible assets and the adoption of relevant international reporting practices also contribute to accelerating stock liquidity (Gao et al., 2019; Labidi & Gajewski, 2019).

The previous studies have also evaluated the relevance of corporate governance in determining stock market liquidity. Ali et al. (2017) obtained a strong effect of corporate governance practices on boosting the liquidity of the Australian market. Lang and Maffett (2011) stated that transparent firms consistently have higher liquidity for their stocks even during the crisis. Alves et al. (2015) documented strong evidence that ownership structure and regular disclosures positively contribute to stock liquidity, whereas Foo and Zain (2010) found that predominance by independent directors on the Board ensures transparent functioning of an enterprise and thus improves stock liquidity.

In addition to the above, company-specific factors also have shown a significant effect on stock liquidity. Norvaišienė and Stankevičienė (2014) explored the markets of the Baltic countries and found that company size and return on assets improved stock liquidity, whereas financial leverage harmed the stock liquidity. Beaupain and Joliet (2013) evidenced a significant impact of financial performance indicators like profitability, investment intensity, and price-to-book ratio in upgrading market liquidity. Kuo et al. (2015) found that high selling pressure on account of credit rating downgrades of stocks lowered market liquidity.

*Stock market liquidity and expected returns.* Another interesting area that has been explored is the effect of market liquidity on stock returns. Shieh et al. (2012) found that any change in liquidity levels of stock results in a huge impact on stock returns. Lam and Tam (2011) concluded that liquidity is the most important factor influencing stock returns even after controlling other determinants of stock returns. A positive effect of lower liquidity was evidenced on expected stock returns by Asparouhova et al. (2010). Similar results were obtained by Chang et al. (2010) and Dinh (2017) while evaluating the liquidity of stocks across different sizes and by Baradarannia and Peat (2013) during the pre-crisis period. Furthermore, Hearn (2010, 2011) found that market liquidity plays an important role in determining stock returns mainly in less competitive stock markets as these markets are characterized to have a high cost of equity.

Furthermore, the effect of liquidity infused during selling stock was found to be more on expected stock returns than the one during buying a stock (Brennan et al., 2012). Also,

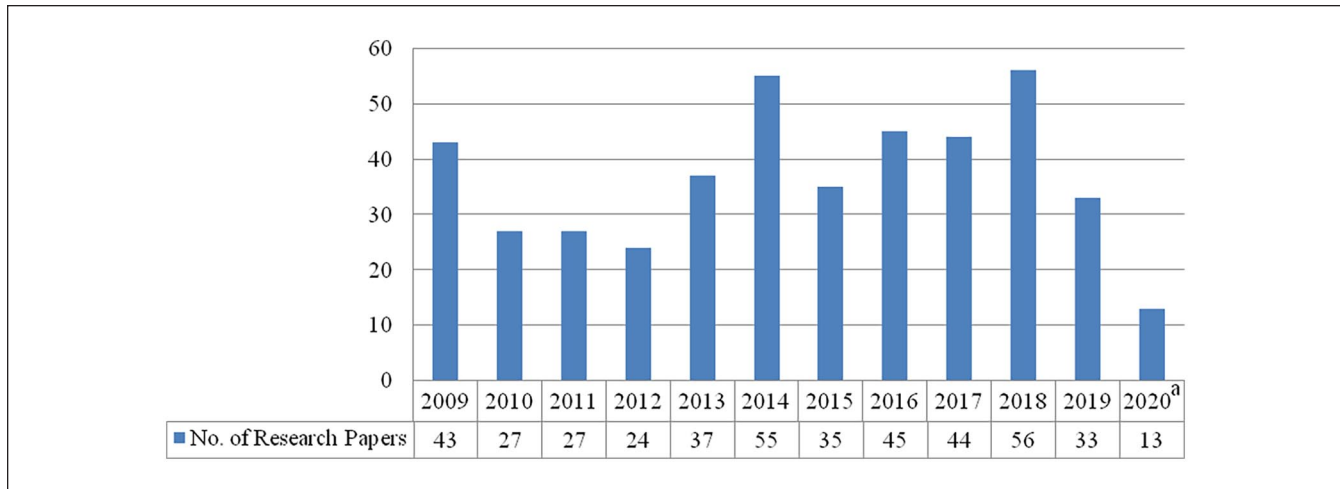
Loukil et al. (2010) found a positive effect of both present and past illiquidity on expected stock returns wherein the return of small size stocks was highly affected by illiquidity over some time. In addition, Arjoon et al. (2016) found that the presence of institutional ownership determines positive relationship between liquidity and stock returns, whereas Bradrania et al. (2015) proved that liquidity influences the expected returns since it crucially determines the relationship between expected returns and expected volatility. Besides, Wang and Chen (2012) developed and tested various asset pricing models to effectively obtain the relationship between liquidity and stock returns.

On the contrary, studies (Lischewski & Voronkova, 2012; Nguyen & Lo, 2013) found no empirical evidence supporting the effect of liquidity on expected stock returns. In frontier markets, Stereńczak et al. (2020) observed that liquidity does not affect returns because they are less globally integrated. Also, Gârleanu (2009) suggested that liquidity does not have any impact on stock returns because different traders employ different trading strategies according to their distinct trading objectives.

*Stock market liquidity risk and expected returns.* In addition to the level of stock market liquidity, market liquidity risk is also found to be an influencing factor of expected returns. The market liquidity risk has been favorably measured as the co-movement between stock and market liquidity, stock liquidity and market return, and market liquidity and stock return in related studies (Altay & Çalgıcı, 2019; Bradrania & Peat, 2014; K. H. Lee, 2011; Vu et al., 2015).

Bradrania and Peat (2014) found that liquidity affects expected returns due to the presence of market liquidity risk. The expected return showed the presence of liquidity premium which increased during high liquidity risk and thereby showed that such risk was priced in the assets. The study also suggested that the Liquidity-adjusted Capital Asset Pricing Model (LCAPM) is the most appropriate approach to identify liquidity risk premium in returns. Furthermore, Vu et al. (2015) used the LCAPM approach and found that liquidity risk is higher in the bearish market which in turn positively affected the stock returns even after controlling the other factors affecting the returns. But during the financial crisis of 2008, Dang and Nguyen (2020) evidenced a negative effect of liquidity risk on stock returns across diverse international markets. Similarly, Nneji (2015) conducted sectoral analysis and found that liquidity risk highly influenced stock prices and thereby any hike in liquidity risk would increase the possibility for a stock market crash.

Chiang and Zheng (2015) found that the market illiquidity risk positively affects the excess stock returns in G7 countries. The results of the portfolio analysis indicate that the effect of market illiquidity risk is more pronounced on the returns of large, growth, liquid, and low-risk stocks. Even Foran et al. (2015) found a positive cross-sectional effect of market liquidity risk on U.K. equity stock returns, whereas stock liquidity



**Figure 3.** Research papers published—Year wise.

Source. Author's findings.

<sup>a</sup>Includes articles published up to April 2020.

risk had a negative effect. Using principal components analysis, the study also obtained common market-specific liquidity risk factors affecting the liquidity across the stocks thereby justifying a strong effect on stock returns. K. H. Lee (2011) found that international portfolio returns are also determined by market liquidity risks in addition to market risks and that this result varies across different economies.

Liang and Wei (2012) found that the premium in the prices of stocks of developed countries is due to the presence of higher market liquidity risk of their respective countries. It was also found that this risk is higher in those countries where there are large company governing boards and more insider trading activities. Lin et al. (2014) affirmed that when prices react slowly to market-wide information, the investors refrain from trading in such stocks and their returns rise on account of liquidity risk of the market, whereas Cao and Petrsek (2014) concluded that the risk-averse investors exert a huge selling pressure during low liquidity conditions and thereby lead to a negative relationship between liquidity risk and returns. Also, the study suggested that concentrated ownership is beneficial in lowering liquidity risk because such investors do not panic during the crisis. On the contrary, Sensoy (2017) concluded that highly concentrated ownership in stocks, especially by institutional investors, contributes to high liquidity risk.

### Quantitative Analysis of the Literature on Stock Market Liquidity

This section presents a quantitative analysis of the 439 reviewed research articles based on

- number of research papers published—year wise,
- contribution of authors—number wise,

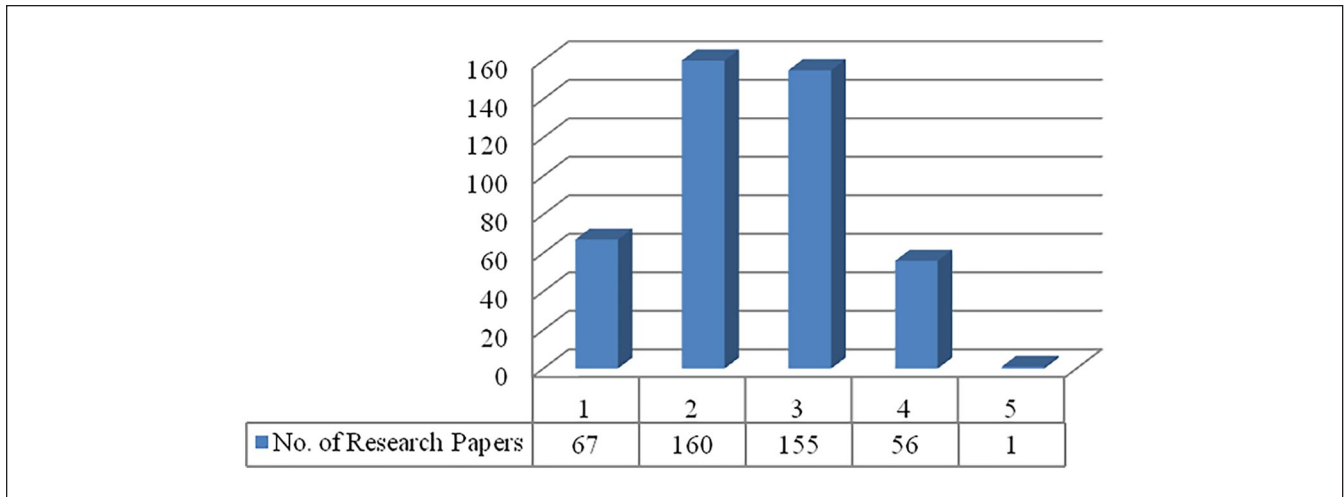
- country-wise contribution of authors,
- appearance of research papers in journals.

*Analysis based on number of research papers published—Year wise.* It was observed that in the recent past years, many research works have been carried out in the area of stock market liquidity. In our sample, the highest number of 56 research papers has been published in the year 2018 followed by 55 research papers in the year 2014, 45 research papers in the year 2016, 44 research papers in the year 2017, 43 research papers in the year 2009, 37 research papers in the year 2013, 35 research papers in the year 2015, 33 research papers in the year 2019, 27 research papers each in the years 2010 and 2011, 24 research papers in the year 2012, and 13 research papers up to April 2020 (Figure 3).

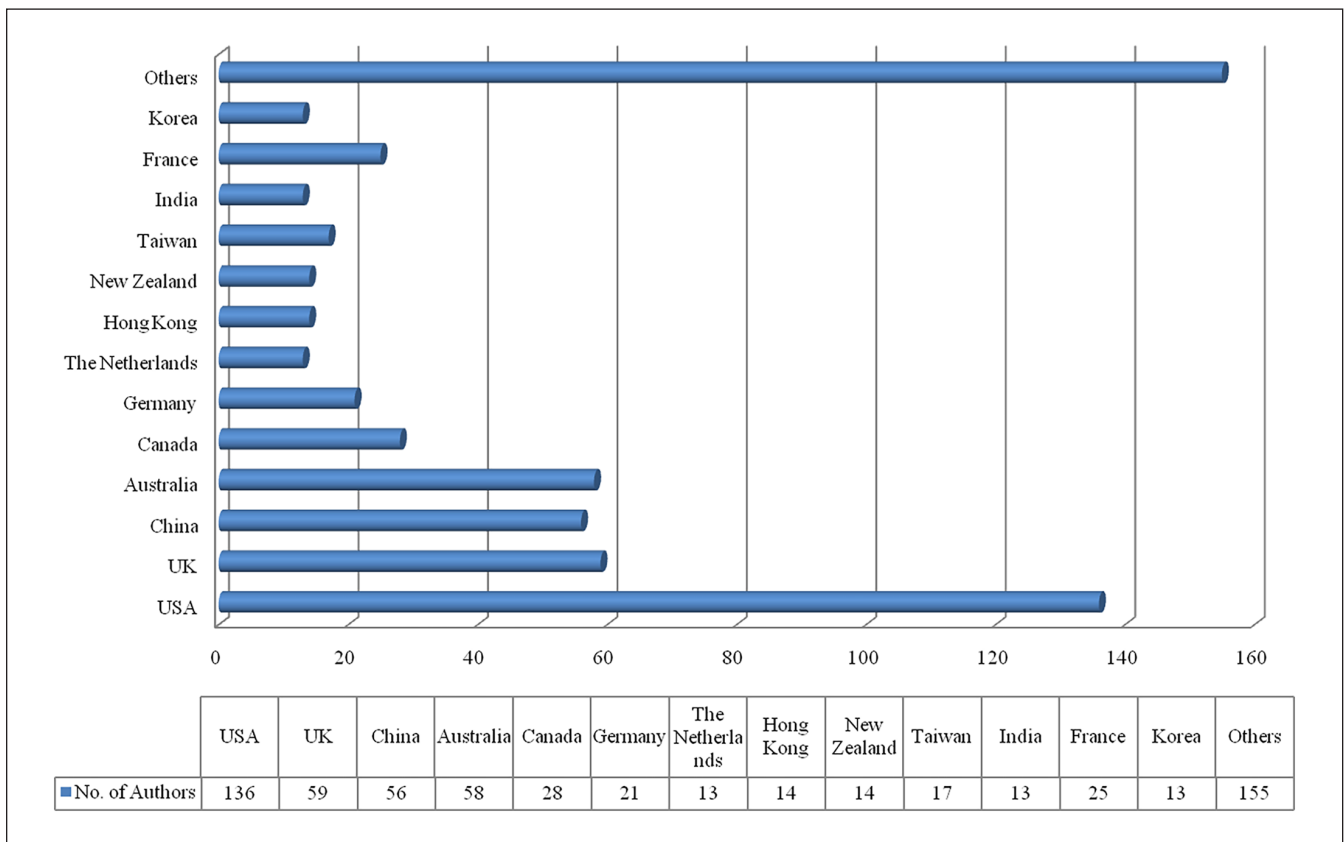
*Analysis based on contribution of authors—Number wise.* Figure 4 depicts that a group of two authors has published 160 research papers, whereas 155 research papers are published by a group of three authors, 67 research papers by a single author, and 56 research papers by a group of four authors. Moreover, only one paper has been authored by five authors.

*Analysis based on country-wise contribution of authors.* Figure 5 depicts the authors from different countries who have actively contributed to the research works on stock market liquidity. A total of 136 authors from the United States have been the strongest contributors to the studies on stock market liquidity. This is followed by 59 authors from the United Kingdom, 58 authors from Australia, 56 authors from China, and 28 authors from Canada, respectively. Also, there have been interesting contributions from countries like France (25 authors), Germany (21 authors), Taiwan (17 authors), Hong





**Figure 4.** Contribution of authors—Number wise.  
Source. Author's findings.



**Figure 5.** Country-wise contribution of authors.  
Source. Author's findings.

Kong and New Zealand (14 authors each), and the Netherlands, Korea, and India (13 authors each). It is also seen that quite a few authors are emerging as contributors in this research area from countries like Tunisia, Switzerland, Luxembourg, Pakistan, Belgium, Singapore, Israel, Czech

Republic, Nigeria, Indonesia, Hungary, Slovakia, Poland, Vietnam, Trinidad, Norway, Austria, Finland, Portugal, Greece, Turkey, Lithuania, Ireland, Italy, Palestine, Colombia, Romania, Spain, Thailand, South Africa, Russia, Saudi Arabia, Malaysia, South Korea, Cyprus, Macau, Denmark,

Japan, Chile, United Arab Emirates, Brazil, Latvia, and Egypt.

*Analysis based on appearance of research papers in journals.* By analyzing the selected research papers on stock market liquidity and the different journals in which they were published, it was found that nearly 42 papers were published in the *Journal of Banking & Finance* and 40 papers in the *Journal of Financial Markets*. This was followed by 34 research papers in *International Review of Financial Analysis*, 33 research papers in *Pacific-Basin Finance Journal*, 28 research papers in *Journal of Financial Economics*, 23 research papers each in *Journal of International Financial Markets, Institutions & Money* and *Finance Research Letters*, and 20 research papers in *Journal of Empirical Finance*. The other research papers were published in the journals, namely, *Research on International Business and Finance* (17), *International Review of Economics and Finance* (15), *Emerging Markets Review* (14), *Journal of Corporate Finance* (12), *Economic Modelling* (10), *North American Journal of Economics and Finance* (10), and *Physica A* (10) (Figure 6).

## Conclusion

The present study reviews the literature on stock market liquidity to identify the key aspects studied after the financial crisis in the year 2008 and presents a quantitative and qualitative analysis of this literature. The study uses 439 research articles published over 63 reputed journals which were retrieved from the ScienceDirect database during the study period.

The study identifies four main aspects in which the reviewed studies on stock market liquidity have been performed, namely, measurement of liquidity, factors influencing liquidity, the relationship between stock market liquidity and expected return and market liquidity risk, and its relationship with expected returns. Among these aspects, it was observed that the majority of the research works have focused on exploring and identifying various factors influencing stock market liquidity. These studies reveal empirical evidence that regulatory policy announcements, trading activities by different investors, upgradation of trading systems at stock exchanges, and corporate announcements are the most influencing factors of stock market liquidity followed by corporate governance, market volatility, and company-specific factors.

The reviewed studies have quantified liquidity of the stock market by using different liquidity measures based on depth, breadth, transaction costs, and immediacy, and thereby indicate the multidimensional quality of liquidity. The review also indicates that returns of security are highly influenced by the level of stock market liquidity and the magnitude of stock market liquidity risk. From the quantitative analysis, it is found that the research work on stock market liquidity has

been rising in recent years and has been mainly initiated by authors from developed economies like the United States, the United Kingdom, and Australia, and was popularly published in the *Journal of Banking & Finance* and *Journal of Financial Markets* (summarized in Figure 7).

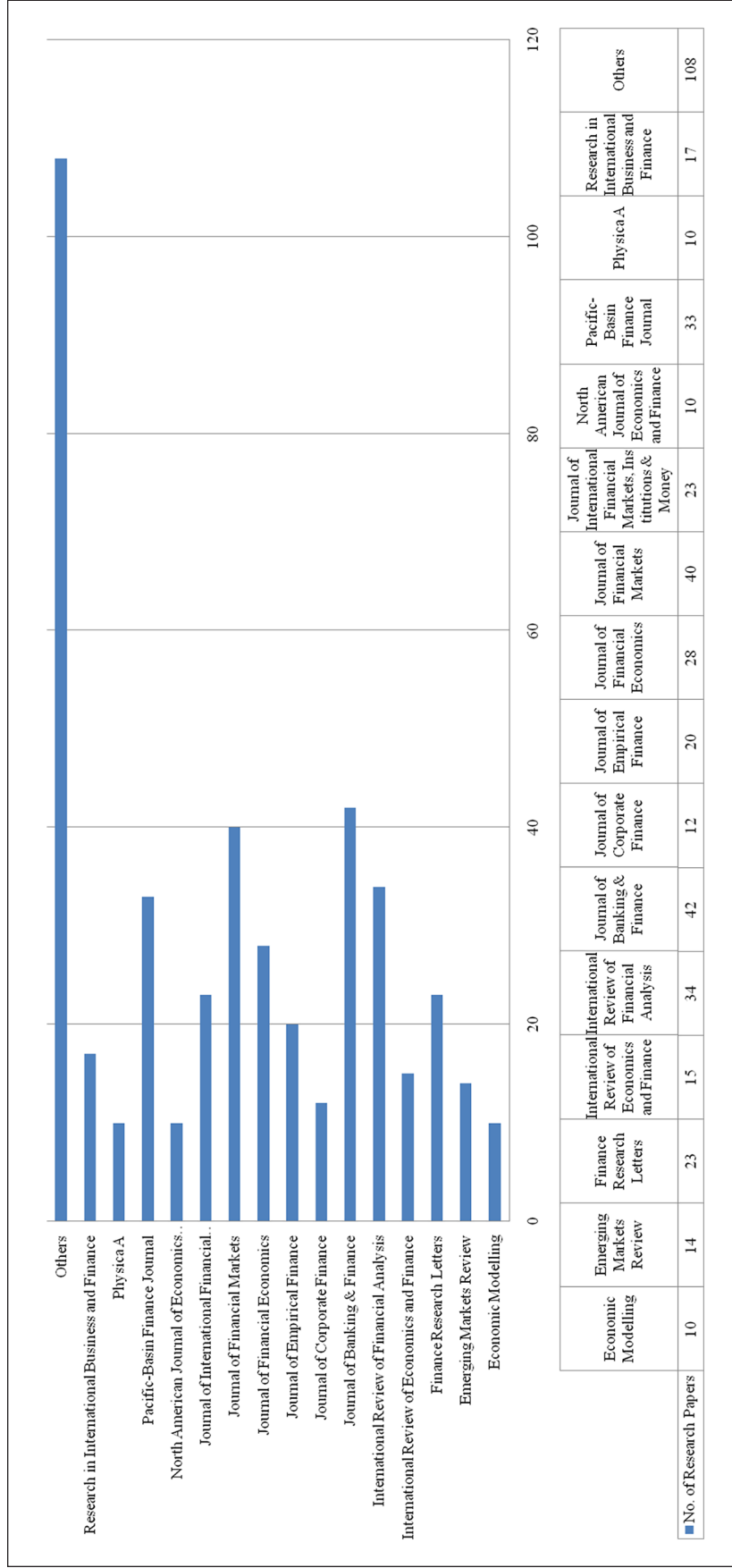
Based on the above findings, the study concludes that although there is a wide range of empirical works in the area of stock market liquidity, still there is ample scope for undertaking similar studies. The four aspects highlighted by this review are vital to comprehensively perceive the essence and constituents of market liquidity which will further influence its effective implementation. Furthermore, market liquidity is a time-varying component which makes it imperative to persistently refine the existing contributions regarding the contexts of different market structures and conditions. Besides, a handful of studies (Chai et al., 2010; Kang & Zhang, 2014; Krishnan & Mishra, 2013) have extensively evaluated all the dimensional liquidity measures, and thus future studies can emphasize using these measures and also elaborate on the interrelationships between them. Even the relationship between stock market liquidity and expected returns can be evaluated across the liquidity dimensions in different markets at different time intervals for facilitating accurate inferences and estimations. Besides, studies can be also undertaken to evaluate these aspects of liquidity in emerging stock markets because these markets have higher growth intensity and offer attractive investment opportunities despite being susceptible to global shocks. Also, the inter-linkages between the liquidity of emerging markets with the global stock markets can be further evaluated.

## Managerial Implications

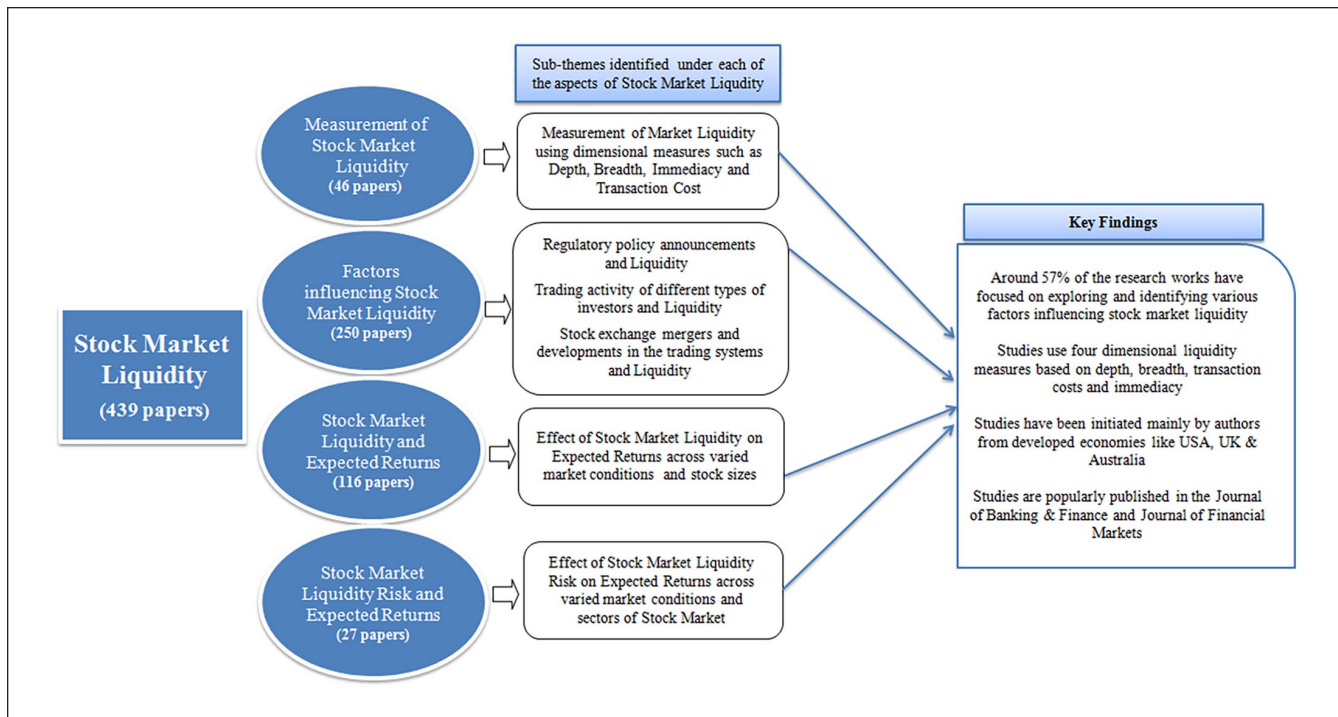
The findings of the current study are useful to market regulators, corporate firms, and investors. Market liquidity is an integral part of the equity market as it ensures the tradability of securities and stability of the market, and hence the consistent analysis of market liquidity is of utmost importance. The current findings highlight multidimensional measures for liquidity measurement which will enable the market regulators, corporate firms, and investors to accurately measure liquidity and draw inferences. The liquidity determinants highlighted in the findings can assist in regulatory and corporate policy decisions, especially during market downturns. Market liquidity and market liquidity risk strongly affect security prices and thus an investor can consider them as one of the factors while formulating their trading strategies and use them as an important attribute for portfolio diversification.

## Limitations of the Study

The current review of literature suffers from the limitation that it considers only the literature on stock market liquidity published over a short duration. Hence, the present study can



**Figure 6.** Appearance of research papers in journals.  
Source: Author's findings.



**Figure 7.** Summarized view of the key findings drawn in the area of stock market liquidity.

Source. Author's findings.

be further extended to review the studies on liquidity in different financial markets over a long sample period.

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