

A REGULATORY APPRAISAL OF THE SAUDI STOCK EXCHANGE: A STUDY BASED ON SECONDARY DATA

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Abstract

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This paper aims to appraise the Saudi Stock Exchange (Tadawul) with reference to various indicators like performance, structure, market size, share price index, etc. This study is motivated from the reform initiatives the Saudi Stock Exchange passes through in recent years because of the implantation of the nationwide strategy, Vision 2030 (Kumar, 2023). Using a published dataset, this study undertakes an appraisal mindset to highlight the performance of the market over 35 years' time (from 1985 to 2019). The analysis follows various descriptive statistics reflecting market trends over the periods across selected parameters. The findings of the study imply that the market is improving in every dimension supporting the reform initiatives (Alsuhaibani et al., 2023). The incremental contribution of the current study is to inform policymakers about the response of the market towards various policy interventions. However, the study warrants careful attention of market regulators to observe the gradual changes so that it may receive policy attention as necessary.

Keywords: Saudi Stock Exchange, Tadawul, Vision 2030, Investors, Saudi Arabia

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1. INTRODUCTION

The stock exchange in Saudi Arabia has undergone various reform activities to improve the market from different dimensions. One of the important goals behind the reforms is to attract potential investors to the stock market while providing desirable protection to their investments through various infrastructural developments. Saudi Tadawul Group, a holding company (Al-Nefaie & Aldhyani, 2022), has

been formed to solidify the infrastructure of the Saudi Exchange, bringing four subsidiary companies under the same umbrella: 1) the Exchange itself, 2) Edaa (the securities depository centre), 3) Muqassa (the securities clearing centre), and 4) Wamid (a newly created technology services company). This integration is important to bring strategic synergy, which drives the market to operate efficiently, deliver high-quality services across business lines, increase

competitiveness, and align the capital market with the rapid growth of emerging markets.

Vision 2030 focuses on making the country a global market leader with a sophisticated capital market (Kumar, 2023). The main themes of Vision 2030 are building a thriving economy, a vibrant society, and an ambitious nation making it a trusted hub of global investment. To ensure trust and confidence among investors, the country formed the Saudi Stock Exchange (Tadawul) as a joint stock company in 2007 and started regulating the securities exchange. Tadawul becomes the largest and most liquid stock market not only in the Gulf Cooperation Council (GCC) but in the whole Middle East and North Africa (MENA) region (Aljarba, 2020). Saudi Tadawul Group becomes one of the top ten largest markets in the world and hopes to move into one of the top five by 2030. Keeping this target in mind, the board of directors of Tadawul unveiled in 2017 a five-year strategic plan for the period 2018-2022 with 29 strategic initiatives under the seven strategic pillars. The plan is multifaceted, encompassing expansion into a wider range of financial instruments and markets. It also envisages improving market infrastructure and efficiency, strengthening investor protection, and enhancing market information.

The activities of Tadawul interface with many of the goals of Vision 2030. To help achieve the objectives of Vision 2030, several executive programmes have been developed. One of such programmes is the Financial Sector Development Programme, whose primary goal is to develop a diversified and effective financial services sector underpinned by the three pillars: 1) developing an advanced capital market, 2) enabling financial institutions to support private sector growth, and 3) promoting and enabling financial planning. Several sub-objectives of the first pillar align with the mandate of Tadawul. One sub-objective is to facilitate the raising of capital to support the process of privatisation, which will open new opportunities for investors. Another sub-objective is to create an efficient platform to encourage investment and diversify the investor base by attracting more foreign investors, increasing the efficiency of trading, and promoting new asset classes. Another sub-objective is to provide a safe and transparent infrastructure, including an upgrade of the post-trade and risk management models. To support the functionalities of Tadawul, the Capital Market Authority (CMA), the financial regulator of the Saudi government, has also undertaken supportive policy for the development of the capital market in the country.

Given the vision of the Kingdom of Saudi Arabia 2030, the CMA and the Tadawul carried out several major developments in the stock market and confirmed several achievements to join the Financial Times Stock Exchange (FTSE) Emerging Markets Index announced in October 2017 (Almutiri, 2020). In August 2019, the Saudi Stock Exchange and Morgan Stanley Capital International (MSCI) completed the inclusion of the Saudi stock market into the MSCI Emerging Market Index (Alshammari & Goto, 2022). Such inclusion of Saudi stocks in popular emerging market indices attracts investors from a wider region and gives momentum to stock market operations. This renewed attention towards

the Tadawul confirms its wider acceptability and endorses the initiatives taken by the country to strengthen the market. To achieve Vision 2030, the development of the Tadawul becomes a priority issue for the Kingdom of Saudi Arabia. Regulators have taken every effort to position Tadawul as one of the top exchanges in the world by expanding locally and globally. It supports the exchange with various types of infrastructure. The level of development of the exchange is exposed through various parameters. Considering the policy attention and priority of the Saudi government in transforming the capital market of the country, the time has come to assess the current state of the Tadawul. Thus, the researchers have become motivated to shed light on the market addressing the following research questions:

RQ1: How has the Tadawul been moving over the years?

RQ2: Does the policy reform initiative reflect market indicators?

RQ3: Does it confirm the goal set under Vision 2030?

This study applies quantitative research method based on secondary data collected from Tadawul and SAMA Annual Statistics, 2019. Analyzing the data, it produces evidential reflections against each of the taken research questions. As previous studies rarely undertook similar research questions, this study finds it a potential research gap and conducts a baseline study for future references. The findings of the study update the regulators and policymakers regarding the state of the market in terms of various indicators chosen for the study through various descriptive statistics. However, it doesn't form any hypothesis to draw any inference which is left for further research.

The remaining part of the paper is organised as follows. Section 2 presents the literature review of the study, which is followed by the research methodology in Section 3. Later, the results are presented in Section 4, with the discussions in Section 5. Finally, Section 6 presents the conclusion.

2. LITERATURE REVIEW

Tadawul is the only stock market in Saudi Arabia. Tadawul becomes one of the largest liquid stock exchanges globally, and it has achieved a total market capitalization of 12,178 trillion Saudi Arabian riyal (SAR) in the week ending May 12, 2022 (Malibari et al., 2022). The main market index of the Saudi Stock Exchange is the Tadawul All Share Index (TASI), which consists of 176 companies spreading across 20 sectors or industry groups (Tlemsani et al., 2020). The origins of the Tadawul dates back to the 1970s when the market was primarily an informal one and only began to receive formal recognition in the 1980s once the government put in place formal measures to establish the Saudi Stock Exchange (SSE). This then ushered in further measures designed to aid the functioning and regulation of the Tadawul, namely the formation of a committee consisting of the Ministry of Finance and National Economy and the Ministry of Commerce and SAMA in 1984 with the explicit remit to regulate and monitor capital market activities (Al-Faryan, 2020). In 2003, Capital Market Law No. M/30 provided the legal framework

for the establishment of the CMA as the main regulator and supervisor of capital market activities. Following these changes, in 2007 the Council of Ministers approved the formation of the Saudi Stock Exchange Company and, in compliance with Article 20 of the Capital Market Law, established Tadawul as a joint stock company (Tadawul, 2017). These initiatives were pivotal in helping policymakers push towards realising their objectives, which included the opening of the capital market as a first step towards engineering market efficiency and transparency. At the same time, it encourages public participation in financial markets as a way of allowing net savings to flow to well-performing firms, which ultimately paved

the way for the privatisation of state-owned enterprises.

Table 1 below displays annual returns for the Saudi stock market and other market trends for the period 2000–2019. It reports the number of listed firms, market capitalization, the value of traded stocks, the turnover ratio, and the value of the market index. Overall, the stock market trends point to a gradual pace of change in the development of the stock market owing to a string of macroeconomic reform measures designed to diversify the Saudi economy away from being an oil-dependent exporting economy and improvements to the overall financial system.

Table 1. Saudi stock market trends at a glance

Year	No. of listed firms	Market capitalization (in USD million)	Stocks traded (in USD million)	Turnover ratio (%)	Market capitalization to GDP (%)	GDP (in USD million)	TASI
2000	75	68,000.00	17,411.44	25.61	35.88	189,514.93	2,258.29
2001	76	73,333.33	22,293.68	30.40	39.83	184,137.64	2,430.11
2002	68	74,933.33	35,676.55	47.61	39.52	189,605.96	2,518.08
2003	70	157,333.33	159,069.34	101.10	72.90	215,807.73	4,437.58
2004	73	306,400.00	473,029.08	154.38	118.42	258,742.13	8,206.23
2005	77	650,133.33	1,103,652.19	169.76	198.09	328,205.60	16,712.64
2006	86	326,933.33	1,403,160.36	429.19	86.86	376,397.60	7,933.29
2007	111	518,933.33	682,056.67	131.43	124.84	415,687.20	11,038.66
2008	127	246,541.33	523,452.27	212.32	47.43	519,796.80	4,802.99
2009	135	318,802.67	337,069.87	105.73	74.30	429,097.85	6,121.76
2010	146	353,437.33	202,449.20	57.28	66.91	528,207.03	6,620.75
2011	150	338,890.67	293,022.94	86.47	50.49	671,238.84	6,417.73
2012	158	373,424.00	514,484.77	137.77	50.74	735,974.84	6,801.22
2013	163	467,440.00	365,244.19	78.14	62.61	746,647.13	8,535.60
2014	169	483,437.33	572,403.11	118.40	63.92	756,350.35	8,333.30
2015	171	421,066.67	442,832.51	105.17	64.36	654,269.90	6,911.76
2016	176	448,533.33	308,529.57	68.79	69.55	644,935.54	7,210.43
2017	180	450,560.00	223,006.74	49.50	65.43	688,586.24	7,226.32
2018	190	495,720.00	232,231.91	46.85	63.03	786,521.83	7,826.73
2019	199	2,406,784.00	234,703.75	9.75	303.52	792,966.84	8,389.23

Note: Table 1 above displays annual returns for the Saudi stock market and other market trends for the period 2000–2019.

Source: Tadawul for number of listed firms, market capitalization, stocks traded, TASI; General Authority for Statistics for gross domestic product (GDP); Authors' calculation for turnover ratio (turnover ratio (%) = (Stocks traded (in USD million) / market capitalization (in USD million)) * 100, and market capitalization to GDP (market capitalization to GDP (%) = (market capitalization (in USD million) / GDP (in USD million)) * 100).

On December 11, 2019, Aramco shares commenced trading on the Saudi Stock Exchange. The shares rose to SAR 35.2, giving it a market capitalization of about \$1.88 trillion, while by the end of 2019, the combined Saudi stock market had a market capitalization of approximately \$2,406,784 million. In the financial market, reforms were directed not only at increasing market transparency but also at improving information reporting standards, standards of good practice, the imposition of disclosure rules, and crucially, internationally accepted corporate governance norms. Such reforms were primarily focused on promoting stock market competitiveness and efficiency, increasing financial market intermediation, and encouraging domestic and foreign investor participation (Nagendrakumar et al., 2022). These policy initiatives have resulted in the growth of the number of companies listed, from 75 in 2000 to 127 in 2008 and 176 by the close of 2016, with a combined market capitalization of approximately \$448,533 million. At the end of 2016, market capitalization as a share of gross domestic product (GDP) amounted to 69.55%, while the TASI index ended at 7,210.43 points in 2016. With regard to the liquidity of the market, the turnover ratio has,

over time, fluctuated widely, from 30.40% in 2001 to 101.10% in 2003 to 429.19% in 2006 to 68.79% by the end of 2016. Overall, as shown in Table 1, all market performance indicators, such as market capitalization, the value of stocks traded, turnover ratio, and the market index value, varied widely over the period. It is apparent that the Tadawul experienced a sudden correction in market activity, with the market declining, largely as a result of the fallout from the global banking and financial crisis. And as the market data reveals, since 2008 Tadawul has slowly recovered, attracting new investors and newly listed companies, which, in turn, have used the market as a successful mechanism to raise new capital.

None of the existing studies cover the main themes of the current study, however, a handful of researches have addressed the performance of Tadawul (Al-Faryan & Dockery, 2021; Jarrah & Derbali, 2023) and its connection with Vision 2030 (Moshashai et al., 2020). A stock market undoubtedly plays an important role in the growth of both developed and emerging economies. Several studies (Choi et al., 1999; Duca, 2007; Kaplan, 2008; Yildirim et al., 2020) have been put forward supporting the role of stock market performance

(i.e., stock prices) as a leading indicator for economic growth. On the contrary, some studies (Binswanger, 2000; Mao & Wu, 2007) have found no relationship between stock market returns and economic growth. In the Saudi Arabian context, one study (Al Rasasi et al., 2020) finds the effect of stock market fluctuations on the demand for money. A few other studies (Alshogheathri, 2011; Kalyanaraman & Al Tuwajri, 2014; Mohanty et al., 2018) attempt to assess the impact of macroeconomic developments on the stock market. In summary, stock market operations become a centre for economic growth and development, ensuring sound financial infrastructure for the development of an economy (Lagasio, 2021). Under Vision 2030, Saudi Arabia is targeting to develop its business sector, reducing its overreliance on the oil sector, and thus, the development of the Tadawul receives special attention which is the major motivation of the current study.

Among global investors seeking diversification opportunities in differentiated markets, there are growing interests in Saudi stock markets as Saudi Arabia has opened its stock markets to foreign investors in recent years (Alshammari & Goto, 2022). Policies geared towards financial sector liberalisation have a direct and positive influence on stock market growth (El-Wassal, 2013). The regulators' role in companies' growth and development is key to advocating developments in the capital market. In Saudi Arabia, efforts are now being made to provide efficient support through regulators to foster reforms in the financial sector (Alawi, 2019). Equity market liberalisation improved capital inflows, and advancement in technology has supported investors to invest internationally (Batten & Kearney, 2006; Bugar et al., 2022; Cevik et al., 2022; Kearney & Lucey, 2004). The integration of stock markets has emerged as a significant topic in the field of finance literature in recent years and has garnered widespread currency as a result of the high value it holds for the parties concerned. This integration may result in significant economic development across the economy, an improvement in the allocation of capital, a reduction in expenses associated with capital, and an increase in the efficiency of risk sharing (Gkikas et al., 2022). Integration of equity markets will help improve capital flows and reduce financial uncertainty

(Caporale et al., 2022; Robiyanto et al., 2016). When the financial markets get more integrated, there will be less diversification benefit from cross-border investment (Robiyanto et al., 2023), which strengthens the operational efficiency of stock markets. The existing literatures on Tadawul categorically confirms the movement of the market in positive directions through the absorption of reform initiatives, however, such studies don't provide evidential empirics covering time series data. This study takes the initiative to fill up the gaps by enriching extant body of literature.

3. RESEARCH METHODOLOGY

This study aims to analyse the performance of the Tadawul based on information available from secondary data sources. It also plans to confirm the impact of policy measures taken to improve the market in different time periods. As the performance of stock exchanges can be measured from different perspectives, this study applies a quantitative research method based on secondary data collected from Tadawul and SAMA Annual Statistics, 2019, and this study identifies a few parameters with reference to which data has been collected. It applies the following step-by-step processes to generate materials in support of the research questions taken for study.

Step 1: Finalizing research questions.

Step 2: Conducting a literature review.

Step 3: Selection of key indicators and data sources.

Step 4: Capturing data and analysis.

Step 5: Presenting findings, limitations of the study and opportunity for future research.

Research questions are identified and presented in the introduction section. Under Vision 2030, the country plans to develop the Tadawul as one of the top exchanges in the world which becomes a national priority. Attracting investors, even from outside the country, becomes a prime focus for market regulators. The literature review section generates evidence in support of the research questions. Keeping the focus of the study on the goals identified this study identifies key indicators and data sources as summarised in Table 2 below.

Table 2. Data used in the study, including periods and sources

No.	Areas	Periods	Sources
1	Structure and characteristics of the Saudi stock market	2008-2014	Authors' analysis, CMA, Tadawul and Mubasher
2	Number of registered investors and portfolios in the Saudi stock market	2005-2019	SAMA Annual Statistics 2019
3	Shares purchased and sold	2005-2019	SAMA Annual Statistics 2019
4	Number of shares traded by sectors	1985-2019	SAMA Annual Statistics 2019
5	Value of shares traded by sectors	1985-2019	SAMA Annual Statistics 2019
6	Number of transactions made by sectors	1985-2019	SAMA Annual Statistics 2019
7	Share Price Index by sectors	1985-2019	SAMA Annual Statistics 2019

Data is captured with reference to the time periods mentioned above, conveniently based on accessibility and availability. Different time periods for different areas are not a problem, as the study doesn't apply any inferential analysis. The principal aim is to show the trends over the years across selected indicators as reflected in numbers, frequencies, indices, etc.

Thus, we apply descriptive statistics to highlight the market trends across different years, which helps us understand the movement of the market. The positivist approach is taken as an ontological belief where it is assumed that reality is measurable and encompasses only what one can directly observe (Tashakkori et al., 2021). From this market trend, we can also opine on the merits of

various market interventions undertaken to improve the market's operation. Other studies may also apply various inferential statistical tools with various qualitative methods like case studies, in-depth interviews, etc. Whether the market is successful in achieving the strategic goal of the nation to the satisfaction of investors is our prime focus of this study, and the results of our analysis are presented in the next section.

4. RESULTS

We have developed this section in line with the objectives of the study. Based on the collected data, we have used descriptive statistics to inform potential readers about the performance of Tadawul with reference to different time periods. We appraise the performance of the market in terms of its depth and breadth, paying particular attention to investors' perspectives.

4.1. Market performance and structure

We address these issues by constructing a sample of a total of 169 firms with a share listing presence on the Saudi stock market for the period December 2008 to December 2014. It covers firms that are known to be sensitive to issues of corporate governance in Saudi Arabia. We use annual data on ownership concentration and other variables, which were gathered from Tadawul. Transparency and accuracy in information remain a major concern to researchers, as they are suspicious about the governance system, information asymmetry level, and market efficiency in emerging markets (Al-Faryan & Dockery, 2021; Farooq & Ahmed, 2014; Farooq & Hamouda, 2016). A common consensus is that the performance of stocks in the market is

highly influenced by the quality of information (Gangadharan & Padmakumari, 2023) and the Tadawul has been successful in ensuring a sound information environment through various reform (regulatory) initiatives.

We focus on ownership data based on ownership stakes of 5% or more in any firm, though there are a few firms where no shareholder had more than a 5% equity stake. We classified firms into four categories based on ownership stake: 1) government-owned, 2) family-owned, 3) foreign-owned, 4) dispersed ownership (Al-Faryan & Dockery, 2017). Following Berle and Means (1932), we took a 20% equity ownership stake to be the level at which an investor would have enough equity in a particular firm to render control and then proceeded to classify them as government, family, foreign, or dispersed ownership firms (Al-Faryan, 2024; Al-Faryan, 2021; Al-Faryan & Dockery, 2017). In their study, Morck et al. (1988) took the range of 20–30% as being useful for effective and meaningful control. In this context, dispersed ownership means that the majority of shares are owned by multiple, small shareholders, i.e., firms with no ownership majority exceeding 20%. Ownership structure influences company performance as a mechanism to increase a company's efficiency in corporate governance. Ownership concentration offers investors the motivation and ability to monitor and control the management directly. In a study, Alawi (2019) observes that there is a significant relationship between financial performance and ownership concentration. High ownership concentration leads to inadequate information disclosure (Leuz et al., 2009), resulting in differential treatment for investors. This study also echoes the same conclusion.

Table 3. The mean structure and characteristics of the Saudi Stock Exchange

Variables	Government	Family	Foreign	Dispersed
Number of listed firms	28	31	19	119
Return on assets (ROA)	7.96	7.93	-1.77	2.74
Return on equity (ROE)	13.85	14.32	-3.13	1.10
Stock return	0.46	0.88	2.59	0.64
Tobin's Q	1.30	1.68	2.43	2.00
Ownership concentration	46.40	40.79	32.91	32.54
Capitalization (million SAR)	33,657.18	8,974.73	6,411.37	3,834.41
Board size	8.54	8.14	9.03	8.43
Board composition (%)	49.02	48.51	45.19	51.26
Board independent	4.22	3.95	4.10	4.29
Director incentives (SAR)	3,040,719	2,952,212	1,734,584	2,066,962
Chief executive officer (CEO) and top executive pay (SAR)	3,800,000	7,894,032	11,300,000	6,205,604
CEO ownership (%)	0.017	4.23	0.013	0.41
CEO age	52.27	52.34	48.34	50.88
CEO tenure	5.40	11.21	3.24	5.14
CEO turnover	0.14	0.11	0.23	0.21
No CEO turnover	23	18	24	136
CEO turnover at firms	82.14%	58.06%	126.32%	114.29%

Note: The table presents the mean structure and characteristics of the Saudi Stock Exchange during the seven years. The number of firms was 169 during the period from 2008 to 2014. The total number of firms is not taken into account in the analysis, which is 197. This is because there is a change in ownership structure during the seven years, where the firms change their ownership percentage as they change from government, family, or foreign ownership or are dispersed among them.

Table 3 provides a summary of performance indicators across different types of firms. Both ROA and ROE are the highest in government-owned and family-owned firms, whereas stock returns and Tobin's Q are the highest in foreign-owned firms. In terms of capitalization, government-owned firms topped the list, followed by family-owned firms.

Foreign-owned firms provide high CEO and top executive salaries, though family-owned firms encourage CEO ownership. CEO turnover is the lowest in family-owned firms and the highest in foreign-owned firms. These performance indicators characterise the features of differently owned firms.

4.2. Registered investors and portfolios

The number of registered investors and portfolios in a stock market is a very important parameter to ensure stock market stability. As the number gets larger, it remains difficult for market participants to make the market volatile. Table 4 below summarises the number of registered investors and portfolios in Tadawul for the period 2005–2019. The numbers are increasing year after year in both categories, which signals the trust and confidence of market

participants in the functioning of the market. In 2019, the rate of increase in the number of registered portfolios approaches doubling. In 2005, the number of registered investors and portfolios were 2,573,597 and 3,471,209, leaving a difference of 897,612. In 2019, the number of registered investors and portfolios became 5,485,716 and 9,891,677, bringing the difference to 4,405,961. The market is successful in attracting new investors and making them happy.

Table 4. Number of registered investors and portfolios in the Saudi stock market

Years	Number of investors registered in Tadawul (Saudi stock market)	Number of portfolios registered in Tadawul (Saudi stock market)
2005	2,573,597	3,471,209
2006	3,577,618	5,327,082
2007	3,669,538	5,872,159
2008	3,954,132	6,668,939
2009	3,997,556	6,912,476
2010	4,045,793	7,084,841
2011	4,099,527	7,135,359
2012	4,221,355	7,477,281
2013	4,335,739	7,765,174
2014	4,462,067	8,076,141
2015	4,555,446	8,427,922
2016	4,616,540	8,988,585
2017	4,675,535	9,378,957
2018	4,741,870	9,844,247
2019	5,485,716	9,891,677

Source: SAMA Annual Statistics 2019 based on Saudi Stock Exchange (Tadawul).

4.3. Purchase and sale of shares

The stock market handles a large number of purchase and sale orders from market participants, which keep the market vibrant, and in an efficient market, price must reflect all the available information. Table 5 shows information regarding the purchase and sale of shares in SAR, the number of shares, and the number of transactions. It also

reports the values effected via the internet in total. As per the information, the Internet is used as a trustworthy channel in more than 70% of executed transactions. Doing stock market transactions via the Internet becomes a popular medium for market participants, which drives the regulators to take various regulatory initiatives and interventions to ensure flawless operation of the market.

Table 5. Shares purchased and sold

Years	Value of shares purchased and sold (billion SAR)			Number of shares purchased and sold (million shares)**			Number of executed transactions (thousand)		
	Via the Internet	Total*	(%)	Via the Internet	Total*	(%)	Via the Internet	Total*	(%)
2005	2,291.4	8,277.4	27.7	7,209.2	24,562.7	29.4	41.1	93.2	44.1
2006	5,436.4	10,523.7	51.7	62,485.7	108,879.5	57.4	129.1	192.2	67.2
2007	3,170.5	5,115.4	62.0	70,050.4	115,658.0	60.6	91.7	131.3	69.8
2008	2,177.6	3,925.9	55.5	67,747.8	117,454.1	57.7	67.6	104.3	64.8
2009	1,591.7	2,528.0	63.0	70,421.4	113,371.1	62.1	51.4	72.9	70.5
2010	852.3	1,518.4	56.1	38,487.7	66,510.3	57.9	25.8	39.1	66.0
2011	1,391.3	2,197.7	63.3	64,451.1	97,089.4	66.4	37.0	51.1	72.4
2012	2,762.7	3,858.6	71.6	124,162.8	172,012.8	72.2	64.5	84.2	76.6
2013	1,885.2	2,739.3	68.8	72,632.7	104,758.2	69.3	43.2	57.9	74.6
2014	2,966.1	4,293.0	69.1	98,740.2	140,237.2	70.4	54.1	71.5	75.7
2015	2,354.4	3,321.2	70.9	97,262.5	131,840.1	73.8	47.3	60.9	77.7
2016	1,635.8	2,314.0	70.7	100,758.3	135,436.4	74.4	42.7	54.5	78.3
2017	1,146.9	1,672.6	68.6	64,655.9	87,926.5	73.5	34.6	43.8	79.0
2018	1,153.5	1,741.7	66.2	54,304.8	75,583.0	71.8	39.2	50.0	78.4
2019	981.2	1,760.3	55.7	42,754.7	66,828.5	64.0	40.1	56.8	70.6

Note: * Total represents shares sold and purchased via all channels of the market (trading terminals, Internet, phone banking and ATMs). ** Data were not revised to account for corporate actions.

Source: SAMA Annual Statistics 2019 Based on Saudi Stock Exchange (Tadawul).

4.4. Number of shares traded by sectors

The performance of the stock market depends on the performance of each share, the performance with reference to each sector, and the performance of the whole market as reflected in various indices. In Table A.1 (in Appendix), we have captured

the number of shares traded across various sectors. We have segregated the table into three panels: 1) Panel A presents data from 1985 to 2007, 2) Panel B presents data from 2008 to 2015, and finally, 3) Panel C presents data from 2016 to 2019. The total in 2016 does not correspond with the total of new sectors adopted by the CMA in early 2017.

In Panel A, we present the number of shares traded across four sectors for the years 1985–2007. It is done based on available data. For some sectors, we fail to collect data for a few years, resulting in some missing values. The total number of shares traded by sectors was on an increasing trend, as reflected in the last column of Table A.1, though within the sectors, there were some ups and downs. The introduction of new sectors in the market automatically brings some adjustments to the portfolio due to the market's response.

Panel B provides data relating to 15 sectors for the years 2008–2015. Surprisingly, the number of shares traded during this period becomes significantly higher. One reason may be the unavailability of data for the years up to 2007. The large number of shares traded across different sectors confirms the active participation of market participants. However, few sectors (say, media & publishing, hotel & tourism) report being less attractive to investors.

Panel C presents four years' worth of (2016–2019) data on the number of shares traded across 21 sectors. Few sectors report significant numbers of shares traded (say, energy, materials, capital goods, insurance, banks, etc.), while some other sectors report a smaller number of shares traded (say, media and entertainment, pharma, biotech & life sciences, software & services, etc.). The important observation is that the total number is on a downward trend across the years.

4.5. Value of shares traded by sectors

The value of a company's stock reflects the availability of information at the industry, market, and firm-specific levels (Gangadharan & Padmakumari, 2023). Thus, the value of stocks becomes a very important parameter to evaluate the performance of a market. The value of shares traded in million SAR is presented in Table A.2 (in Appendix). The data given in Table A.1 has simply been converted to SAR to highlight better insights on trade volume. The presentation follows the same structure. It also includes three panels: 1) Panel A addresses data for years from 1985 to 2007, 2) Panel B presents data for years from 2008 to 2015 across 15 sectors, and 3) Panel C presents data from 2016 to 2019 across 21 sectors.

Panel A shows an increasing trend in the value of shares traded by sector except in 2007, where the value has declined. Panel B, however, doesn't follow any specific trend, which is very similar to the data presented in Panel B of Table A.1. Panel C also reports a declining trend like Table A.1.

4.6. Number of share transactions by sectors

The number of share transactions is another important parameter to understand shareholder activism in a regulated stock market. Table A.3 (in Appendix), presents data related to the number of share transactions by sectors with reference to three different time periods in three different panels (Panel A covers 1985–2007, Panel B covers 2008–2015, and Panel C covers 2016–2019). Panel A reports a continuous increase in the number of share transactions, which signifies the greater involvement of shareholders in trade. It could be

because of the market opportunity created by price changes. Panel B shows a zigzag trend like before. However, Panel C reports an increasing trend. Over the time gap, the values highlight a common trend whereby the market remains volatile from 2008–2016 and then is corrected.

4.7. Share price index by sectors

Each stock market has its own way of developing share price indices, considering various factors like the nature of investors, market size, firm dynamics, macroeconomic issues, etc. Market indices provide key information to macroeconomists, financial economists, market analysts, and other stakeholders in the financial world. Consistent indices signal long-term regularities that help in understanding the behaviour of capital market agents, the evolution of the economy, and making international comparisons. History shows that a great variety of indices have been created in order to measure the performance of stock markets. The TASI is a major stock market index that tracks the performance of all companies listed on the Saudi Stock Exchange. The index has a base value of 1000 as of 1985, and it was reorganised on June 30, 2008. Table A.4 (in Appendix) provides the stock price index of the Saudi Stock Exchange by sectors in three different panels. Panel A generates data from 1985 to 2007, Panel B generates data from 2008 to 2015 across 15 sectors, and finally, Panel C generates four years of data (2016–2019) across 21 sectors.

Panel A of Table A.4 shows the value of the share price index for each sector until 2007. A closer look at the index value highlights the impact of the stock market crash in the year 2006. The market index has increased (doubled) significantly in 2005 (from 8,206.23 in 2004 to 16,712.64 in 2005). There is a sharp decline in index value in 2006 (7,933.29) as compared to 2005 (16,712.64), whereby the market has reverted to 2004 in terms of index value. It is important for a market to signal any bubbles to protect innocent investors. Trading at prices above their fundamental values has been referred to as a stock market bubbles. These bubbles, when busted, can lead to a market crash (Suresh et al., 2022). As the market crashes, investors suffer consequences, and thus, the market needs to respond to protect their interests. The Tadawul successfully responds to the market crash signalling its ability to control the market. Since 2007, the market has shown an increasing trend (11,038.66), which is due to market corrections as a result of various interventions. From 2008, the number of sectors increased from 8 to 15, the number of market indices rose from 9 to 16, and they were calculated on the basis of free-floating shares only. Thus, Panel B presents the values for the share price index over eight years (2008–2015) across 15 sectors. The values confirm the market's consistency in terms of index. Panel B reflects consistent growth from 2008 to 2014, with a decline in 2015. As reflected in Panel C, this decline continued in 2016, 2017, and 2018. However, it showed improvement in 2019, when the sectors increased from 20 to 21.

5. DISCUSSION

The study categorically segregates few analyses into three panels. Panel A covers periods from 1985 to 2007, Panel B covers periods from 2008 to 2015 and Panel C covers periods from 2016 to 2019. There is a reclassifications of industry categories in 2007 when the Tadawul became listed as a joint stock company and further classifications in 2016 which is driven by Vision 2030. The analysis reflects that Tadawul has been significantly improved as a result of market liberalization and diversification policies (Almutiri, 2020). It has been successful in attracting investors which is reflected in market capitalization and trade volumes (Hkiri et al., 2021). Thus, the analysis confirms that the goals of Vision 2030 is reflected in market indicators and the regulators are successful in translating policies into reality. It requires further attention to continue with the achievements made so far.

This market has the potential to expedite economic development by encouraging individuals to save more money and make more effective use of available resources (Al-Nefae & Aldhyani, 2022; Yildirim et al., 2020). Understanding its importance in driving the economy, the regulators in Saudi Arabia have taken admirable reform initiatives to uplift the national capital market. To develop trading and post-trade services infrastructure, the Saudi Tadawul Group rolls out new enhancements through its subsidiaries. These enhancements intend to provide investors with increased investment opportunities and contribute to expanding investor access to the Saudi capital market as part of wider efforts to develop an advanced capital market in Saudi Arabia. These enhancements are expected to have a positive impact on the operational efficiency of the group and its subsidiaries. This study, thus, sheds light on the trend in shareholding and portfolio patterns over the periods. The mission of Saudi Tadawul Group is to help the Kingdom build a thriving economy with a technologically advanced and integrated capital market at its centre as part of its 2030 Vision (Abid & Alotaibi, 2020). To this effect, the Financial Sector Development Programme was launched in 2017 to enable financial institutions to support the growth of the private sector, develop an advanced capital market, and boost and enable financial planning. The programme achieved great success by having the Tadawul join global indices like the FTSE and MSCI (Assous et al., 2020). This study informs the stock market regulators about its growth potential.

Under Vision 2030, Tadawul must develop a strong capital market in the presence of every condition of an efficient market. Various reform initiatives have brought a breakthrough change in the operational efficiencies of the market, which is reflected in various performance parameters such as market capitalization, size of individual stocks and portfolios, digitization in trade, integration with global markets, etc. This study informs stock market users, regulators, and activists about the market's achievements by classifying data in three different panels based on changes in market portfolios.

6. CONCLUSION

This study concludes that the regulators in Saudi Arabia are successful in developing the market through local and global integration. Based on secondary sources of data, this study appraises the performance and operational efficiency of the Tadawul as reflected in published data. It reports that the Tadawul has increased significantly in market capitalization, maintaining a positive trend over the years. The ROA and ROE of government- and family-owned businesses are good. The number of registered investors and portfolios is increasing, which confirms the wider participation of investors in market operations. Transactions through the Internet are on the rise, which confirms the infrastructural improvement of markets in handling and processing transactions online. The number and value of shares traded by sectors are also on the rise, which confirms the sectoral reforms. The share price index by sectors also presents a positive trend, except for the years from 2015 to 2018. However, it has started to recover. All these analyses support the policies taken to improve the market. The policy-driven reforms and developments in Tadawul experiences could be great learning for other emerging stock markets.

The study has made incremental contributions in existing body of knowledge. The theoretical contribution is that it shows market trends in leading indicators highlighting the movement of the markets. The practical contribution of the study is to reflect the response of the market as a response to market reform initiatives. The major limitation of this study is that it has taken a general perspective to appraise the market's operation. Rather than drawing any inference, this study has identified various performance parameters to highlight market trends through descriptive analysis of published data in various secondary sources. However, further studies may be taken to dig into specific areas for better insight into where further regulatory attention is required. Event studies may also be done to evaluate the performance of different stock market reforms (Aljarba, 2020). Studies may also be conducted using time series data to draw specific inferences.

The study has significant policy implications. The authors take the opportunity to inform the policymakers regarding few policy advises which need immediate attention to develop the market further. Using ownership concentration, operational complexity, and analysts as proxies for corporate governance, Farooq and Ahmed (2014) confirm that a better information environment and market efficiency are required to ensure a good governance system. The Tadawul needs to look into the governance system further to ensure an investor-friendly system of governance whereby investors stakes are protected. In equity market, investors always struggle in maintaining their existing portfolio (the initial strategy) or modifying the same (the emergent strategy) to increase assets (Kurniawan & Santoso, 2023). In a study, Sandhu (2022) confirms the fact that the psychological biases of individual investor behaviour depend on share price levels, which affect the ownership structure of a firm. The Tadawul should look deep

into the ownership structure pattern to uplift the interest of the various categories of investors. Stock markets should develop sufficient infrastructure to pass through the required information to the satisfaction of investors. The speed at which investors incorporate relevant information into stock prices determines the advantages for investors (Gangadharan & Padmakumari, 2023). The Tadawul needs to emphasise disclosure practises (mandatory and voluntary) to ensure the timely flow of transparent information into the market. Studies have proven that sectoral indices do not mimic market behaviour, and the reaction of the sectors tends to be different compared to the market's response (Suresh et al., 2022). The Tadawul needs to observe the sectoral dispersion in terms of the absorbance of market shocks. In cases of market volatility, investors need

guidance to gain from price movement across sectors, and policymakers need to enable themselves to take corrective measures to put the markets back on track when the index falsely deviates from intrinsic values (Suresh et al., 2022).

Tao et al. (2019) find evidence supporting a positive correlation between stock market returns and real economic activities in China. The Tadawul needs to observe the potential connection between stock market returns and economic development, linking it with major reform initiatives. This will provide some long-term orientation of the market movements, and the interventions will be tested continuously. Overall, the study finds the presence of favourable impact of policy implications on market performance. At the same time, it suggests areas for further attention on the part of market regulators and analysts.

REFERENCES

- Abid, M., & Alotaibi, M. N. (2020). Crude oil price and private sector of Saudi Arabia: Do globalization and financial development matter? New evidence from combined cointegration test. *Resources Policy*, 69, Article 101774. <https://doi.org/10.1016/j.resourpol.2020.101774>
- Al Rasasi, M., Rawah, F., & Alghamdi, B. (2020). On the nexus between stock market fluctuations and the demand for money in Saudi Arabia. *Business and Economic Research*, 10(1), 142-154. <https://doi.org/10.5296/ber.v10i1.16231>
- Alawi, S. (2019). Relationship between capital requirement, ownership structure, and financial performance in Saudi Arabian listed companies. *Asian Economic and Financial Review*, 9(9), 1077-1090. <https://doi.org/10.18488/journal.aefr.2019.99.1077.1090>
- Al-Faryan, M. A. S. (2020). Corporate governance in Saudi Arabia: An overview of its evolution and recent trends. *Risk Governance and Control: Financial Markets & Institutions*, 10(1), 23-36. <https://doi.org/10.22495/rgcv10i1p2>
- Al-Faryan, M. A. S. (2021). The effect of board composition and managerial pay on Saudi firm performance. *Review of Quantitative Finance and Accounting*, 57, 693-758. <https://doi.org/10.1007/s11156-021-00959-4>
- Al-Faryan, M. A. S. (2024). Firm-level factors influencing CEO turnover in Saudi Arabia. *Cogent Business & Management*, 11(1), Article 2262710. <https://doi.org/10.1080/23311975.2023.2262710>
- Al-Faryan, M. A. S., & Dockery, E. (2017). Ownership structure and corporate governance: What does the data reveal about Saudi listed firms? *Corporate Ownership & Control*, 14(4-2), 413-424. <https://doi.org/10.22495/cocv14i4c2art7>
- Al-Faryan, M. A. S., & Dockery, E. (2021). Testing for efficiency in the Saudi stock market: does corporate governance change matter? *Review of Quantitative Finance and Accounting*, 57, 61-90. <https://doi.org/10.1007/s11156-020-00939-0>
- Aljarba, A. (2020). *Saudi stock market reaction to different major events* [Dissertations, Claremont Graduate University]. Scholarship@Claremont. https://scholarship.claremont.edu/cgu_etd/311
- Almutiri, A. F. H. (2020). Capital market liberalization: Effect of foreign investors on Saudi stock market performance. *Journal of Mathematical Finance*, 10(2), 267-286. <https://doi.org/10.4236/jmf.2020.102017>
- Al-Nefae, A. H., & Aldhyani, T. H. H. (2022). Predicting close price in Emerging Saudi Stock Exchange: Time series models. *Electronics*, 11(21), Article 3443. <https://doi.org/10.3390/electronics11213443>
- Alshammari, S., & Goto, S. (2022). What factors drive Saudi stock markets? — Firm characteristics that attract retail trades. *International Review of Economics & Finance*, 80, 994-1011. <https://doi.org/10.1016/j.iref.2022.02.004>
- Alshogheathri, M. A. M. (2011). *Macroeconomic determinants of the stock market movements: empirical evidence from the Saudi stock market* [Doctoral dissertation, Kansas State University]. Kansas State University. <http://hdl.handle.net/2097/11989>
- Alsuhaibani, W., Houmes, R., & Wang, D. (2023). The evolution of financial reporting quality for companies listed on the Tadawul Stock Exchange in Saudi Arabia: New emerging markets' evidence. *Emerging Markets Review*, 55, Article 101009. <https://doi.org/10.1016/j.ememar.2023.101009>
- Assous, H. F., Al-Rousan, N., AL-Najjar, D., & AL-Najjar, H. (2020). Can international market indices estimate TASI's movements? The ARIMA model. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(2), Article 27. <https://doi.org/10.3390/joitmc6020027>
- Batten, J. A., & Kearney, C. (2006). Interdependence and integration in emerging European financial markets. In J. A. Batten & C. Kearney (Eds.), *Emerging European financial markets: Independence and integration post-enlargement* (Vol. 6, pp. 1-14). Emerald Group Publishing. [https://doi.org/10.1016/S1569-3767\(05\)06001-2](https://doi.org/10.1016/S1569-3767(05)06001-2)
- Berle, A. A., & Means, G. C. (1932). *The modern corporation and private property*. Transaction Publishers.
- Binswanger, M. (2000). Stock returns and real activity: is there still a connection? *Applied Financial Economics*, 10(4), 379-387. <https://doi.org/10.1080/09603100050031507>
- Bugan, M. F., Cevik, E. I., & Dibooglu, S. (2022). Emerging market portfolios and Islamic financial markets: Diversification benefits and safe havens. *Borsa Istanbul Review*, 22(1), 77-91. <https://doi.org/10.1016/j.bir.2021.01.007>

- Caporale, G. M., Gil-Alana, L. A., & You, K. (2022). Stock market linkages between the ASEAN Countries, China and the US: A fractional integration/cointegration approach. *Emerging Markets Finance and Trade*, 58(5), 1502-1514. <https://doi.org/10.1080/1540496X.2021.1898366>
- Cevik, E. I., Gunay, S., Zafar, M. W., Destek, M. A., Bugan, M. F., & Tuna, F. (2022). The impact of digital finance on the natural resource market: Evidence from DeFi, oil, and gold. *Resources Policy*, 79, Article 103081. <https://doi.org/10.1016/j.resourpol.2022.103081>
- Choi, J. J., Hauser, S., & Kopecky, K. J. (1999). Does the stock market predict real activity? Time series evidence from the G-7 countries. *Journal of Banking & Finance*, 23(12), 1771-1792. [https://doi.org/10.1016/S0378-4266\(99\)00020-5](https://doi.org/10.1016/S0378-4266(99)00020-5)
- Duca, G. (2007). The relationship between the stock market and the economy: Experience from international financial markets. *Bank of Valletta Review*, 36(3), 1-12.
- El-Wassal, K. A. (2013). The development of stock markets: in search of a theory. *International Journal of Economics and Financial Issues*, 3(3), 606-624. <https://dergipark.org.tr/tr/download/article-file/362801>
- Farooq, O., & Ahmed, S. (2014). Stock price synchronicity and corporate governance mechanisms: Evidence from an emerging market. *International Journal of Accounting, Auditing and Performance Evaluation*, 10(4), 395-409. <https://doi.org/10.1504/IJAAPE.2014.066392>
- Farooq, O., & Hamouda, M. (2016). Stock price synchronicity and information disclosure: Evidence from an emerging market. *Finance Research Letters*, 18, 250-254. <https://doi.org/10.1016/j.frl.2016.04.024>
- Gangadharan, V., & Padmakumari, L. (2023). Annual report readability and stock return synchronicity: Evidence from India. *Cogent Economics & Finance*, 11(1), Article 2186034. <https://doi.org/10.1080/23322039.2023.2186034>
- Gkikas, D. C., Theodoridis, P. K., & Beligiannis, G. N. (2022). Enhanced marketing decision making for consumer behaviour classification using binary decision trees and a genetic algorithm wrapper. *Informatics*, 9(2), Article 45. <https://doi.org/10.3390/informatics9020045>
- Hkiri, B., Béjaoui, A., Gharib, C., & AlNemer, H. A. (2021). Revisiting efficiency in MENA stock markets during political shocks: Evidence from a multi-step approach. *Heliyon*, 7(9), Article e08028. <https://doi.org/10.1016/j.heliyon.2021.e08028>
- Jarrah, M., & Derbali, M. (2023). Predicting Saudi stock market index by using multivariate time series based on deep learning. *Applied Sciences*, 13(14), Article 8356. <https://doi.org/10.3390/app13148356>
- Kalyanaraman, L., & Al Tuwajri, B. (2014). Macroeconomic forces and stock prices: Some empirical evidence from Saudi Arabia. *International Journal of Financial Research*, 5(1), 81-92. <https://doi.org/10.5430/ijfr.v5n1p81>
- Kaplan, M. (2008). The impact of stock market on real economic activity: Evidence from Turkey. *Journal of Applied Sciences*, 8(2), 374-378. <https://doi.org/10.3923/jas.2008.374.378>
- Kearney, C., & Lucey, B. M. (2004). International equity market integration: Theory, evidence and implications. *International Journal of Financial Analysis*, 13(5), 571-583. <https://doi.org/10.1016/j.irfa.2004.02.013>
- Kumar, N. (2023). Saudi Arabia's "Vision 2030": Structural reforms and their challenges. *Journal of Sustainable Development*, 16(4), 92-99. <https://doi.org/10.5539/jsd.v16n4p92>
- Kurniawan, H. T., & Santoso, A. S. (2023). Investment decision in crisis: The alternative view of escalation of commitment in determining investment performance. *Cogent Business & Management*, 10(1), Article 2196785. <https://doi.org/10.1080/23311975.2023.2196785>
- Lagasio, V. (2021). Corporate governance, ownership, and performance: A closer look at the Italian case. *Corporate Ownership & Control*, 19(1), 8-16. <https://doi.org/10.22495/cocv19i1art1>
- Leuz, C., Lins, K. V., & Warnock, F. E. (2009). Do foreigners invest less in poorly governed firms? *The Review of Financial Studies*, 22(8), 3245-3285. <https://doi.org/10.1093/rfs/hhn089>
- Malibari, N., Katib, I., & Mehmood, R. (2022). Smart robotic strategies and advice for stock trading using deep transformer reinforcement learning. *Applied Sciences*, 12(24), Article 12526. <https://doi.org/10.3390/app122412526>
- Mao, Y., & Wu, R. (2007). Does the stock market act as a signal for real activity? Evidence from Australia. *Economic Papers: A Journal of Applied Economics and Policy*, 26(2), 180-192. <https://doi.org/10.1111/j.1759-3441.2007.tb01015.x>
- Mohanty, S. K., Onochie, J., & Alshehri, A. F. (2018). Asymmetric effects of oil shocks on stock market returns in Saudi Arabia: Evidence from industry level analysis. *Review of Quantitative Finance and Accounting*, 51, 595-619. <https://doi.org/10.1007/s11156-017-0682-5>
- Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, 20, 293-315. [https://doi.org/10.1016/0304-405X\(88\)90048-7](https://doi.org/10.1016/0304-405X(88)90048-7)
- Moshashai, D., Leber, A. M., & Savage, J. D. (2020). Saudi Arabia plans for its economic future: Vision 2030, the National Transformation Plan and Saudi fiscal reform. *British Journal of Middle Eastern Studies*, 47(3), 381-401. <https://doi.org/10.1080/13530194.2018.1500269>
- Nagendrakumar, N., Kumarapperuma, C., Malinga, C., Gayanthika, K., Amanda, N., & Perera, A. (2022). Corporate governance and firm integrated performance: A conceptual framework. *Corporate Governance and Sustainability Review*, 6(2), 8-17. <https://doi.org/10.22495/cgsrv6i2p1>
- Robiyanto, R., Hersugondo, H., & Chotijah, G. S. (2016). ASEAN Economic Community (AEC) and economic stability: A review from Indonesia's side. *International Journal of Economic Research*, 13(2), 603-611. https://serialsjournals.com/abstract/43698_9.pdf
- Robiyanto, R., Nugroho, B. A., Handriani, E., & Frensidi, B. (2023). Measuring the effectiveness of ASEAN-5 initiatives from emerging market portfolio's perspective. *Cogent Business & Management*, 10(1), Article 2167292. <https://doi.org/10.1080/23311975.2023.2167292>
- Sandhu, H. (2022). Low price anchors in equity market. *Cogent Economics & Finance*, 10(1), Article 2152937. <https://doi.org/10.1080/23322039.2022.2152937>
- Suresh, G., Kumara, N. R., & Natchimuthu, N. (2022). Are there bubbles in sectoral indices? Evidence from national stock exchange. *Cogent Economics & Finance*, 10(1), Article 2145750. <https://doi.org/10.1080/23322039.2022.2145750>

- Tadawul. (2017). *Annual report 2017: Expansion and diversification*. <https://www.saudiexchange.sa/wps/wcm/connect/7ea9ab40-5d5a-4f6c-a200-c18f849e913f/Tadawul+AR2017-EnglishNEW.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-7ea9ab40-5d5a-4f6c-a200-c18f849e913f-mkIIPqb>
- Tao, J., Ye, Q., & Zhang, J. (2019). New evidence on the relations among stock returns, inflation and economic activities. *International Journal of Research*, 6(2), 70-76. <https://journals.pen2print.org/index.php/ijr/article/view/16993>
- Tashakkori, A. M., Johnson, R. B., & Teddlie, C. (2021). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences* (2nd ed.). SAGE Publications.
- Tlemsani, I., Albadeen, F., Althaaly, G., Aljughaiman, M., & Bubshait, H. (2020). Tadawul and Dubai financial market — A comparative study. *Journal of Business Administration Research*, 9(2), 45-52. <https://doi.org/10.5430/jbar.v9n2p45>
- Yildirim, S., Yildirim, D. C., & Diboglu, P. (2020). Does Sukuk market development promote economic growth? *PSU Research Review*, 4(3), 209-218. <https://doi.org/10.1108/PRR-03-2020-0011>

APPENDIX

Table A.1. Number of shares (in thousands) traded by sectors (Part 1)

Panel A: Data from 1985 to 2007								
Years	Banking & financial services	Cement	Telecommunication & information tech	Insurance	Total			
1985	443	493	-	-	3,936			
1986	781	422	-	-	4,885			
1987	860	3,273	-	-	13,903			
1988	1,210	2,800	-	-	14,641			
1989	2,576	2,791	-	-	15,272			
1990	2,453	4,126	-	-	16,938			
1991	5,999	5,373	-	-	33,622			
1992	5,999	2,952	-	-	34,235			
1993	13,748	1,610	-	-	60,308			
1994	15,097	5,580	-	-	152,088			
1995	27,190	8,855	-	-	116,618			
1996	31,860	29,804	-	-	137,833			
1997	78,226	37,899	-	-	313,975			
1998	129,700	21,137	-	-	294,637			
1999	156,122	33,862	-	-	527,506			
2000	92,107	46,248	-	-	554,913			
2001	77,937	124,368	-	-	691,828			
2002	77,908	126,617	-	-	1,735,838			
2003	87,116	87,967	323,512	-	5,565,857			
2004	95,105	119,171	294,447	-	10,298,343			
2005	271,538	266,406	420,336	111,665	12,281,331			
2006	1,135,388	1,066,702	894,117	129,725	68,515,280			
2007	1,537,258	500,314	563,513	2,528,145	57,828,978			
Panel B: Data from 2008 to 2015								
Sectors	2008	2009	2010	2011	2012	2013	2014	2015
Banking & financial services	9,391,260	8,896,993	5,873,451	4,701,567	9,493,692	6,417,086	9,800,974	12,404,757
Cement	378,923	259,482	624,106	1,632,920	2,879,580	3,190,429	2,373,263	1,753,432
Telecommunication & information tech	6,055,200	4,736,038	1,952,623	4,330,354	13,697,444	5,873,503	8,075,815	4,902,202
Insurance	2,972,849	5,424,229	3,097,740	7,142,815	11,475,455	6,341,119	8,485,762	7,439,970
Petrochemical industries	7,750,592	10,949,133	9,492,643	9,400,383	10,970,890	6,017,853	10,866,373	9,140,904
Retail	1,060,202	2,154,417	574,157	1,164,792	1,676,391	2,016,144	1,936,044	1,369,672
Energy & utilities	787,981	680,066	1,041,473	945,864	1,236,382	663,980	980,297	768,661
Agriculture & food industry	1,980,596	3,761,068	1,212,304	3,804,500	3,516,565	2,747,495	3,866,976	2,515,971
Multi-investment	1,786,103	4,286,439	2,431,581	3,180,726	4,298,739	1,717,246	2,364,293	1,657,215
Industrial investment	3,957,124	4,597,359	2,037,377	2,179,778	2,141,702	1,989,378	3,778,332	3,729,523
Building & construction	1,619,758	2,936,193	1,407,785	2,599,418	3,968,175	2,217,130	4,056,623	3,407,708
Real estate development	3,571,172	5,034,685	2,737,315	5,281,185	17,566,177	11,053,991	11,262,450	13,811,775
Transport	1,929,982	1,930,189	555,628	1,438,323	2,337,036	1,250,537	1,272,084	1,743,176
Media & publishing	236,969	454,776	93,733	364,658	303,582	285,520	373,466	820,671
Hotel & tourism	200,329	584,500	123,230	377,422	444,584	524,746	625,870	454,424
Total	58,727,059	56,685,567	33,255,148	48,544,703	86,006,395	52,306,159	70,118,622	65,920,061

Table A.1. Number of shares (in thousands) traded by sectors (Part 2)

Panel C: Data from 2016 to 2019				
Sectors	2016	2017	2018	2019
Energy	1,369,982	941,933	949,825	1,820,370
Materials	14,184,189	7,380,516	9,111,927	7,691,152
Capital goods	3,229,523	2,229,836	1,374,738	1,641,211
Commercial & professional services	637,957	371,080	234,672	138,851
Transportation	1,006,462	576,353	462,022	603,300
Consumer durables & apparel	1,081,933	767,759	492,859	451,128
Consumer services	1,187,085	850,837	668,704	792,939
Media and entertainment	640,142	330,885	173,814	111,138
Retailing	986,089	546,432	504,790	591,621
Food & staples retailing	503,362	325,068	275,995	296,794
Food & beverage	2,726,439	1,435,153	841,494	986,202
Health care equipment & services	304,266	200,050	310,749	336,384
Pharma, biotech & life sciences	47,518	36,302	30,862	29,107
Banks	14,186,765	9,335,335	8,352,336	7,818,177
Diversified financials	506,320	443,991	312,385	343,442
Insurance	9,559,736	4,761,186	2,740,519	2,717,203
Telecommunication services	2,600,399	1,412,497	1,799,560	1,889,107
Utilities	606,629	476,558	364,740	526,243
Reits	37,267	1,864,803	717,881	955,041
Real estate management & development	12,327,104	9,681,979	8,071,613	3,591,104
Software & services	-	-	-	49,222
Total	67,729,166	43,968,552	37,791,485	33,379,737

Note: This separation is driven by changes in the sectoral composition of firms with reference to selected time periods. From 2008, the number of sectors increased from 8 to 15, and the number of market indices rose from 9 to 16, and they are calculated on the basis of free-floating shares only. Similarly, there is a mismatch between the total and data on sectors for the period from 1985 until 2008 due to the unavailability of data for each sector for the period after adopting the new classification of sectors.

Source: SAMA Annual Statistics 2019 Based on Saudi Stock Exchange (Tadawul).

Table A.2. Value of shares (millions of SAR) traded by sectors (Part 1)

Panel A: Data from 1985 to 2007								
Years	Banking & financial services	Cement	Telecommunication & information tech	Insurance	Total			
1985	182	116	-	-	760			
1986	294	56	-	-	831			
1987	298	366	-	-	1,686			
1988	530	216	-	-	2,098			
1989	1,617	329	-	-	3,364			
1990	2,257	615	-	-	4,403			
1991	3,613	949	-	-	8,527			
1992	7,096	865	-	-	13,699			
1993	8,642	479	-	-	17,360			
1994	6,189	976	-	-	24,871			
1995	7,832	1,404	-	-	23,227			
1996	10,406	5,342	-	-	25,397			
1997	29,280	8,157	-	-	62,060			
1998	32,820	3,484	-	-	51,509			
1999	34,870	3,790	-	-	56,579			
2000	29,520	5,238	-	-	65,293			
2001	24,385	20,789	-	-	83,601			
2002	25,961	27,584	-	-	133,787			
2003	35,748	21,919	105,067	-	596,510			
2004	53,028	43,242	160,196	-	1,773,859			
2005	238,286	168,884	296,276	61,439	4,138,696			
2006	294,753	205,630	199,723	31,789	5,261,851			
2007	112,947	37,659	38,090	194,856	2,557,713			
Panel B: Data from 2008 to 2015								
Sectors	2008	2009	2010	2011	2012	2013	2014	2015
Banking & financial services	208,979	149,423	98,732	73,554	163,040	132,758	279,707	295,376
Cement	26,696	12,500	14,909	33,061	70,160	85,882	78,936	47,016
Telecommunication & information tech	154,128	74,876	35,169	54,578	194,686	90,017	148,431	87,533
Insurance	153,057	201,112	90,345	197,467	451,044	266,838	319,073	210,553
Petrochemical industries	350,697	299,899	287,301	329,392	311,181	196,356	332,612	270,394
Retail	33,233	55,274	17,796	29,258	48,702	98,379	129,828	76,452
Energy & utilities	11,759	8,220	13,850	13,374	18,210	9,608	16,337	14,026
Agriculture & food industry	57,943	94,172	41,186	108,339	122,738	93,287	171,529	82,255
Multi-investment	36,140	56,559	27,649	54,166	86,826	33,737	63,045	33,613
Industrial investment	128,062	99,909	51,357	64,966	82,987	79,879	162,773	142,651
Building & construction	96,454	86,292	34,942	55,045	90,316	54,671	131,561	85,051
Real estate development	83,085	66,086	32,111	47,060	211,562	147,941	198,437	187,634
Transport	46,270	30,308	8,402	19,433	45,583	33,555	48,277	72,283
Media & publishing	6,615	11,393	1,989	9,709	13,439	13,387	18,669	25,538
Hotel & tourism	5,706	17,989	3,446	9,432	18,843	33,372	47,297	30,245
Total	1,962,946	1,264,011	759,184	1,098,836	1,929,318	1,369,666	2,146,512	1,660,621

Table A.2. Value of shares (millions of SAR) traded by sectors (Part 2)

Panel C: Data from 2016 to 2019				
Sectors	2016	2017	2018	2019
Energy	34,367	19,041	27,037	63,090
Materials	300,654	191,317	273,484	214,342
Capital goods	46,017	31,456	26,262	25,160
Commercial & professional services	16,346	9,058	6,545	7,274
Transportation	23,276	13,341	10,505	13,049
Consumer durables & apparel	14,787	9,982	6,634	6,812
Consumer services	41,256	25,662	16,835	19,063
Media	23,379	14,053	10,607	6,414
Retailing	27,075	15,789	16,646	22,670
Food & staples retailing	14,255	9,001	7,136	5,984
Food & beverage	56,171	36,847	26,022	30,394
Health care equipment & services	18,296	10,636	13,920	13,061
Pharma, biotech & life sciences	1,507	1,273	956	784
Banks	219,355	194,865	221,666	280,047
Diversified financials	6,155	7,281	4,443	4,257
Insurance	159,195	99,035	62,862	48,845
Telecommunication services	31,761	19,147	26,118	50,373
Utilities	11,565	11,428	7,144	9,996
Reits	446	27,902	7,126	8,488
Real estate management & development	111,125	89,163	98,921	47,543
Software & services	-	-	-	2,494
Total	1,156,987	836,275	870,870	880,139

Note: This separation is driven by changes in the sectoral composition of firms with reference to selected time periods. From 2008, the number of sectors increased from 8 to 15, and the number of market indices rose from 9 to 16, and they are calculated on the basis of free-floating shares only. Similarly, there is a mismatch between the total and data on sectors for the period from 1985 until 2008 due to the unavailability of data for each sector for the period after adopting the new classification of sectors.

Source: SAMA Annual Statistics 2019 Based on Saudi Stock Exchange (Tadawul).

Table A.3. Number of share transactions (in thousands) made by sectors (Part 1)

Panel A: Data from 1985 to 2007								
<i>Years</i>	<i>Banking & financial services</i>	<i>Cement</i>	<i>Telecommunication & information tech</i>	<i>Insurance</i>	<i>Total</i>			
1985	1,507	709	-	-	7,842			
1986	1,896	931	-	-	10,833			
1987	3,653	1,447	-	-	23,267			
1988	7,212	2,589	-	-	41,960			
1989	54,824	4,053	-	-	110,030			
1990	30,032	4,948	-	-	85,298			
1991	23,115	4,862	-	-	90,559			
1992	79,656	8,271	-	-	272,075			
1993	114,370	8,182	-	-	319,582			
1994	67,834	13,285	-	-	357,180			
1995	82,817	19,921	-	-	291,742			
1996	89,328	49,100	-	-	283,759			
1997	139,931	62,976	-	-	460,056			
1998	167,547	36,173	-	-	376,617			
1999	166,422	44,495	-	-	440,225			
2000	119,576	58,663	-	-	498,135			
2001	114,071	135,751	-	-	605,035			
2002	105,218	132,181	-	-	1,033,669			
2003	127,456	108,980	425,369	-	3,763,403			
2004	172,728	208,296	598,469	-	13,319,523			
2005	3,383,276	1,424,474	2,448,511	497,596	46,607,951			
2006	4,436,641	2,909,062	2,325,606	248,016	96,095,920			
2007	2,249,453	678,858	636,438	6,747,629	65,665,500			
Panel B: Data from 2008 to 2015								
<i>Sectors</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>
Banking & financial services	5,220,334	2,390,587	1,377,416	997,185	1,960,658	1,407,098	2,820,487	2,835,705
Cement	486,357	348,648	556,895	838,066	2,176,374	2,358,155	1,701,761	1,015,947
Telecommunication & information tech	4,471,590	1,852,364	772,037	1,258,427	3,825,763	1,430,805	1,646,798	1,370,439
Insurance	7,635,319	8,584,512	4,903,806	6,958,028	13,036,692	8,311,470	8,513,764	6,671,719
Petrochemical industries	5,897,266	5,934,437	3,865,678	4,073,776	4,484,652	2,462,284	3,459,832	3,346,015
Retail	1,799,590	2,225,151	710,870	962,250	1,392,954	2,555,669	2,666,042	1,774,450
Energy & utilities	292,680	197,192	206,128	212,509	220,664	134,349	204,358	214,096
Agriculture & food industry	2,526,335	3,468,632	1,523,391	3,004,822	3,047,913	2,269,124	3,411,934	1,998,068
Multi-investment	1,319,867	2,129,750	929,779	1,549,201	2,164,189	821,993	1,194,942	851,341
Industrial investment	5,024,430	2,962,994	1,777,365	1,647,077	2,028,222	1,808,681	2,690,910	2,625,075
Building & construction	3,301,227	2,796,187	1,254,684	1,683,342	2,323,580	1,391,109	2,779,761	2,321,291
Real estate development	2,028,873	1,655,990	1,131,801	1,231,173	3,545,982	2,270,406	2,358,755	2,685,015
Transport	883,254	900,705	262,526	518,054	924,123	672,497	840,417	1,438,695
Media & publishing	226,389	381,941	110,738	297,591	371,967	378,676	479,742	727,511
Hotel & tourism	222,460	629,236	153,029	315,432	601,315	695,378	991,588	568,836
Total	52,135,929	36,458,326	19,536,143	25,546,933	42,105,048	28,967,694	35,761,091	30,444,203

Table A.3. Number of share transactions (in thousands) made by sectors (Part 2)

Panel C: Data from 2016 to 2019				
Sectors	2016	2017	2018	2019
Energy	717,204	518,454	886,292	1,500,747
Materials	5,630,030	4,155,085	5,864,004	6,610,252
Capital goods	1,656,752	1,402,547	1,571,721	1,696,742
Commercial & professional services	488,253	361,254	282,175	324,908
Transportation	636,778	452,922	460,909	652,226
Consumer durables & apparel	606,657	474,704	474,482	511,844
Consumer services	1,074,312	763,063	759,846	980,167
Media	801,667	627,573	505,088	336,010
Retailing	897,144	636,244	730,262	942,799
Food & staples retailing	541,434	381,189	406,063	439,428
Food & beverage	1,701,284	1,303,805	1,211,203	1,530,067
Health care equipment & services	428,437	332,261	523,646	572,522
Pharma, biotech & life sciences	44,822	46,989	44,773	46,490
Banks	2,295,481	2,116,488	2,791,476	4,428,343
Diversified financials	244,728	369,749	304,103	339,887
Insurance	6,335,228	4,317,892	3,643,689	3,336,010
Telecommunication services	705,716	569,759	933,942	1,205,810
Utilities	241,766	267,473	240,574	330,021
Reits	18,718	978,114	590,885	738,586
Real estate management & development	2,207,274	1,819,716	2,786,752	1,771,794
Software & services	-	-	-	101,140
Total	27,273,685	21,895,281	25,011,885	28,395,793

Note: This separation is driven by changes in the sectoral composition of firms with reference to selected time periods. From 2008, the number of sectors increased from 8 to 15, and the number of market indices rose from 9 to 16, and they are calculated on the basis of free-floating shares only. Similarly, there is a mismatch between the total and data on sectors for the period from 1985 until 2008 due to the unavailability of data for each sector for the period after adopting the new classification of sectors.

Source: SAMA Annual Statistics 2019 Based on Saudi Stock Exchange (Tadawul).

Table A.4. Share price index by sectors* (1985 = 1000) (Part 1)

Panel A: Data from 1985 to 2007								
<i>Years</i>	<i>Banking & financial services</i>	<i>Cement</i>	<i>Telecommunication & information tech</i>		<i>Insurance</i>	<i>TASI Index</i>		
1985	689.19	755.87	-	-	-	690.88		
1986	567.64	627.65	-	-	-	646.03		
1987	838.26	595.44	-	-	-	780.64		
1988	1,257.73	708.83	-	-	-	892.00		
1989	2,185.08	983.14	-	-	-	1,086.83		
1990	1,900.93	947.22	-	-	-	979.77		
1991	4,276.23	1,382.70	-	-	-	1,765.24		
1992	4,987.16	2,100.21	-	-	-	1,888.65		
1993	4,913.04	1,933.37	-	-	-	1,793.30		
1994	3,069.19	1,424.48	-	-	-	1,282.87		
1995	3,278.40	1,371.60	-	-	-	1,367.60		
1996	3,968.50	1,792.40	-	-	-	1,531.00		
1997	5,596.70	2,041.20	-	-	-	1,957.80		
1998	4,344.80	1,271.10	-	-	-	1,413.10		
1999	6,438.95	1,682.16	-	-	-	2,028.53		
2000	7,229.53	1,735.29	-	-	-	2,258.29		
2001	7,802.13	2,753.70	-	-	-	2,430.11		
2002	7,741.92	3,227.66	-	-	-	2,518.08		
2003	10,080.35	4,128.92	2,486.93	-	-	4,437.58		
2004	19,866.91	5,632.69	3,738.12	-	-	8,206.23		
2005	40,766.06	10,561.28	5,667.07	1,947.53	-	16,712.64		
2006	23,367.16	596.92	3,115.25	1,456.89	-	7,933.29		
2007	30,611.69	7,158.81	3,322.62	2,354.58	-	11,038.66		
Panel B: Data from 2008 to 2015								
<i>Sectors</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>
Banking & financial services	13,595.73	15,674.21	16,706.81	14,581.76	14,645.38	17,865.56	18,314.14	15,586.76
Cement	3,055.25	3,915.93	3,924.44	5,336.06	6,063.04	7,022.95	6,852.73	4,542.23
Telecommunication & information tech	1,646.50	1,791.41	1,920.60	1,668.58	2,164.77	2,657.14	1,942.08	1,621.15
Insurance	609.62	1,079.75	911.48	996.63	1,361.66	1,207.18	1,275.94	1,243.89
Petrochemical industries	3,170.95	5,396.80	6,518.34	6,232.93	5,856.40	7,545.50	5,857.20	4,274.68
Retail	3,733.01	4,387.73	4,924.45	6,475.17	7,506.05	11,698.54	15,518.48	12,549.95
Energy & utilities	3,415.18	4,210.69	5,017.16	4,976.27	4,790.15	5,358.74	5,648.32	5,724.83
Agriculture & food industry	3,860.53	5,010.55	5,620.73	5,812.72	6,590.35	9,193.36	11,669.72	9,126.10
Multi-investment	2,052.66	2,442.94	2,284.35	2,756.42	3,697.36	4,350.70	3,679.06	3,300.14
Industrial investment	3,289.77	4,707.70	5,069.26	5,515.90	6,315.25	7,088.42	6,592.86	6,427.57
Building & construction	3,920.35	3,750.28	3,321.61	3,264.12	2,820.08	3,502.90	3,302.82	2,298.14
Real estate development	3,214.26	3,262.89	2,758.13	2,705.21	3,344.20	4,762.89	5,915.87	5,962.68
Transport	2,950.05	3,397.55	3,198.03	2,882.24	4,865.51	6,476.81	7,242.87	7,782.73
Media & publishing	1,783.79	1,893.91	1,463.47	2,148.99	2,909.56	2,735.90	2,200.66	3,462.13
Hotel & tourism	3,986.84	5,898.88	4,881.20	6,005.91	7,253.64	16,173.81	19,770.14	16,806.56
TASI Index	4,802.99	6,121.76	6,620.75	6,417.73	6,801.22	8,535.60	8,333.30	6,911.76

Table A.4. Share price index by sectors* (1985 = 1000) (Part 2)

Panel C: Data from 2016 to 2019				
Sectors	2016	2017	2018	2019
Energy	4,977.22	4,279.85	4849.21	5,442.65
Materials	4,983.12	5,053.62	5,251.47	5,166.7
Capital goods	4,990	4,341	3,900.75	4,332.37
Commercial & professional services	5,044.3	4206.16	4,136.91	4,771.81
Transportation	5099.3	4011.84	3,476.9	4,395.18
Consumer durables & apparel	4,645.69	4,140.63	3,663.67	3,506.44
Consumer services	4,832.41	3,684.83	2,947.21	3,958.85
Media and entertainment	5,120.85	7,736.38	10,178.05	9,401.74
Retailing	4,910.24	5,632.97	6,865.53	7,697.19
Food & staples retailing	5,053.01	5,610.27	5,943.94	6,616.03
Food & beverage	4,901.78	4,897.73	3,888.02	4,353.52
Health care equipment & services	5,017.65	4,443.12	3,757.41	3,729.82
Pharma, biotech & life sciences	5,382.59	3,970.98	3,878.64	3,594.99
Banks	5,084.71	5,501.85	7,213.57	8,107.3
Diversified financials	4,986.59	4,029.94	3,478.02	3,302.48
Insurance	4,912.45	4,724.05	4,175.07	4,513.53
Telecommunication services	5,002.46	4,252.2	5,405.7	6,473.13
Utilities	4,860.47	4,561.31	3,369.3	4,399.7
Reits	5,000	4,632.68	3,623.33	4,197.6
Real estate management & development	5,016.11	4,697.18	3,225.33	3,132.35
Software & services	-	-	-	4,933.33
TASI Index	7,210.43	7,226.32	7,826.73	8,389.23

Note: This separation is driven by changes in the sectoral composition of firms with reference to selected time periods. From 2008, the number of sectors increased from 8 to 15, and the number of market indices rose from 9 to 16, and they are calculated on the basis of free-floating shares only. Similarly, there are missing sectors index data for the period from 1985 until 2007 due to the unavailability of data for each sector for the period after adopting the new classification of sectors.

Source: SAMA Annual Statistics 2019 Based on Saudi Stock Exchange (Tadawul).