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Article

Do Life-Cycles Affect Financial Reporting Quality? Evidence from Emerging Market

Cogent Business & Management

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Suggested Citation: Can, Gökberk (2020) : Do Life-Cycles Affect Financial Reporting Quality? Evidence from Emerging Market, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 7, Iss. 1, pp. 1-24,
<https://doi.org/10.1080/23311975.2020.1854147>

This Version is available at:

<https://hdl.handle.net/10419/245015>

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To cite this article: Gökberk Can | (2020) Do Life-Cycles Affect Financial Reporting Quality? Evidence from Emerging Market, Cogent Business & Management, 7:1, 1854147, DOI: [10.1080/23311975.2020.1854147](https://doi.org/10.1080/23311975.2020.1854147)

To link to this article: <https://doi.org/10.1080/23311975.2020.1854147>



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Cogent Business & Management (2020), 7: 1854147

ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS |
RESEARCH ARTICLE

Do Life-Cycles Affect Financial Reporting Quality? Evidence from Emerging Market

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Received: 12 August 2020
Accepted: 18 November 2020

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Abstract: This paper aims to present the effect of life cycle on financial reporting quality (FRQ). Discretionary accruals, small profit, and audit aggressiveness were used to test the FRQ from different approaches for Borsa Istanbul-listed companies between 2008 and 2017. The sample comprises 1,645 observations of 217 companies over a 9 year period. The life stages were estimated with Dickinson's cash-flow patterns. Following Hansen, Hong and Park, introduction, growth, mature, shake-out, and decline parameters were assigned values of 0, 0.25, 0.5, 0.75, and 1, respectively. The findings for small profit and discretionary accruals are consistent with those of previous literature. Results show that both discretionary accruals and small profit decrease as the companies move forward in their life cycles, while, on the other hand, audit aggressiveness increases. A negative coefficient was observed, but it was insignificant for the other dependent variables. The findings provide insight into the effect of life-cycle stages on FRQ. Results show that the introduction and decline stages negatively affect FRQ, and in addition showed that the audit aggressiveness of Turkish companies decreases with increased listing duration.

Subjects: Accounting; Financial Accounting; Organizational Change

Keywords: life-cycle stages; financial reporting quality; discretionary accruals

1. Introduction

This paper researches the effect of life cycle on financial reporting quality. Previous literature mainly chose a single measure of financial reporting quality. This paper however aims to observe whether moving forward in life-cycle stages results in any change in every financial reporting quality (FRQ) measurement. Various companies' life-cycle stages are determined with cash-flow

ABOUT THE AUTHOR

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PUBLIC INTEREST STATEMENT

Companies' life-cycle stages are always under the interest of economic and business literature. Moving forward in their life-cycle stages change efficiency, and resource allocation. Accounting literature focused on the relationship between a financial reporting quality measure and life-cycle stages. This paper tests the life-cycle stage-financial reporting quality relationship using three (audit aggressiveness, discretionary accruals, and small profits) different measures. Discretionary accruals and small profit decrease as the companies move forward in their life cycles. On the other hand, audit aggressiveness increases when the firms grow further in their life cycles.

patterns based on Dickinson's (2011) paper and assigned a value between 0 and 1 following Hansen et al. (2018). In contrast to the previous literature, the relationship between FRQ and life cycle was tested using three different proxies: Audit aggressiveness, discretionary accruals, and small profit reporting. The relationship between life-cycle stages and audit aggressiveness has not been tested in previous literature. As such, this may be the first paper that focuses on life-cycle stages in the Borsa Istanbul (hereafter BIST) listed companies. This paper investigates whether FRQ proxies have the same prioritization as the companies mature over stages in an emerging market. Turkey is an emerging market, and its stock exchange is relatively younger than western counterparts. This paper aims to understand whether life-cycle stages affect FRQ in BIST-listed companies. The majority of companies are not subject to an independent audit, and as such FRQ becomes a management consideration only for initial public offerings and afterwards.

Life-cycle stages are not based on the age of the company. As companies grow older (age) and/or larger (size, employment), they may or may not mature over time (Greiner, 1972). Internal (e.g., management perspective, innovation skills, financial position) and external (e.g., national economy, political developments, trade with new markets) factors are the primary sources of this difference between age/size, and maturity in a company (Dickinson, 2011; Levie & Lichtenstein, 2010), and whether further stages are reached faster compared to peers. A company may expand horizontally or vertically, as management can expand the range of products or services. The magnitude and complexity of activities increase as the company moves forward through the stages (Adizes, 1979). Many economics and business scholars approached the companies' growth from a biological perspective (Levie & Lichtenstein, 2010). Transitions between life-cycle stages change in power configuration (Mintzberg, 1984), managerial centralization (Greiner, 1972), and stakeholder strategies (Jawahar & McLaughlin, 2001) in the company. Considering the life-cycle stage's powerful effect on management and its structure, management's approach to financial reporting is also affected (Jensen & Meckling, 1976).

Life cycles consist of five stages of introduction, growth, maturity, shake-out, and decline. Naming and numbering of these stages vary in the literature. Accounting and finance literature have used size (Klein & Marquardt, 2006), tangibility (Khan & Watts, 2009), retained earnings (DeAngelo et al., 2006), costing system (Kallunki & Silvola, 2008), employment (Dinlersoz et al., 2019), age (Doyle et al., 2007a; Drake et al., 2009; Oliver, 2001; La Rocca et al., 2011; Wasley & Wu, 2006), asset growth (Bayat & Bargezar Noshahr, 2018), and multi-criteria proxies (Anthony & Ramesh, 1992; Desai et al., 2006; Elsayed & Paton, 2009; Faff et al., 2016; Lester et al., 2003; Pashley & Philippatos, 1990) to determine the companies' life-cycle stages. According to Dickinson (2011), cash-flow pattern proxy utilizes the financial information set contained in operating, investing, and financing cash flows, and helps to capture differences in a company's profitability, growth, and risk. The author stated that the combination of cash-flow patterns represents a company's operational capabilities and resource allocations.

This paper's data set consists of 217 BIST-listed companies with 1,645 observations over a 9 year period. The life stages are estimated with Dickinson's (2011) cash-flow patterns for each observation. Following Hansen et al. (2018), values of 0, 0.25, 0.5, 0.75, and 1 are assigned for introduction, growth, maturity, shake-out, and decline, respectively. Audit aggressiveness was calculated with Gul, Wu, and Yang's (Gul et al., 2013) model, and discretionary accruals are estimated for industry/year with Kothari, Leone, and Wasley's (Kothari et al., 2005) "Performance matched discretionary accrual model", using the absolute value of the model's residual. A threshold of 0-to-0.025 detects small profit and marks the observations that fall into the threshold. In addition to the life-cycle, firm-level control variables are utilized to test the model. Results show that financial reporting quality does not always increase as companies move further into their life-cycle stages. In addition, audit aggressiveness (small profits) increases in the later (early) stages. A robustness test based on the listing duration shows that the audit aggressiveness declines with the listing duration. The listing duration-based life-cycle variable results in insignificant but negative coefficients for dependent variables.

Supported by theoretical review, this paper contributes to the accounting literature by providing a perspective on the life cycle's effect on financial reporting in an emerging market. To my knowledge, this is the first paper in Turkey that provides any evidence regarding life-cycle stages. Differing from prior literature, three different measures (audit aggressiveness, discretionary accruals, and small profit) are used to test the relationship between FRQ and life-cycle stages. Results report that advancing in the life-cycle stage does not always increase FRQ as different FRQ measures dominate as life-cycle stages move forward. Empirical evidence points out that audit aggressiveness increases as companies move forward in their life-cycle stage. Based on literature review, this is the first paper that tests the relationship between life-cycle stages and audit aggressiveness. Finally, results also show that small profit reporting tends to decrease as companies proceed through the life-cycle stages.

The remainder of this paper is organized as follows. Section 2 presents Turkey's institutional setting. Section 3 reviews the theoretical literature in order to develop this paper's main hypothesis. Section 4 discusses the empirical literature review and presents the hypothesis development. Sample, financial reporting quality proxies, life-cycle stage measurement, and econometric model are presented in Section 5. The empirical results and robustness tests are discussed in Section 6. Lastly, Section 7 concludes the paper.

2. Background

Geographically and socially, Turkey (officially Republic of Turkey) is the bridge between Europe and Asia. The country's founding fathers used French, German, Italian, and Swiss examples to establish its secular legal and governing system. Turkey signed the Customs Union agreement with the European Union (hereafter EU) on 31 December 1995. The country's EU membership candidacy has been ongoing since 1999. According to the Central Intelligence Agency's report, 99.8% of the population is Muslim. Despite this, Shari'a Law does not influence the country's secular legal code. Turkey's first capital market was established as the Istanbul Stock Exchange (hereafter ISE) on 26 December 1985 and renamed to Borsa Istanbul on 5 April 2013. Capital Market Authority (hereafter CMB) regulates BIST-listed companies' disclosures, financial statements, announcements, corporate governance, and other requirements. The banking sector dominates Turkey's economy. In 2018, banks were six of the ten highest taxpayer institutions. BIST's most populated sectors are manufacturing companies and financial institutions (including holdings) with 175 and 127 companies, respectively. The main index is BIST100, and it contains 100 companies with the highest market capitalization, nine of which are banks. According to the Revenue Administration, the Central Bank of Turkey (hereafter CBT) was the highest taxpayer in 2018. Including CBT, there were six banks in the top ten and four in the top five listed companies.

Due to the country's EU membership candidacy, listed companies have been preparing their financial statements following International Financial Reporting Standards (hereafter IFRS) since 2005. Public interest entities and companies meeting Public Oversight, Accounting, and Auditing Standards Authority's (hereafter POAASA) two-of-three criteria have been preparing their financial statements following IFRS. These companies are also subject to independent audit. Big4 accounting firms dominate the Turkish audit market and their partners are busier than non-Big4 counterparts (Ocak, 2018). For private companies outside of POAASA criteria, financial reporting depends on the tax regulations, and an independent audit is not mandatory for them. Thus, it can be said that management's understanding of financial reporting quality depends on corporate tax payments. Turkey's institutional setting does not force the majority of companies to have a higher quality of financial statements. Thus, companies do not need an independent audit until they become a public interest entity or are listed in BIST. Starting with the fiscal year 2009, companies announce their financial statements, notifications, meetings, and present their company details via the Public Disclosure Platform (hereafter PDP). Central Securities Depository (hereafter CSD) records and reports equity and debt instruments. The market value of assets under custody (equity and debt securities of companies, government debt securities, mutual and exchange funds,

structured products, and asset-backed securities) is approximately 252.5 billion USD on 31 August 2020.

Turkey has been dealing with political crises since the multi-party system started in 1945. The country lived through two coup d'états (1960 and 1980) and three military memorandums (1971, 1997, and 2007). On 15 July 2016, a fraction of the armed forces attempted another coup d'état. The country's most profound economic crisis happened in 2001 due to a political dispute between the president (Ahmet Necdet Sezer) and prime minister (Bulent Ecevit). Political and economic instability have affected the Turkish's capital market development. Ararat and Ugur (2003) stated that Turkish capital market's main characteristics are low liquidity, high volatility, high cost of capital, and limited new capital formation. In later research, Ugur and Ararat (2006) reported a positive relationship between corporate governance reforms and macroeconomic stability since 2002. According to the authors, macroeconomic stability reduced the risk and increased the Turkish stock market's returns. Therefore, new investors entered the market, and out-of-company volatility diminished. The authors claimed that these external developments made companies invest in corporate governance reforms. Günay (2016, 2019) pointed out that political events (including the coup attempt) do not significantly affect BIST volatility to the extent of returning to pre-November 2011 levels.

3. Theoretical literature review

Business and economics scholars have estimated companies' growth and the effect of growth on organizations since the 1960s (Levie & Lichtenstein, 2010). A company is born, then grows, reaches a level of maturity, activities start to decline, and its life will be over when the operations are not sustainable anymore. Prior literature defined life cycles using the metaphor of organisms to support the advancement through stages. However, despite the fundamental and metaphorical similarity, this definition does not show the transition between stages (Levie & Lichtenstein, 2010). Internal and external factors affect the pace and speed of transition. As well, the duration of transition between stages may be different for different companies, and many do not only move forward through all the cycles. According to the model classification of Miller and Friesen (1984), 75% of companies in the "birth" cycle progressed to the "growth" phase immediately. Different fields define life-cycle stages differently, as in economic and business literature where there is no generally accepted number of stages. According to Levie and Lichtenstein (2010) detailed analysis, prior literature classified life cycle from 3 to 11 stages, and the most frequent classifications have three, four, or five stages. The authors divided the prior literature into "Stages of growth models" and "Dynamic states models." According to the authors, stages of growth models follow a pattern similar to biological life, limiting stages and transitions. On the other hand, dynamic state models represent an infinite number of stages, and thus there may be any number of dynamic states during its existence.

Company growth comes with different consequences. Whetten (1987) defined growth as a by-product of other strategies as successful goods/services foster growth. Mueller (1972) states that in a typical growing company, management decentralizes the decision-making tools. According to the author, the primary purpose of decentralization is to involve those with adequate information and incentives to ensure uncertain decisions. Mueller (1972) also claims that large companies that should not be growing at all grow faster than young companies with an innovative idea. Smith et al. (1985) point out that short-term accomplishments are achievements for young organizations' managers. According to the authors, managers prioritize short-run, result-oriented, quantitative performance results, and maintaining suppliers' support. The authors also mention that management prioritizes different practices of management in each life cycle. Mintzberg (1984) claims that life-cycle transitions also create a change in power and its configuration. The author also points out that the external coalition's structure affects the internal coalition's composition and organizational power configuration. Jawahar and McLaughlin (2001) highlight that companies' stakeholder strategy changes across stages due to its importance in organizational survival. In

addition, they state that companies will act proactively to attract investors and creditors to find more funding and longer tenure, respectively.

According to Doyle et al. (2007b), companies with staffing issues (“inadequate segregation of duties,” “inadequate qualified staffing and resources,” or “lack of a full-time CFO”) are in the early stage of life cycle. These companies have the lowest restructuring costs and the highest sales growth. Greiner (1972) defines the transition process as the company’s evolutions creating its own revolutions, such as a transition from centralized to decentralized management. The author also mentioned that management’s solution to each revolution determines whether the company can move forward through its life cycles. According to the author, a company may not grow in size but may face the same managerial practices and issues over time. The author claimed that with increased size, companies’ communication and coordination issues become larger, new functions arise, duties become more interrelated, and levels of management hierarchy spread. Adizes (1979) explains the change in organizational behavior using the PAEI (Produce, Administration, Entrepreneurship, Integration) role model and divided the life into 10 stages (Courtship, Infancy, Go-Go, Adolescent, Prime, Mature, Aristocratic, The Early Bureaucracy, Bureaucracy, Death). The author states that different roles gain importance or disappear as the organization passes from one stage to another, and organizational behavior responds to the changes due to the role prioritization.

Following Gort and Klepper (1982), Dickinson (2011) uses the “organic” approach and defines five life-cycle stages. The author used agency (Jensen, 1986) and pecking-order theories (Myers, 1984) to assign the cash-flow pattern to the life-cycle stage. According to Dickinson (2011), cash-flow patterns present a better proxy than performance and age proxies due to the non-linear relationship between these proxies and life-cycle stages. Dickinson (2011) also stated that cash-flow patterns reflect the behavioral changes between the life-cycle stages such as positive operating cash flow as it is a signal of increased efficiency that will happen in growth and mature stage companies. The other advantage of using cash-flow patterns is that cash-flow classification has a crucial role in market capitalization and stock returns prediction. Using economic theory, Dickinson (2011) claims that cash-flow patterns show how companies’ strategy choice affects operational capabilities and resources allocation.

4. Empirical literature review and hypotheses development

Dickinson et al. (2018) found that analysts’ earnings and accounting information forecasts are both informative for market values, but conditions differ for the life-cycle stage. Regarding their evidence, investors put more weight on analysts’ forecasts for growth and mature companies. On the other hand, investors find accounting information to be more relevant for stock prices and stock returns of companies in the introduction and decline stages. According to de Oliveira and Girão (2018), analysts’ earnings forecasts are more negatively affected for introduction and decline stage companies. The authors also state that optimistic or pessimistic bias decreases in the decline stage compared to non-mature stages. Abdullah and Mohd-Saleh (2014) use mature companies as a baseline and compare these companies’ accounting conservatism to “growth” and “decline” companies’ conservatism. They reported that growth (decline) companies are less (more) than mature companies. Hansen et al. (2018) find a different result in terms of conservatism. The authors claim that unconditional reporting conservatism decreases over the life-cycle stages, but conditional reporting conservatism is not related to life-cycle stages. X. Xudong Chen et al. (2010) state that incorporation of life-cycle variables into the accrual model reduces the likelihood of both type I and II errors, and it also significantly improves the explanatory power of the accrual model. Hribar and Yehuda (2015) report that accruals and free cash flows have a strong and negative correlation in the maturity and decline stages. Their evidence showed that the cash-flow anomaly subsumes the accruals anomaly in maturity and decline stages.

Anthony and Ramesh (1992) report that unexpected sales growth and unexpected capital investment show a monotonic decline from growth to decline stages. Faff et al. (2016) find that

investments and equity issuance vary with the life cycle. Their evidence also shows that debt issuance and cash holdings increase (decrease) in the introduction and growth (mature and shake-out/decline) stages. Park and Chen (2006) report that the market evaluates accounting information differently for different stages. The authors also state that accounting conservatism affects the relationship between valuation and life cycle. They claim that investors price lower (higher) for the decline (growth) stage companies due to conservative accounting practices. In similar research, Bixia (2007) suggests that capital markets are aware of information conveyed in the firm life-cycle stage and incorporate it when they interpret risk factors. Nagar and Sen (2017) state that decline stage companies are more likely to use classification shifting in order to beat or meet earnings benchmarks.

Hasan et al. (2016) found that the life-cycle stage is significantly correlated with tax avoidance. According to their results, while tax avoidance is positively associated with introduction and decline stages, the authors observed a negative association with growth and mature stages when the shake-out stage is the benchmark. Mangoting and Onggara (2019) report similar results for tax avoidance and life-cycle stages. The authors state that tax avoidance is significantly positive in the introduction and decline stages and significantly negative in growth and mature stages. Regarding their evidence for the life cycle related to earnings persistence, Martinez and Bassetti (2016) claim that life-cycle stages must be added to the analysis to test book-tax difference and the earnings persistence relationship. Hasan and Habib (2017) use the shake-out stage as the baseline, and they document that idiosyncratic risk is higher for the introduction and decline stages, while it is lower for the growth and maturity stages. Hasan et al. (2015) report that the cost of equity shows a U-shaped pattern. Their evidence showed that the cost of equity increases in the introduction and decline stages and decreases in the growth and mature stages.

According to Owen and Yawson (2010), there is a highly significant and positive relationship between the life-cycle and the likelihood of becoming a bidder. The authors also state that making cash and mixed deals is positively correlated with the life cycle. Using Chinese-listed non-financial companies from 2007 to 2016, Shahzad et al. (2020) found that idiosyncratic risk, market risk, and total risk are significantly higher during the introduction, growth, and decline stages due to their competitive advantages, resource base, and capabilities being limited. Their empirical evidence shows that these risks are lower during the mature stage. Bravo (2019) shows the relationship between a firm's beta and the various corporate stages. The author mentions that the relationship between beta and the life cycle is prompted by initially significant volatile expected future cash flows. The volatility declines as the company establishes its position in the market and stabilizes its revenue and earnings. Yang and Shyu (2019) state that the group's effect on the company's performance is highest in the mature stage. The authors' empirical evidence shows that financial institutional ownership has a negative impact on the decline stage companies.

Lee and Choi (2018) find that companies' corporate social responsibility (CSR) engagement differs in their life cycles. The authors reported that there is a positive (negative) correlation with growth (decline) companies and CSR engagement. Shahzad et al. (2019) report that corporate risk-taking is higher (lower) during the introduction and decline stages (mature and growth stages). Their empirical evidence shows a negative (positive) relationship between corporate risk-taking and both current and future performance during the introduction and decline (mature and growth) stages. Yoo et al. (2019) report that research and development (R&D) expenditures have different effects in terms of future performance, future uncertainty, and capital market response. According to the authors' empirical evidence, R&D expenditures decrease (increase) the future performance for the introduction (mature) stage. The authors also claim that the introduction stage companies receive a negative response from the capital market for their R&D expenditures. Bhattacharya et al. (2019) report that a non-linear relationship exists between a company's life-cycle stage and its propensity to pay dividends. Measuring the life cycle with Retained Earnings-to-Total Equity ratio proposed by Drake et al. (2009), Budiarto et al. (2019) find that mature (growing) Indonesian

companies pay more (less) dividends than their counterparts because they are larger and more profitable.

Following the prior literature, I developed the following hypothesis:

H1₀: Moving forward in their life-cycle stages does not affect the financial reporting quality of companies (Expected sign varies with hypothesis).

H1A₀: Moving forward in their life-cycle stages does not affect the audit aggressiveness of the companies (Expected Sign for H1A1 [-]).

H1B₀: Moving forward in their life-cycle stages does not affect discretionary accruals of the companies (Expected Sign for H1B1 [-]).

H1C₀: Moving forward in their life-cycle stages does not affect small profit reporting of the companies (Expected Sign for H1C1 [-]).

5. Research design

5.1. Sample

The audited financial data from BIST-listed companies were used between the years 2009 and 2017, except for all financial companies which were excluded. According to the BIST classification, holdings are listed under financial institutions, and therefore holdings are ruled out from the data set. The sample comprises 217 companies, 9 years, and 1,645 observations in an unbalanced panel data set. Two resources were used to download the data. Financial variables, Sharia compliance, reporting lag, and listing duration were downloaded from Thomson Reuters Eikon Database, and the institutional ownership data from the Central Securities Depository (CSD). The industry classification of BIST was utilized. Table 1 reports sample distribution per year and industry.

5.2. Research model

The research model construction was based on the previous literature and analyzed the effect of the life-cycle stage on the financial reporting quality. The financial reporting quality was measured with three different proxies. Kothari et al. (2005) and Gul et al. (2013) estimated the discretionary accruals and audit aggressiveness, respectively. Companies that reported a profit to beat the earnings benchmark were marked. Also, the companies' life cycles were labeled using Dickinson (2011). Supported by the previous literature (please see Literature Review), the following model was developed. Table 2 presents the definitions of the variables.

$$FRQ_{it} = \alpha_1 LCS_{it} + \beta_1 SHARIA_{it} + \beta_2 INST_{it} + \beta_3 LIST_{it} + \beta_4 SIZE_{it} + \beta_5 Q_{it} + \beta_6 TANG_{it} + \beta_6 CHOLD_{it} + \beta_7 OCF_{it} + \beta_8 OCFD_{it} + \beta_9 REVG_{it} + \beta_{10} REVD_{it} + \beta_{11} LOSS_{it} + \beta_{12} DIV_{it} + \beta_{13} LAG_{it} + YearsFixed + IndustriesFixed \quad (1)$$

The fixed-effect model assumes that independent variables that affect the dependent variable vary with cross-section and time (Wooldridge, 2018). Fixed effect regression is useful when two or more observations are available for each unit (Stock & Watson, 2020). My data set covers 217 companies from 9 years and 8 industries. 2009, 2010, and 2011 are the global crisis years. 2016 is the year that the coup d'état happened. The majority of observations (73%) are in the manufacturing industry. I used fixed effects to capture the effect of years and industries on the dependent variable (Sul, 2019). My data set does not include any randomly selected companies and there are quantitative and qualitative differences among these companies. Gujarati (2015) stated that using fixed effects is more suitable than random effects when a unit choice is not random.

Table 1. Sample distribution per industry and year

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Education, Health, Sports and Other Social Services	4	4	4	4	5	5	5	5	4	40
Administrative and Support Service Activities	0	0	0	2	2	2	3	3	3	15
Manufacturing	119	121	130	122	135	147	146	143	142	1,205
Construction and Public Works	1	3	3	3	4	4	6	5	5	34
Agriculture, Forestry, and Fishing	0	0	1	1	2	3	3	3	2	15
Technology	12	12	14	13	14	14	14	13	12	118
Wholesale and Retail Trade, Hotels, and Restaurants	12	12	18	20	21	20	19	20	20	162
Transportation, Telecommunication, and Storage	6	6	6	6	6	7	7	6	6	56
Total per Year	154	158	176	171	189	202	203	198	194	1,645

Table 2. List of variables

Variable	Definition	Source
FRQ	FRQ is the financial reporting quality measured with discretionary accruals, small profit, and audit aggressiveness.	Eikon
DACC	Discretionary accruals calculated with Kothari et al. (2005).	Eikon
SP	1 if the company earnings divided by lagged assets is between 0 and 0.025.	Eikon
AGG	Audit aggressiveness calculated with Gul et al. (2013).	Eikon
LCS	Assigned a value of 0, 0.25, 0.5, 0.75, or 1 for introduction, growth, mature, shake-out, and decline stages (Hansen et al., 2018) proposed by Dickinson (2011).	Eikon
SHARIA	1 if the company is Sharia-compliant.	Eikon
INST	Institutional ownership divided by total ownership.	CRA
LIST	Listing Duration	Eikon
SIZE	Natural logarithm of total assets in the period t.	Eikon
Q	Market capitalization in the period t.	Eikon
TANG	Net Property, Plant, Equipment divided by lagged assets.	Eikon
LEV	Total Liabilities divided by lagged assets.	Eikon
CHOLD	Sum of Cash Holdings and Short-Term Investments divided by lagged assets.	Eikon
OCF	Operating Cash Flow divided by lagged assets.	Eikon
OCFD	Standard deviation of OCF divided by lagged assets and prior 2 years	Eikon
REVG	Change in Revenue divided by lagged assets	Eikon
REVD	Standard deviation of revenue divided by lagged assets and prior 2 years	Eikon
LOSS	1 if the company reported loss in the period t.	Eikon
DIV	1 if the company paid dividends in the period t.	Eikon
LAG	Reporting lag	Eikon

5.3. Measuring financial reporting quality

The measurements consist of discretionary accruals, audit aggressiveness, and small profits. I used Kothari et al. (2005) and Gul et al. (2013) to estimate the discretionary accruals and audit aggressiveness, respectively. The small profit was calculated for 0 and +0.025 levels of net income divided by lagged assets (ROA).

5.3.1. Audit aggressiveness

Firstly, audit aggressiveness (AGG) is measured using Gul et al. (2013) with logistic regression to predict modified audit opinions using Equation 2. The dependent variable is modified opinion, which equals one if the client receives a modified opinion, otherwise, it is 0. A higher result obtained from Equation 3 signals that the auditor has a lower tendency to issue a modified audit opinion (Gul et al., 2013) and results in a decrease in the financial reporting quality (Xiaolin Chen et al., 2017).

$$\begin{aligned} \text{Modified}_{it} = & \beta_0 + \beta_1 \text{Quick Ratio}_{it} \\ & + \beta_2 (\text{Receivable} + \text{Other Receivables} + \text{Inventories}_{it}) / (\text{Total Assets}_{it}) \\ & + \beta_3 \text{ROA}_{it} + \beta_4 \text{LOSS}_{it} + \beta_5 \text{Leverage}_{it} + \beta_6 \text{LogSize}_{it} + \beta_7 \text{LogAge}_{it} \\ & + \text{Sector Fixed}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

$$\text{AGG} = \text{Predicted Opinion} - \text{Actual Opinion} \quad (3)$$

5.3.2. Discretionary accruals

The second FRQ measure is discretionary accruals (DACC). For each BIST industry group and year combination with at least six companies, the discretionary accruals were estimated by using the absolute of residuals obtained from Kothari et al. (2005). For the industries with less than six companies, their years were merged to reach the observation of six per industry.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}} \right] + \beta_{1i} \left[\frac{REV_{it} - \Delta REC_{it}}{A_{it-1}} \right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}} \right] + \beta_{3i} ROA_{it-1} + \varepsilon_{it} \quad (4)$$

where TA_{it} is total accruals calculated with balance sheet approach in year t ; ΔREV_{it} is revenues in year t less revenues in year $t-1$; ΔREC_{it} is receivables in year t less receivables in year $t-1$; PPE_{it} is property, plant, and equipment in year t ; ROA_{it} is Return on Asset ratio in year $t-1$; A_{it-1} is lagged assets; ε is error term in year t ; i notation stands for company.

5.3.3. Small profits

To test the relationship between life cycles and small profit, the model was estimated with logistic regression for small profits. Burgstahler and Dichev (1997) stated that reporting a small profit is an indicator of income increasing earnings management because the management will prefer reporting a small profit instead of a small loss. According to Gul et al. (2013), Chinese companies that report a loss in 2 consecutive years will be more motivated to report a small profit reporting due to the 3-year profitability rule in the stock exchange. The authors used the 0–0.01 threshold of net income divided by the average asset to estimate small profit. In a later paper, Gul et al. (2017) used a 0–0.2 threshold. Their empirical evidence showed that size positively affects small profit. Goodwin and Wu (2016) pointed out that small profit is an indicator of lower audit quality and auditor's failure to restrain the client from upwards earnings management practices to beat the earnings benchmark. The authors used a 0–0.02 threshold of net income divided by lagged assets to estimate small profit. According to Ocaik (2013), BIST-listed companies tend to report small profit to satisfy the investors' earnings benchmark expectations. Figure 1 reports ROA (un-tabulated) histogram using –0.25 and +0.25 bands to make a better presentation. An interquartile range of 0.006¹ is calculated for the full sample. 15.32% (7.41%) of observations in the 0 to 0.025 (–0.025 to 0) band occur 4 times in between every 0.025. Figure 1 shows that the highest frequency of ROA is between 0 and 0.03. Using the same bands, Figure 2 shows the ROA distribution per year.² The figure shows that small profit reporting frequency increases after 2009 except for 2013 and 2017.

5.4. Life-cycle determination

Table 3 presents the life-cycle determination using Dickinson's (2011) cash flows as proxies. Following Hansen et al. (2018), values of 0, 0.25, 0.5, 0.75, or 1 were assigned for LCS as introduction, growth, mature, shake-out, and decline stages.

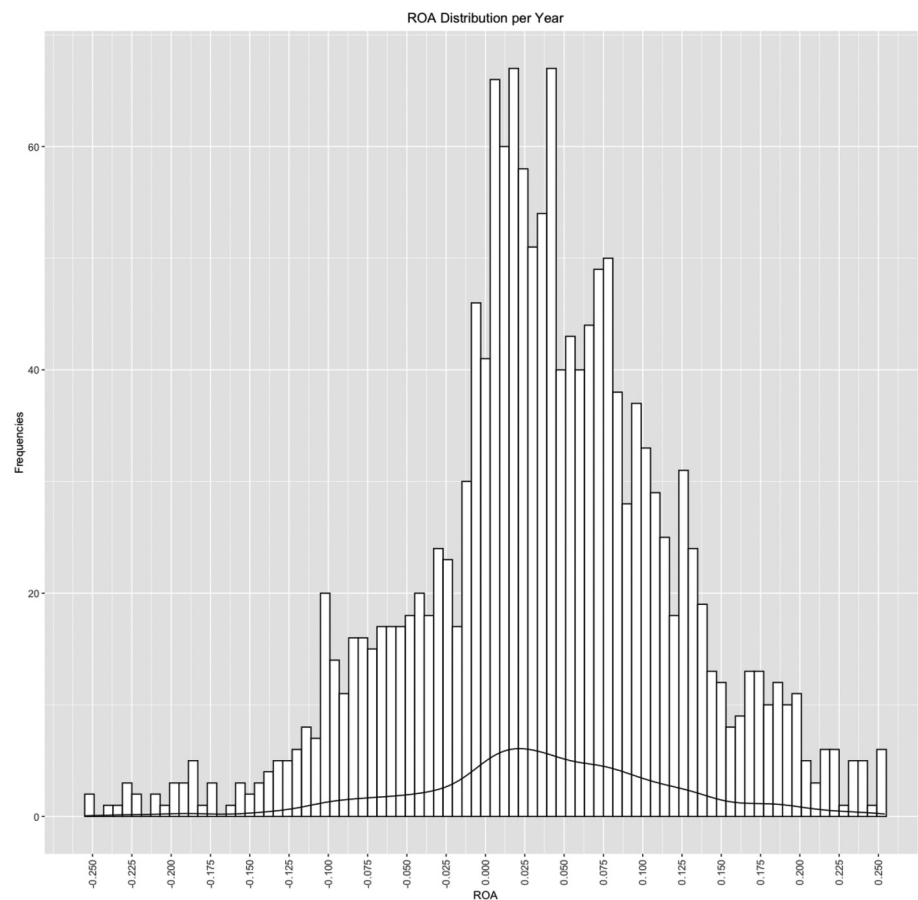
6. Empirical results and discussion

Kothari et al. (2005) and Gul et al. (2013) models are cross-sectionally run for each industry/year. I constructed the dependent variable DACC and AGG using each unit's residual dependent variables from the residuals of Kothari et al. (2005) and Gul et al. (2013).

6.1. Descriptive statistics

Table 4 reports the descriptive statistics for continuous variables. Extreme values were confirmed with financial statements published on PDP. No variables are winsorized for the analysis. Table 5 reports the descriptive statistics for categorical variables. Table 6 provides the means for each variable per life-cycle stage. The table shows that the mean of the dependent variables does not always vary following the cycle stages. The mean of audit aggressiveness increases moving forward to the decline stage, while small profit's mean is lower in the later stages. The mean of small profit reporters is highest in introduction and growth stages, and it declines in mature and shake-out stages. An increase in the mean is observed in the decline stage. Discretionary accruals have different results

Figure 1. ROA distribution between -0.25 and +0.25.



than the other dependent variables. The mean of discretionary accruals is positive in introduction and decline stages, negative in growth and mature stages, and zero in the shake-out stage. [Tables 7–9](#) report the t-test of differences of means for life-cycle stages. [Table 10](#) presents the correlation matrix of the dependent and independent variables. Statistical significance is presented in brackets. The highest correlation (0.59) occurred between institutional ownership and size. The lowest correlation (–0.37) is between loss and dividends payment.

6.2. Results

[Table 11](#) reports the results for linear and logistic regressions with year and industry fixed effects. Standard errors are robust at the industry/year level (Zeileis, 2004). The first and second columns in Panel A report the results for audit aggressiveness and discretionary accrual models, respectively. Panel B reports the results for small profits with pseudo-R-square (Zhang, 2018).

The results show that financial reporting quality does not always increase with the life-cycle stage. According to the empirical evidence, audit aggressiveness increases (coefficient 0.08 | t-statistic 1.98) as the companies move forward in their life-cycle stages. The variable does not have statistically significant results (–0.01 | –0.42) for discretionary accruals. Different than Nagar and Sen (2017), it was observed that companies do not tend to report small profits in the later stages of the life cycle (–0.10 | –3.22). It can be stated that different financial reporting quality measures are affected in different stages. The results confirm that moving further in the life-cycle stage does not always increase the financial reporting quality. Increased market capitalization reduces audit aggressiveness (–0.02 | –2.18), and small profit (–0.02 | –2.72). A positive (negative) relationship was observed between loss reporting and audit aggressiveness (0.09 | 3.36) and

Figure 2. ROA distribution per year.

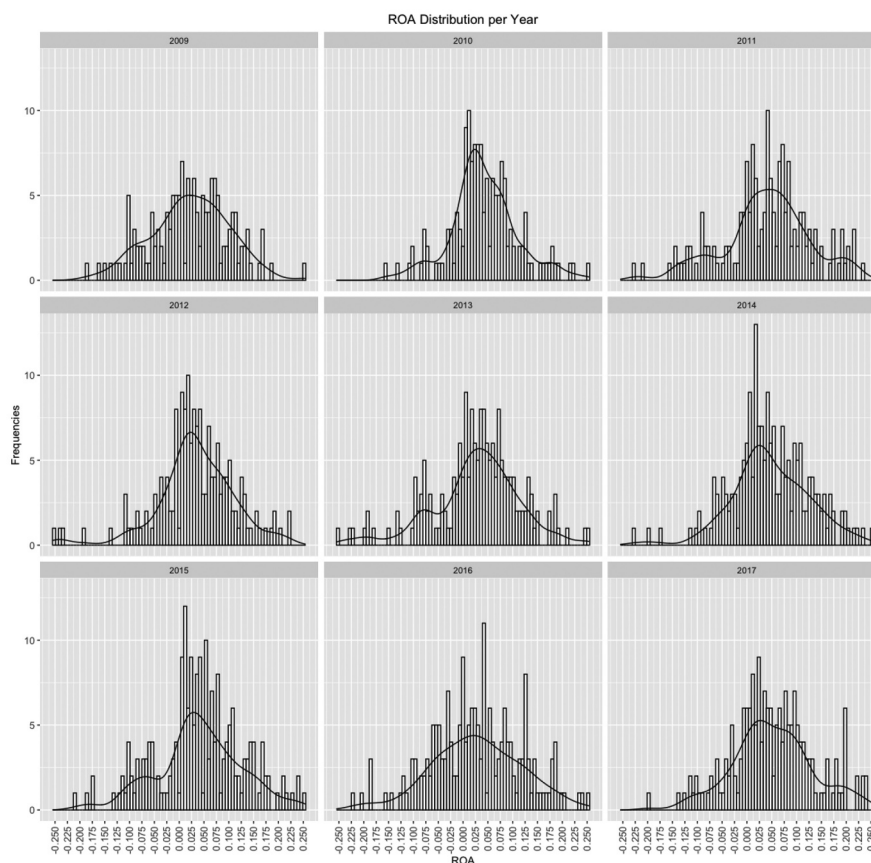


Table 3. Life-cycle determination using Dickinson (2011)

Cash Flow Type	1	2	3	4	4	4	5	5
Operating	-	+	+	-	+	+	-	-
Investing	-	-	-	-	+	+	-	+
Financing	+	+	-	-	+	-	+	-

1. Introduction 2. Growth 3. Mature 4. Shake-Out 5. Decline

discretionary accruals (0.02 | 2.16). Longer reporting lag signals the tendency toward small profit (0.14 | 2.00). The variable was not statistically significant for audit aggressiveness and discretionary accruals. Statistical analysis showed that dividend payment reduces small profit (-0.08 | -3.99). According to my analysis, cash holding reduces small profit (-0.28 | -5.54) but increases the discretionary accruals (0.14 | 4.20).

Sharia compliance was used as an ethics proxy. The results showed that Sharia compliance reduces the discretionary accruals (-0.01 | -2.04). On the other hand, with 10% statistical significance, it is observed that there is higher audit aggressiveness (0.04 | 1.73) in the Sharia-compliant companies than their non-compliant counterparts. Listing duration and institutional ownership are used as governance proxies. The results also show that the listing duration reduces the discretionary accruals (-0.01 | -2.43). Increased institutional ownership reduces small profit

Table 4. Descriptive statistics for continuous variables

	MIN	1Q	MEAN	3Q	MAX	SD
AGG	-0.97	-0.23	-0.11	-0.09	3.39	0.43
DACC	-0.79	-0.07	0.00	0.06	0.88	0.15
FLCV	0.00	0.25	0.40	0.50	1.00	0.28
INST	0.00	0.09	0.38	0.62	0.99	0.31
LIST	2.71	8.14	8.43	9.06	9.37	0.93
SIZE	15.06	18.36	19.52	20.42	24.13	1.64
Q	0.34	0.98	1.57	1.66	13.51	1.25
TANG	0.00	0.20	0.38	0.52	3.40	0.27
LEV	0.01	0.36	0.66	0.80	17.61	0.70
CHOLD	0.00	0.02	0.11	0.15	2.32	0.15
OCF	-1.71	-0.01	0.06	0.12	6.14	0.25
OCFD	0.00	0.04	0.11	0.12	3.70	0.22
REVG	-1.75	0.00	0.14	0.21	5.19	0.37
REVD	0.00	0.06	0.20	0.23	3.13	0.29
LAG	3.93	4.20	4.31	4.33	6.08	0.19

Table 5. Variables' means per cycle for dichotomous variables

	MIN	1Q	MEAN	3Q	MAX	SD	N = 1
SP	0.00	0.00	0.15	0.00	1.00	0.36	252
SHARIA	0.00	0.00	0.29	1.00	1.00	0.46	484
LOSS	0.00	0.00	0.28	1.00	1.00	0.45	454
DIV	0.00	0.00	0.38	1.00	1.00	0.49	632

reporting (-0.10 | -2.68). My empirical evidence shows that leverage increases the discretionary accruals (0.02 | 3.03) and small profit (0.07 | 4.74). Operating cash flow and 3-year volatility are used to observe their effect on financial reporting quality. Operating cash flow reduces the small profit reporting (-0.10 | -2.77). Operating cash-flow volatility also results in 10% significance for small profit reporting (-0.08 | -1.67) and discretionary accruals (0.05 | 1.78). Revenue growth and 3-year volatility are also used as revenue-based variables. Revenue deviation resulted in a 10% significance in the audit aggressiveness model (0.07 | 1.77). Revenue growth reduces small profit reporting (-0.10 | -4.10). Size decreases the discretionary accruals (-0.01 | -2.04) and resulted in 10% significance for audit aggressiveness (-0.01 | -1.69).

6.3. Robustness test

Following the prior literature, the analysis is tested with an alternative life-cycle proxy (Habib et al., 2019; Hansen et al., 2018; Hasan et al., 2016). The age for each year is divided into quintiles of life cycles and modified Equation 1 as follows:

$$\begin{aligned}
 FRQ_{it} = & \alpha_1 ABC_{it} + \beta_1 SHARIA_{it} + \beta_2 INST_{it} + \beta_3 LIST_{it} + \beta_4 SIZE_{it} + \beta_5 Q_{it} \\
 & + \beta_6 TANG_{it} + \beta_7 CHOLD_{it} + \beta_8 OCF_{it} + \beta_9 OCFD_{it} + \beta_{10} REVD_{it} + \beta_{11} LOSS_{it} + \beta_{12} DIV_{it} + \beta_{13} LAG_{it} \\
 & + Years\ Fixed + Industries\ Fixed
 \end{aligned} \quad (5)$$

Using quintiles of age, values of 0, 0.25, 0.5, 0.75, and 1 were assigned to "ABC" for introduction, growth, mature, shake-out, and decline, respectively. Table 12 reports the results of the robustness test. When the test is run with age as a variable, it did not provide materially different results.

Table 6. Variables' means per cycle

	1	2	3	4	5
AGG	−0.15	−0.11	−0.12	−0.08	0.00
DACC	0.07	−0.03	−0.02	0.00	0.04
SP	0.20	0.18	0.12	0.13	0.14
SHARIA	0.23	0.32	0.33	0.23	0.24
INST	0.26	0.38	0.47	0.33	0.25
LIST	8.14	8.48	8.57	8.48	8.16
SIZE	18.91	19.73	19.96	19.14	18.60
Q	1.50	1.49	1.70	1.60	1.38
TANG	0.38	0.43	0.37	0.30	0.31
CHOLD	0.07	0.14	0.11	0.14	0.09
OCF	−0.11	0.09	0.14	0.07	−0.04
OCFD	0.14	0.09	0.08	0.11	0.23
REVG	0.20	0.13	0.14	0.07	0.05
REVD	0.27	0.17	0.17	0.21	0.28
LOSS	0.45	0.25	0.18	0.27	0.43
DIV	0.23	0.31	0.55	0.37	0.15
LAG	4.31	4.31	4.32	4.30	4.31

Notes: 1. Introduction 2. Growth 3. Mature 4. Shake-Out 5. Decline.

Table 7. Difference of means test for audit aggressiveness (AGG)

1	2	Mean	Mean	t-stat	p-value
Introduction	Growth	−0.15	−0.11	−1.11	0.27
Introduction	Mature	−0.15	−0.12	−1.01	0.31
Introduction	Shake-Out	−0.15	−0.08	−1.60	0.11
Introduction	Decline	−0.15	0.00	−1.97	0.05
Growth	Mature	−0.11	−0.12	0.26	0.80
Growth	Shake-Out	−0.11	−0.08	−0.83	0.41
Growth	Decline	−0.11	0.00	−1.52	0.13
Mature	Shake-Out	−0.12	−0.08	−1.05	0.29
Mature	Decline	−0.12	0.00	−1.64	0.10
Shake-Out	Decline	−0.08	0.00	−0.95	0.34

Material differences are observed from the primary analysis presented in Table 11. The age-based cycle variable (ABC) results in positive coefficients but were statistically insignificant. With 10% statistical significance, I observe lower discretionary accruals (−0.01 | −1.94) and higher audit aggressiveness (0.04 | 1.77) in Sharia-compliant companies. Size reduces audit aggressiveness (−0.01 | −2.18) and discretionary accruals (−0.01 | −2.24). The age-based cycle model showed that market capitalization reduces audit aggressiveness (−0.02 | −2.33) and small profit (−0.02 | −2.70). Leverage increases discretionary accruals (0.02 | 3.14) and small profit (0.07 | 4.90). Empirical evidence shows that cash holding increases discretionary accruals (0.15 | 4.16) and reduces small profit (−0.29 | −5.59). Loss reporting increases audit aggressiveness (0.09 | 3.26) and discretionary accruals (0.02 | 2.17) but reduces small profit (−0.33 | −17.10). Institutional ownership (−0.10 | −2.78), operating cash flow (−0.12 | −3.03), revenue growth (−0.10 | −3.87), and dividend payment

Table 8. Difference of means test for discretionary accruals (DACC)

1	2	Mean	Mean	t-stat	p-value
Introduction	Growth	0.07	-0.03	7.93	0.00
Introduction	Mature	0.07	-0.02	8.03	0.00
Introduction	Shake-Out	0.07	0.00	4.60	0.00
Introduction	Decline	0.07	0.04	1.23	0.22
Growth	Mature	-0.03	-0.02	-1.04	0.30
Growth	Shake-Out	-0.03	0.00	-1.73	0.09
Growth	Decline	-0.03	0.04	-3.40	0.00
Mature	Shake-Out	-0.02	0.00	-1.19	0.23
Mature	Decline	-0.02	0.04	-3.08	0.00
Shake-Out	Decline	0.00	0.04	-2.00	0.05

Table 9. Difference of means test for small profit (SP)

1	2	Mean	Mean	t-stat	p-value
Introduction	Growth	0.20	0.18	0.64	0.52
Introduction	Mature	0.20	0.12	3.14	0.00
Introduction	Shake-Out	0.20	0.13	2.15	0.03
Introduction	Decline	0.20	0.14	1.58	0.12
Growth	Mature	0.18	0.12	2.66	0.01
Growth	Shake-Out	0.18	0.13	1.68	0.09
Growth	Decline	0.18	0.14	1.15	0.25
Mature	Shake-Out	0.12	0.13	-0.30	0.76
Mature	Decline	0.12	0.14	-0.50	0.62
Shake-Out	Decline	0.13	0.14	-0.22	0.83

(-0.09 | -4.07) reduce small profit. Listing duration decreases discretionary accruals (-0.01 | -2.75). With 10% significance, the age-based cycle analysis showed that while operating cash deviation reduces small profit (-0.08 | -1.69), reporting lag has a positive effect on small profit (0.13 | 1.93). Revenue deviation resulted in 10% significance with a positive coefficient (0.07 | 1.78) for the audit aggressiveness model.

7. Summary and conclusion

This paper investigated the life-cycle stage and FRQ relationship in Turkey. The previous literature mainly chose a single measure of financial reporting quality. As such, this paper set out to test whether moving forward in the life-cycle stage results in an increase in every FRQ measurement. Different from the previous literature, the relationship is tested using three different proxies for FRQ: aggressiveness, discretionary accruals, and small profit reporting. The relationship between life-cycle stages and audit aggressiveness was never tested in the previous literature. Due to the country's institutional setting, management's understanding of financial reporting quality depends on corporate tax payments. The institutional setting of Turkey does not force the majority of companies to have higher quality financial statements. Thus, companies do not need an independent audit until they become a public interest entity or are listed in BIST. This paper investigates whether moving forward in the life-cycle stage affects FRQ in the Turkish context.

Table 10. Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1.00																		
2	-0.01 (0.64)	1.00																	
3	-0.06 (0.01)	0.04 (0.09)	1.00																
4	0.07 (0.01)	-0.09 (0.00)	-0.08 (0.00)	1.00															
5	0.03 (0.26)	-0.04 (0.08)	0.00 (0.87)	0.01 (0.74)	1.00														
6	-0.04 (0.12)	-0.04 (0.08)	-0.10 (0.00)	0.06 (0.02)	0.05 (0.04)	1.00													
7	-0.02 (0.39)	-0.09 (0.00)	-0.07 (0.01)	0.07 (0.01)	0.22 (0.00)	0.17 (0.00)	1.00												
8	0.00 (0.93)	-0.04 (0.07)	-0.04 (0.13)	0.01 (0.56)	0.02 (0.50)	0.59 (0.00)	0.24 (0.00)	1.00											
9	0.01 (0.77)	-0.05 (0.03)	-0.10 (0.00)	0.02 (0.38)	-0.05 (0.04)	0.13 (0.00)	0.04 (0.15)	-0.08 (0.00)	1.00										
10	-0.06 (0.01)	-0.02 (0.45)	-0.02 (0.48)	-0.11 (0.00)	0.03 (0.27)	0.01 (0.75)	0.11 (0.00)	0.06 (0.02)	-0.09 (0.00)	1.00									
11	0.00 (0.97)	-0.05 (0.05)	0.00 (0.96)	-0.09 (0.00)	-0.12 (0.00)	-0.03 (0.29)	-0.01 (0.77)	0.07 (0.01)	0.16 (0.00)	0.00 (0.90)	1.00								
12	0.01 (0.74)	-0.06 (0.01)	-0.09 (0.00)	0.06 (0.01)	-0.17 (0.00)	0.10 (0.00)	-0.05 (0.04)	0.06 (0.01)	0.12 (0.00)	-0.08 (0.00)	0.06 (0.01)	1.00							

(Continued)

Table 10. (Continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	1 AGG 2.DACC 3.BEAT 4.FLC 5.SHARIA 6.INST 7.LIST 8.SIZE 9.Q 10.TANG 11.LEV 12.CHOLD 13.OCF 14.OCFD 15.REVG 16.REVD 17.LOSS 18.DIV 19.LAG																		
13	0.02 (0.49)	-0.23 0.00	-0.06 (0.01)	0.16 0.00	0.01 (0.74)	0.12 0.00	0.10 0.00	0.11 0.00	0.12 0.00	0.00 (0.86)	0.29 0.00	0.23 0.00	1.00						
14	0.06 (0.02)	0.03 (0.26)	-0.05 (0.05)	0.03 (0.26)	-0.09 (0.00)	-0.11 0.00	-0.09 (0.00)	-0.13 0.00	0.12 0.00	-0.10 (0.00)	0.47 0.00	0.09 (0.00)	0.30 0.00	1.00					
15	-0.01 (0.73)	-0.05 (0.06)	-0.04 (0.12)	-0.11 0.00	-0.01 (0.59)	0.08 (0.00)	-0.05 (0.07)	0.06 (0.02)	0.07 (0.01)	-0.03 (0.20)	0.18 0.00	0.09 (0.00)	-0.06 (0.01)	0.11 0.00	1.00				
16	0.05 (0.07)	-0.02 (0.34)	-0.04 (0.15)	-0.02 (0.32)	-0.09 (0.00)	-0.08 (0.00)	-0.15 0.00	-0.12 0.00	0.05 (0.05)	-0.14 0.00	0.33 0.00	0.05 (0.03)	0.04 (0.15)	0.48 0.00	0.36 0.00	1.00			
17	0.00 (0.84)	0.02 (0.42)	-0.26 0.00	-0.09 (0.00)	-0.07 (0.01)	-0.20 0.00	-0.02 (0.32)	-0.24 0.00	-0.03 (0.22)	0.17 0.00	0.18 0.00	-0.21 0.00	-0.12 0.00	0.10 (0.00)	-0.16 0.00	0.07 (0.00)	1.00		
18	0.01 (0.77)	-0.10 0.00	-0.08 (0.00)	0.08 (0.00)	-0.01 (0.71)	0.34 0.00	0.15 0.00	0.41 0.00	0.08 (0.00)	-0.09 (0.00)	-0.12 0.00	0.10 0.00	0.11 0.00	-0.10 (0.00)	0.04 (0.10)	-0.07 (0.01)	-0.32 0.00	1.00	
19	0.01 (0.61)	-0.01 (0.60)	0.04 (0.08)	-0.01 (0.79)	0.02 (0.41)	0.06 (0.02)	-0.03 (0.19)	0.09 (0.00)	0.02 (0.52)	0.05 (0.05)	0.09 (0.00)	-0.03 (0.17)	0.01 (0.61)	0.03 (0.28)	0.02 (0.43)	0.07 (0.01)	0.02 (0.52)	0.06 (0.01)	1.00

Notes: 1 AGG 2.DACC 3.BEAT 4.FLC 5.SHARIA 6.INST 7.LIST 8.SIZE 9.Q 10.TANG 11.LEV 12.CHOLD 13.OCF 14.OCFD 15.REVG 16.REVD 17.LOSS 18.DIV 19.LAG.

Table 11. Regression for linear and logistics regression

Variables	PANEL A		Variables	PANEL B
	AGG	DACC		SP
LCS	0.0796** (0.0402)	-0.0048 (0.0116)	LCS	-0.1020*** (0.0318)
SHARIA	0.0383* (0.0221)	-0.0120** (0.0059)	SHARIA	-0.0269 (0.0192)
INST	-0.0178 (0.0297)	0.0128 (0.0116)	INST	-0.0966*** (0.0360)
LIST	-0.0043 (0.0092)	-0.0092** (0.0038)	LIST	-0.0055 (0.0112)
SIZE	-0.0109* (0.0064)	-0.0047** (0.0023)	SIZE	-0.0113 (0.0075)
Q	-0.0168** (0.0077)	0.0049* (0.0027)	Q	-0.0220*** (0.0081)
TANG	0.0056 (0.0321)	-0.013 (0.0127)	TANG	-0.0304 (0.0321)
LEV	-0.0015 (0.0209)	0.0226*** (0.0075)	LEV	0.0660*** (0.0139)
CHOLD	-0.0158 (0.0677)	0.1500*** (0.0357)	CHOLD	-0.2820*** (0.0510)
OCF	-0.0241 (0.0464)	-0.0279 (0.0206)	OCF	-0.0997*** (0.0360)
OCFD	0.0182 (0.0501)	0.0530* (0.0298)	OCFD	-0.0801* (0.0480)
REVG	-0.0269 (0.0371)	-0.0023 (0.0158)	REVG	-0.1040*** (0.0253)
REVD	0.0723* (0.0408)	-0.0003 (0.0165)	REVD	0.0168 (0.0385)
LOSS	0.0893*** (0.0266)	0.0159** (0.0073)	LOSS	-0.3360*** (0.0195)
DIV	-0.0171 (0.0215)	-0.0081 (0.0059)	DIV	-0.0830*** (0.0208)
LAG	0.0579 (0.0649)	0.0248 (0.0194)	LAG	0.1350** (0.0673)
Units	217			
Years	9			
Obs.	1,645			
F-Statistic	28.7958	58.4302	Chi-Sq	38.4389
Adj. R-Sq	0.3573	0.5346	Pseudo R-Sq	0.1800
Industries Fixed	Yes			
Years Fixed	Yes			

Notes: *p < 0.1; **p < 0.05; ***p < 0.01.

The previous literature used a variety of criteria (size, tangibility, retained earnings, costing system, employment, age, asset growth, and multi-criteria) to determine the companies' life-cycle stages. In this paper, Dickinson's (2011) cash-flow pattern-based approach is used. According to the author, cash-flow patterns utilize the financial information set contained in

Table 12. Regression for linear and logistics regression for age-based cycle

Variables	PANEL A		Variables	PANEL B
	AGG	DACC		SP
ABC	0.0433 (0.0366)	0.0132 (0.0093)	ABC	0.0043 (0.0327)
SHARIA	0.0390* (0.0221)	-0.0115* (0.0059)	SHARIA	-0.0255 (0.0194)
INST	-0.0136 (0.0295)	0.0129 (0.0116)	INST	-0.1010*** (0.0362)
LIST	-0.0086 (0.0116)	-0.0114*** (0.0042)	LIST	-0.0095 (0.0126)
SIZE	-0.0141** (0.0065)	-0.0054** (0.0024)	SIZE	-0.0102 (0.0076)
Q	-0.0179** (0.0077)	0.0044 (0.0028)	Q	-0.0225*** (0.0083)
TANG	-0.0108 (0.0304)	-0.014 (0.0126)	TANG	-0.0167 (0.0324)
LEV	-0.0037 (0.0208)	0.0233*** (0.0074)	LEV	0.0711*** (0.0145)
CHOLD	-0.0172 (0.0672)	0.1480*** (0.0357)	CHOLD	-0.2860*** (0.0512)
OCF	-0.0115 (0.0461)	-0.0292 (0.0206)	OCF	-0.1180*** (0.0388)
OCFD	0.0193 (0.0488)	0.0530* (0.0298)	OCFD	-0.0813* (0.0480)
REVG	-0.0306 (0.0370)	-0.0015 (0.0157)	REVG	-0.0971*** (0.0251)
REVD	0.0724* (0.0408)	-0.001 (0.0166)	REVD	0.0142 (0.0387)
LOSS	0.0872*** (0.0267)	0.0159** (0.0073)	LOSS	-0.3330*** (0.0195)
DIV	-0.017 (0.0216)	-0.0087 (0.0059)	DIV	-0.0852*** (0.0210)
LAG	0.069 (0.0638)	0.0262 (0.0194)	LAG	0.1290* (0.0665)
Units	217			
Years	9			
Obs.	1,645			
F-Statistic	28.6010	58.5427	Chi-Sq	37.2345
Adj. R-Sq	0.3557	0.5351	Pseudo R-Sq	0.1744
Ind. Fixed	Yes			
Years Fixed	Yes			

Notes: *p < 0.1; **p < 0.05; ***p < 0.01.

operating, investing, and financing cash flows. It helps to capture differences in a company's profitability, growth, and risk. The author states that the combination of cash-flow patterns represents a company's operational capabilities and resource allocations. The life-cycle stages of companies are determined with cash-flow patterns depending on Dickinson's (2011) paper.

Following Hansen et al. (2018), values were assigned of 0, 0.25, 0.5, 0.75, and 1 for introduction, growth, mature, shake-out, and decline stages, respectively. Audit aggressiveness was estimated with GWY's 2013 model. The discretionary accruals for industry/year with Kothari et al.'s (2005) "Performance matched discretionary accrual model" are utilized, as well as the absolute value of the model's residual. A 0-to-0.025 threshold is used to detect small profit and label the observations that fall into the threshold.

A total of 1,645 observations were used over 9 years, with 217 companies to investigate the effect of life-cycle stages on FRQ in BIST-listed companies. Based on the literature review, this is the first paper that focuses on life cycles in the Turkish context. The results show that financial reporting quality does not always increase with the life-cycle stage. According to the empirical evidence, audit aggressiveness increases as the companies move forward in their life-cycle stages. The variable resulted in a negative coefficient for discretionary accruals, but it was not statistically significant. On the other hand, it is observed that companies do not tend to report small profits in the later stages of the life cycle. I can state that different financial reporting quality measures are prioritized in different stages. My statistical analysis showed that audit aggressiveness increases (decreases) in the later (earlier) stages. On the other hand, small profit reporting increases (decreases) in the earlier (later) stages is observed. The result confirms that moving further in the life-cycle stage does not always increase the financial reporting quality. A robustness test is conducted based using the quintiles of age. The variable results in a positive coefficient for FRQ measures but was statistically insignificant. When the test is conducted with age as a variable, it does not provide materially different results.

This paper contributes to the accounting literature by providing a perspective on the cycle's effect on financial reporting from an emerging market using a theoretical framework. As far as could be ascertained, this is the first paper in Turkey that provides evidence regarding life-cycle stages. The results show that advancing in life-cycle stages does not always increase FRQ. Different from the previous literature, it is shown that different FRQ measures earn prioritization as life-cycle stages move forward. Empirical evidence shows that audit aggressiveness increases as companies move forward in their life-cycle stage. On the other hand, the tendency to report small profit decreases as they proceed through the life-cycle stages. The life-cycle stage variable results in a negative coefficient for discretionary accruals, but it is statistically insignificant in my analysis. There are limitations to this research. Governance (board composition, CEO/CFO qualifications, etc.) is not incorporated into the model, nor a wider variety of audit-based (audit firm size, auditor gender, audit report type) variables. Future research can assess the cycle transition duration, corporate governance quality, top management characteristics, and independent audit qualifications for life-cycle analysis.

Funding

The author received no direct funding for this research.

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Disclosure statement

I do not have any financial or non-financial competing interests with publicly listed companies used in this paper.

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The photo reflects the country's industrialization and the growth of a company that is always open to new developments and a major player in the world. Established in 1965, Erdemir is the biggest steel producer in Turkey and 49th in the world. As a result of its significant financial and governance advances, Erdemir is in Borsa Istanbul's Corporate Governance and Dividends 25 Indexes.

Citation information

Cite this article as: Do Life-Cycles Affect Financial Reporting Quality? Evidence from Emerging Market, Gökberk Can, *Cogent Business & Management* (2020), 7: 1854147.

Notes

1. Interval is 0.005 in Burgstahler and Dichev (1997).
2. I prepared the figures using R—ggplot2 package (Wickham, 2016).

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