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Examining Firm Competitiveness: A Life Cycle Theory Perspective

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Abstract

This study probes into the scrutiny of firm competitiveness from the vantage point of the firm life cycle theory, leveraging a complete dataset covering 237 manufacturing firms listed on the Pakistan Stock Exchange (PSX) over the period covering from 2010 to 2021. Employing firm life cycle stages through Dickinson (2011) approach as independent variables and firm competitiveness as the dependent variable based on the APP model developed using PCA analysis. Panel dummy regression analysis is performed, and results revealed that a statistically significant variation in firm competitiveness is observed across different life cycle stages. It signifies the importance of considering this aspect while devising policies and strategies to improve or sustain overall firm competitiveness.

Keywords: Firm Competitiveness, Life Cycle Theory, Dickinson's approach

In the contemporary evolving landscape of business and economics, firms are the building blocks of industry (Krugman, 1994; Porter, 2008) and essential economic agents responsible for producing goods, delivering services, and driving technological advancements (Falciola et al., 2020; Krugman, 1994; Momaya, 2019; Porter, 2008). In today's complex and globalized economy, understanding the dynamics of firm-level competitiveness (FC) is paramount (Falciola et al., 2020). FC is a vibrant notion that encapsulates a multilayered array of organizational attributes and strategies that collectively determine a firm's ability to endure and excel in the vigorous panorama of the global market (Momaya, 2019). FC is the linchpin determining a company's ability to thrive amidst fierce competition, adapt to evolving market conditions, and contribute to broader economic growth (Chikán et al., 2022). Moreover, the Asset process and performance model (APP) explain that competitiveness at the firm level is a firm's ability to strategically leverage its unique combination of tangible and intangible assets, optimize its internal processes, to achieve superior performance outcomes in the competitive marketplace (Ajitabh & Momaya, 2004; Momaya, 1998, 2019; Momaya & Selby, 1998). Competitiveness is manifested when a firm effectively deploys its resources and capabilities to gain sustainable advantages, meet or exceed customer expectations, and enhance its market position and financial performance (Sahoo et al., 2022).

Besides that, the firm life cycle (FLC) approach has been a subject of considerable interest and debate among scholars and practitioners. It serves as a powerful framework to explain how the life cycle stages of the firm affect the firm in different ways. Gort and Klepper (1982) categorize the FLC into five stages, i.e. introduction, growth, maturity, decline and shakeout. Miller and Friesen (1984) explained that it is predicated on the notion that organizations, much like living entities, undergo a cyclical progression through various stages of development, each marked by distinct characteristics and challenges. Moreover, firm faces different stage-specific problems which require specific management attention and actions as firm moves from one stage to another like modification in profitability, corporate governance, financial, operational and investment choices, and customer desires (Aldaas, 2021; Elsayed et al., 2009; Filatotchev et al., 2006; Helfat et al., 2009; Helfat & Peteraf, 2003; Kazanjian & Drazin, 1989). However, the process of life cycle stages for the firm is not a linear progression as observed in biological entities (Aldaas, 2021; Dickinson et al., 2018; Dickinson, 2011).

Furthermore, Falciola et al. (2020) explain that in a contemporary globalized marketplace, businesses are confronted with challenges and opportunities on an unprecedented scale. Like all biological entities, firms also pass through different life cycle stages (Aldaas, 2021; Chandler, 1962; Dickinson et al., 2018; Dickinson, 2011; Gort & Klepper, 1982; Yahaya & Onyabe, 2020). Notably, the forces of globalization have reshaped the competitive landscape, eroding

geographical boundaries and endowing firms with a customer base that transcends national borders (Chikán et al., 2022; Falciola et al., 2020; Ruzekova et al., 2020). Aldaas (2021); Ramzan and Lau (2023); Shahzad et al. (2019); Yahaya and Onyabe (2020) highlighted that the application of the FLC perspective offers a nuanced lens that highlighted the pressing urge to investigate how FC is shaped during its different life cycle stages. Moreover, focusing on Pakistan's grave economic difficulties further intensified the importance to study this problem.

Literature Review

The FLC concept has been a subject of considerable interest and debate among scholars and practitioners. It serves as a powerful framework to explain how the life cycle stages of the firm affect the firm in different ways. Gort and Klepper (1982) categorize the FLC into five stages, i.e. introduction, growth, maturity, decline and shakeout. Miller and Friesen (1984) explained that it is predicated on the notion that organizations, much like living entities, undergo a cyclical progression through various stages of development, each marked by distinct characteristics and challenges. Moreover, firm faces different stage-specific problems which require specific management attention and actions as firm moves from one stage to another like modification in profitability, corporate governance, financial, operational and investment choices, and customer desires (Aldaas, 2021; Elsayed et al., 2009; Filatotchev et al., 2006; Helfat et al., 2009; Helfat & Peteraf, 2003; Kazanjian & Drazin, 1989). However, the process of life cycle stages for the firm is not a linear progression as observed in biological entities (Aldaas, 2021; Dickinson et al., 2018; Dickinson, 2011). It will confirm whether management must be alert regarding the FLC stages. It is essential for entrepreneurs, management, business leaders, policymakers, and researchers alike because, at each stage of the life cycle, a firm is experiencing specific issues that require management's focus to adjust its priorities to either retain in that stage of life cycle or to move to the desired stage. It is essential for organizational resilience and evolution to adapt to fluctuating economic conditions, comply with evolving regulations, and exploit policy-driven opportunities. At the same time, by incorporating the above changes, the firm needs to adjust its assets and performance, which affect its overall performance, leading to firm competitiveness. Therefore, it is logical to study how life cycle changes affect firm competitiveness. According to the author, no study tries to find the answer to the above-highlighted question. A grey area exists in the existing body of knowledge. This study addresses this gap by exploring the dynamic interplay between firm competitiveness and life cycle stages. This understanding can lead to more effective decision-making in investment, resource allocation, and market positioning.

Ajitabh and Momaya (2004); Falciola et al. (2020); Momaya (1998, 2019); Momaya and Selby (1998); Sahoo et al. (2022) confirmed that for the survival of the firm in current turbulent conditions is possible only because of its competitiveness. Firm competitiveness is examined in a variety of ways. It is used to be proxied by profitability and productivity in the literature predominantly by Javaid and Afridi (2015); Lee (2018); Porter (1990); Porter (2000); Sardana et al. (2016); Voulgaris et al. (2000). However, understanding the dynamic nature of the firm competitiveness, researchers like Chikán et al. (2022); Falciola et al. (2020); Hurley (2018); Sahoo et al. (2022); Voulgaris and Lemonakis (2014) proposed that an index should be developed based which can capture the true picture of the firm competitiveness. Ajitabh and Momaya (2004); Momaya (1998, 2019); Momaya and Selby (1998) claimed that existing frameworks of firm competitiveness lack the basic requirement of providing power to the management of the firm in controlling, changing and improving the existing conditions of the firm through managing its assets process and performance. For that purpose, the asset process and performance (APP) model is proposed by Ajitabh and Momaya (2004); Momaya (1998, 2019); Momaya and Selby (1998).

Besides, APP explains that firms' management has the asset portfolios like liquid assets, productive assets, firm size, intangible assets including human capital, structural capital and relational capital (Azhar & Ahmed, 2019; Bayraktaroglu et al., 2019; Javaid & Afridi, 2015; Kamasak, 2017; Kurniawan & Muharam, 2021; Lazăr, 2016; Ovechkin et al., 2021; Rahman & Yilun, 2021; Yameen et al., 2019) on which different processes like inventory management, income diversification, production and administration (Bal & Sönmezer, 2022; Gitau, 2021; Istan et al., 2021; Kisyeri, 2022; Uddin et al., 2022; Walid, 2021; Wang et al., 2022) are applied to generate the performances (Arbelo et al., 2021; Barton et al., 2010; Gentry & Shen, 2010; Rahman et al., 2017; Van Looy & Shafagatova, 2016) in various domains and all that contribute to shape the firm competitiveness after studying firm from Australia, Romania, Turkey, Germany, Italy, Spain, France,

Demark, Nigeria, India, Pakistan, Poland, Indonesia, Russia, Malaysia, Ethiopia, China, Saudi Arabia, Kenya, Tanzania, Vietnam, US and UK. This model provides the power lacked by the previous framework as it guides the management to control, change and improve these three components to sustain or improve the current competitiveness of the firm (Ajitabh & Momaya, 2004; Momaya, 1998, 2019; Momaya & Selby, 1998).

Moreover, another branch of literature explained that, like each biological entity follows the life cycle, the firms are also experiencing the same phenomenon but not in a linear progression and move back and forth during their life span. Each life cycle stage required stage-specific issues that required specific decision-making (Chandler, 1962; Lester et al., 2008; Lester et al., 2003; Miller & Friesen, 1984). Similarly, firms also experience stage-specific variation in their decision-making concerning finance generation, resource allocation, investments and operational matters (Helfat & Peteraf, 2003). Filatotchev et al. (2006) further explained that firms must adjust their governance policies concerning their life cycle stages.

Likewise, the firm's adoption and implementation of different ethical and environmental policies are affected by its performance concerning its life cycle stage. The maturity stage impact of firm performance on these policies is strongest compared to all other stages (Elsayed et al., 2009). Mokhova and Zinecker (2013) studied firms from small and medium enterprises (SMEs) in the Czech Republic to examine how the life cycle stage of a firm affects the relationship between liquidity and bankruptcy. Results confirmed that the relationship varies with life cycle stages, and the same is observed while investigating liquidity and profitability. A similar study was conducted by Yazdanfar and Öhman (2014) to examine Swedish SMEs across various industrial sectors, confirming that firm performance varies concerning its life cycle stage.

Additionally, Liao et al. (2014) studied listed manufacturing firms of the Taiwan stock exchange and confirmed that the relationship between ownership structure and firm performance transformed with life cycle stages. However, it is important to mention that managerial and director ownership are considered for analysis. Hasan et al. (2015) examined the Australian manufacturing and service sector firms to study the association between cost of equity and life cycle stages. Results confirmed a U-shaped relationship, which is higher during the introduction and decline stage only. It is important to note that the firm's life cycle stage classification is based on Dickinson (2011) cashflow approach. Using a similar approach, Zhou et al. (2016) studied Chinese firms and confirmed that the relationship between internal control and performance varies with the changes in life cycle stages. In literature, there are three prominent but different ways to classify firms per their life cycle stages. The methods of classification are presented by Anthony and Ramesh (1992), Park and Chen (2006) and Dickinson (2011). Gulec and Karacaer (2017) used all three methods while studying Turkish non-financial firms. Results confirmed that firm size, profitability, liquidity, risks and stock returns vary across the life cycle stages.

Furthermore, Diebecker et al. (2017) studied several firms across the globe to examine how FLC stages affect sustainable firm performance. An inverted U-shaped relationship is confirmed, which means that as a firm moves from different stages to the maturity stage, its sustainability firm performance increases or it can be explained that sustainability in the firm performance increases as the firm experiences its maturity stage. Khamaki et al. (2018) studied various listed firms on the Tehran stock exchange. The selected firms are divided into cyclical and non-cyclical firms, as guided by Fama and French (1989). This study is conducted to confirm how capital productivity behaves concerning life cycle stages with the mediation of investment choices. Results confirmed that capital productivity varies with life cycle stages, but it is not true for investment choices for both cyclical and non-cyclical firms. Chang and Ma (2019) studied non-financial firms listed on the Shanghai and Shenzhen stock exchanges to investigate the relationship between financial flexibility, management efficiency and performance in the light of life cycle stages. Results confirmed that firm performance increases with an increase in firm financial flexibility while the efficiency of management variates and even diminishes at the maturity stage.

Similarly, focusing on Chinese firms, Shahzad et al. (2019) confirmed that the firm's risk-taking behaviour also varies across the life cycle stages. Yahaya and Onyabe (2020) confirmed that existing literature on life cycle stages and performance is also observed in Nigerian firms. Alqahtani et al. (2022) studied firms from GCC countries. They confirmed that as firms move from one stage

to another of their life cycle, their performance, decisions related to financial matters and the number of outside directors vary.

The research mentioned above findings collectively establish a consensus that various aspects, including assets, processes, and performance, exhibit substantial variations as firms transition through distinct life cycle stages. These empirical observations can be conceptually encapsulated within the Assets-Processes-Performance (APP) model, a construct for quantifying firm competitiveness. Considering these substantive variances across the life cycle stages, it becomes imperative to undertake an empirical investigation to ascertain whether firm competitiveness is contingent upon the specific stage within the life cycle paradigm. This inquiry holds significance as it seeks to illuminate whether the dynamic interplay between a firm's developmental trajectory and competitive positioning is a salient phenomenon deserving scholarly attention and rigorous analysis.

Research Methodology

The secondary data is collected for manufacturing firms listed on PSX from 2010 to 2021. A total of 237 firms were shortlisted for this study. Firms' annual reports and State Banks of Pakistan analysis report on non-financial sector firms are used to collect firm financial data. The dependent variable of the study is firm competitiveness (FC). The FC is based on the APP model. It is a composite index based on the average of firm asset, process and performance indices, which are separately developed using the Principal Component analysis.

Firm Life cycle (FLC) stages are considered independent variables. Gort and Klepper (1982) divided FLC into five stages. The cash flow approach presented by Dickinson (2011) is used to classify firms into these five stages. Dummy variables represent each stage, which has a value of 1 if the firm falls into the introduction stage and zero otherwise. Moreover, If the firm gets a value of 1 in a specific stage, it will also get zero value in other stages. It confirms that stages are mutually exclusive as well as collectively exhaustive. Dummy regression is performed in which shakeout stage firms are used as reference variables to avoid dummy traps (Gujarati, 2021).

$$Firm\ Competitiveness_{i,t} = \beta_0 + \beta_1 Introduction_{i,t} + \beta_2 Growth_{i,t} + \beta_3 Mature_{i,t} + \beta_4 Decline_{i,t}$$

Data Analysis and Results

Table 1

Firm in Life Cycle Stages

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Introduction	12	29	17	18	30	23	31	58	46	39	29	33
Growth	33	43	31	40	47	52	48	56	46	46	54	48
Mature	80	62	92	100	103	112	107	73	83	92	98	112
Decline	9	15	12	9	14	14	9	13	15	19	15	13
Shakeout	103	88	85	70	43	36	42	37	47	41	41	31
Total	237	237	237	237	237	237	237	237	237	237	237	237

Table 1 shows firms' classification using the Dickinson (2011) model. The results show that these 237 firms move across different life cycle stages. However, it is important to note that increasing trends are observed in firms falling in their life cycle growth and maturity stages. A declining trend is also observed for the firms falling in their life cycle's decline and shakeout stages. It means that firms learn from their experiences and cope with life cycle-specific issues to sustain or move toward the desired life cycle stage (Agarwal & Gort, 2002). Besides that, firms falling in the introduction stage observed a mixed trend due to the changing dynamics of the business environment and competition.

Figure 1.
Firms in FLC

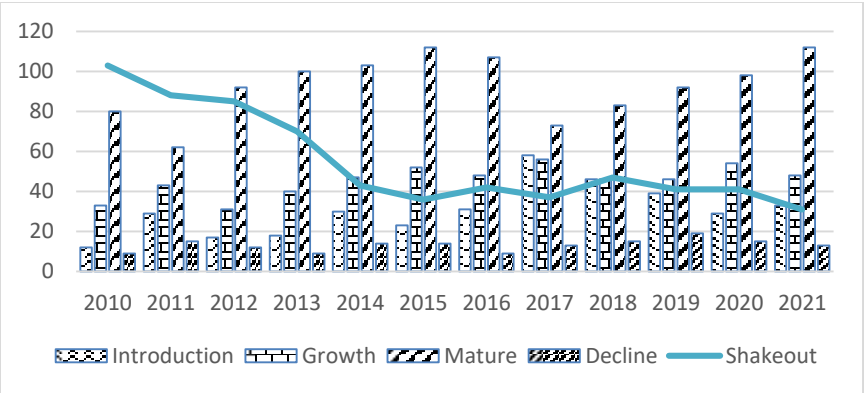

Table 2 illustrates that the redundant fixed effect and Hausman test confirmed that the panel regression fixed effect model is the appropriate test for this study. Moreover, D-W (Durbin Watson) statistics confirm no autocorrelation issue..

Table 2
Regression Analysis

Constant	47.69182*** (0.648145)
Introduction Stage	1.583472*** (0.639035)
Growth Stage	1.753275*** (0.474767)
Mature Stage	1.474084*** (0.457542)
Decline Stage	0.934346 (0.646634)

R^2	0.787515	**Adj- R^2**	0.777143	**F-Stat**	85.57422***	**D-W**	1.868532

Hausman Test = 49.750266***

Redundant Fixed Effect Test
CS F
(80.4199***)
CS Chi^2
(6015.6299***)

*Significance: *** 1%, **5%, * 10%*

Discussion

Table 2 shows the results of the dummy regression analysis. The significant value of F-statistics confirmed that the provided results are reliable. The Hausman test confirmed that a fixed effect model is appropriate for this study. Furthermore, the unobserved time-invariant factors due to differences between the firm's understudy can affect the relationship of the study. Because of that, the cross-sectional fixed effect model is used to control that undesirable effect. The shakeout stage variable is not considered in the regression analysis. It acts as a reference variable whose value is represented by the value of the constant in the table.

Results confirmed that if a firm falls in the life cycle's shakeout stage, its competitiveness is 47.69 points. It is the baseline competitiveness level of the firm because, in this stage, competition reduces as the nonperforming firms leave the market and only a few firms remain in the business by developing adaptability and a better understanding of customer preferences and market requirements. As a result of which, when the firm moves from the shakeout stage to another stage of its life cycle, its competitiveness is significantly increasing (Alqahtani et al., 2022; Chang & Ma, 2019; Diebecker et al., 2017; Gort & Klepper, 1982; Miller & Friesen, 1984; Yahaya & Onyabe, 2020).

Moreover, suppose the firm is in the introductory stage of its life cycle. In that case, it experiences limited competition compared to the growth and maturity stage with high cash outflows in marketing and advertisement to catch customer attention (Gort & Klepper, 1982). The firm is involved in offering new products in the market, which requires proper pricing strategies like skimming or penetration and developing new channels for product distribution (Diebecker et al., 2017). It is quite common to have high initial costs with increased challenges, risk and uncertainties experienced by the firm, which requires proper management attention through proper asset and process management, leading to increased firm profitability by exploring new markets, which leads to increased firm competitiveness (Alqahtani et al., 2022; Chikán et al., 2022; Momaya, 2019; Sahoo et al., 2022).

Similarly, as the firm moved toward the growth stage of its life cycle, it observed an increase in its competitiveness due to aggressive marketing efforts using digital means by the firm (Jung & Shegai, 2023; Thottoli & Thomas, 2023). The firm's offerings are getting recognition in the market through customers, which increases sales growth (Dickinson et al., 2018; Dickinson, 2011). Similarly, customer experience is a marketing source for further customer attraction without cost, resulting in increased firm competitiveness (Jung & Shegai, 2023; Thottoli & Thomas, 2023). Alqahtani et al. (2022) further explained that due to increasing acceptance, new entrants are encouraged to join the competition, resulting in increased competition which further requires management attention towards product differentiation, market expansion, innovation and operational development (Chikán et al., 2022; LE, 2022; Nasution & Siregar, 2018; Ruzekova et al., 2020; Sohrabpour et al., 2021; Suzan, 2020).

Moreover, as the firm moves toward the mature stage of its life cycle, its competitiveness increases because the firm offering got maximum recognition in the market, and the fruits of aggressive marketing are now ready for the firm (Jung & Shegai, 2023; Thottoli & Thomas, 2023). The firms that survived the competition and reached the maturity stage have acquired assets according to dynamic conditions that are in line with the firm's operations that boast firm performance, leading to increased overall firm competitiveness (Momaya, 2019; Ramzan & Lau, 2023; Shahzad et al., 2019). Management of the firm in the maturity stage is required to maximize production to achieve economies of scale and economies of scope to achieve cost leadership to serve as a competitive advantage (Agarwal & Gort, 2002; Chen et al., 2015; Chikán et al., 2022; Elsayed & Wahba, 2013; Gort & Klepper, 1982; Gupta & Boyd, 2008; Nasution & Siregar, 2018).

However, results confirmed that if the firm is in the decline stage of its life cycle, its competitiveness is not significantly different from the shakeout stage. The possible reason behind the result is that both stages share some major similarities like reduced competition, market attractiveness, profit margin, innovation and growth opportunities (Elsayed et al., 2009; Elsayed & Wahba, 2013; Gort & Klepper, 1982; Jung & Shegai, 2023; Khamaki et al., 2018; Leung & Sharma, 2021). Moreover, less than 20 firms (table 1) each year fall into the decline stage and due to less competition, proper resource allocation, asset and process management and learning from past experiences help to sustain their competitiveness level (Agarwal & Gort, 2002) causing not a significantly different competitiveness despite life cycle changes.

Overall, the results of this regression suggest that firms in the introduction, growth, and maturity stages tend to have higher competitiveness levels than those in the shakeout stage. However, there is no statistically significant difference in competitiveness between firms in the decline stage and those in the shakeout stage. This interpretation aligns with the general

expectations of FLC theory, where firms' management priorities should be changed concerning life cycle stages by adopting varying strategies which result in different levels of competitiveness (Agarwal & Gort, 2002; Dickinson, 2011; Diebecker et al., 2017; Elsayed et al., 2009; Elsayed & Wahba, 2016; Gort & Klepper, 1982).

Research Implications

The results are aligned with the FLC theory. As the firm moves through different life cycle stages, the competition faced by the firm varies, requiring management's keen attention and control towards proper overall resource allocation for effective use of assets through efficient processes to generate performance. In this process, management must focus on product differentiation, marketing and innovation, resulting in a competitive advantage over others that act as a logical reason for increased firm competitiveness Diebecker et al. (2017), Khamaki et al. (2018), Chang and Ma (2019), Shahzad et al. (2019), Yahaya and Onyabe (2020) and Alqahtani et al. (2022).

Conclusion, Limitations and Future Directions

This study examines firm competitiveness concerning the FLC theory perspective on a dataset comprising 237 manufacturing firms listed on PSX from 2010 to 2021. This analysis used FLC stages as independent variables, with firm competitiveness as the dependent variable. The regression analysis reveals a statistically significant variation in firm competitiveness across different life cycle stages. This finding underscores the importance of considering a firm's stage in its life cycle when assessing its competitive position. Firms in the introduction and growth stages exhibit significantly higher levels of competitiveness than those in the shakeout stage (used as the reference category). It suggests that younger firms and those experiencing growth are particularly competitive within the manufacturing sector. Firms in the mature stage also demonstrate a significantly higher level of competitiveness, emphasizing their ability to sustain competitive advantages even as markets mature, and competition intensifies. However, firms in the decline stage face challenges in maintaining competitiveness but may adopt strategies to mitigate competitiveness decline. Recognizing the unique challenges and opportunities associated with each life cycle stage is essential for sustaining and enhancing competitiveness in a dynamic business landscape.

This study has limitations as it focuses only on the dummy data to explore the nexus between FC and FLC. It lacks the flexibility to capture the complexity between the variables. For better understanding and control, future studies may focus on various quantitative variables affecting FC concerning FLC theory.

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