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Abstract

This study investigates the factors influencing working capital management practices across 27 Pakistani banks listed on the Pakistan Stock Exchange (PSX) from 2006 to 2014. By examining this period and focusing on the banking sector, the research aims to provide insights into the determinants shaping working capital management within the Pakistani banking industry. Adopting a time-series approach, the study utilizes secondary data sourced from the annual reports of all listed banks in Pakistan. Statistical analysis, specifically the Ordinary Least Squares (OLS) method, is employed to examine the impact of various factors on working capital management practices. These factors include profitability, firm size, leverage, asset tangibility, and sales growth. Through rigorous statistical evaluation, the study seeks to elucidate the relationships between these determinants and working capital management within the banking sector over the specified timeframe. The findings reveal significant relationships between profitability, firm size, and asset tangibility with working capital management practices. The analysis demonstrates a strong positive correlation between the dependent and independent variables, indicating that Pakistani banks have effectively managed their working capital. These results highlight the importance of profitability, firm size, and asset tangibility as key determinants influencing working capital management. Overall, the findings suggest that banks in Pakistan have demonstrated proficiency in optimizing their working capital resources to support operational activities and enhance financial performance. This study provides valuable insights for financial managers, policymakers, and stakeholders seeking to improve liquidity management and operational efficiency in the banking sector.

Keywords: Working Capital Management, Pakistani Banks, Profitability, Firm Size, Leverage, Asset Tangibility

1. INTRODUCTION

The financial sector serves as a fundamental pillar of the Pakistani economy, playing a pivotal role in fostering robust and sustainable economic development. Comprising a diverse array of institutions including banks, insurance companies, leasing companies, modaraba companies, mutual funds, housing finance firms, and exchange companies, the financial sector forms a well-integrated network that facilitates economic transactions and investment activities. This institutional framework underpins the capital structure and liquidity of firms, with banking efficiency influencing financial performance and credit access, particularly in developing economies like Pakistan (Wang & Ahmad, 2018; Khan & Zahra, 2019). Additionally, the dynamics of interest rates, inflation, and macroeconomic governance further shape banking behavior and profitability, thereby affecting working capital practices (Ahmed & Rahman, 2019; Ali, 2018). As highlighted by Khanna & Palepu (1997), the exposure and transparency of information within the financial sector are paramount for all stakeholders involved.

Transparency and accessibility of information are essential for fostering trust and confidence among investors, regulators, and the public at large. In the financial sector, where decisions are often based on complex financial instruments and transactions, clear and transparent information serves as the cornerstone of accountability and risk management. Prior research has emphasized that transparency reduces information asymmetry, which is critical in enhancing investor trust and regulatory compliance (Shahbaz, 2018; Ahmad, 2018). By providing accurate and timely information, financial institutions can enhance market efficiency, reduce uncertainty, and mitigate systemic risks. Moreover, transparency in the financial sector promotes fair competition and market integrity, ensuring a level playing field for all participants. It enables investors to make informed decisions, fosters investor protection, and enhances the overall stability and resilience of the financial system (Wali, 2018;

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JOURNAL OF POLICY OPTIONS

2(4), 140-153

Adeel, 2019). In an environment characterized by transparency and openness, financial institutions are better equipped to identify and address emerging risks, thereby contributing to the soundness and stability of the economy. Banks constitute the predominant segment of Pakistan's financial sector, representing a cornerstone of the country's modern services industry. With their extensive reach and influence, banks play a pivotal role in facilitating trade and commerce, thereby contributing to the overall economic vibrancy. The performance of banks has been linked to their ability to align with economic reforms and competitive service models that support trade expansion and private sector development (Arshad & Mukhtar, 2019; Saleem & Fatima, 2018). As a key driver of economic activity, the banking sector embodies principles of efficiency and effectiveness, continuously striving to enhance its operational capabilities and service delivery (Siddiqi, 2018; Khan, 2019; Bibi, 2019). According to Bhatti and Hussain (2010), the success of banks hinges on their ability to pursue ongoing improvements and innovations in strategic management practices. In a rapidly evolving financial landscape, characterized by technological advancements and shifting market dynamics, banks must adopt proactive strategies to remain competitive and meet the evolving needs of their customers. By embracing innovation and strategic management principles, banks can enhance their efficiency, optimize resource allocation, and capitalize on emerging opportunities in the marketplace. Moreover, strategic management serves as a guiding framework for banks to navigate challenges and capitalize on growth opportunities in a dynamic business environment. As highlighted by previous studies, strategic foresight is integral to financial resilience and sectoral competitiveness, particularly in adapting to institutional, technological, and regulatory shifts (Farahmand, 2019; Koocheki, 2018). Through strategic planning, banks can align their organizational objectives with market trends, regulatory requirements, and customer preferences, thereby positioning themselves for long-term success and sustainability (Nasir, 2019; Kumar, 2018). Additionally, strategic management enables banks to anticipate and respond to changes in the external environment, ensuring agility and adaptability in the face of uncertainty. In essence, the banking sector in Pakistan epitomizes the principles of efficiency, effectiveness, and strategic management. By embracing innovation and continuously refining their strategic approaches, banks can drive sustainable growth, foster financial inclusion, and contribute to the overall economic development of Pakistan. As integral components of the country's financial ecosystem, banks play a vital role in shaping the trajectory of Pakistan's economy and advancing its position in the global marketplace. Following Pakistan's independence in 1947, the nascent nation faced significant challenges in its banking sector, characterized by a limited presence of just five commercial banks resulting from mergers and acquisitions. The pressing need for bank development stemmed from factors such as capital scarcity and the prevailing financial and political instability. Recognizing the imperative of bolstering the financial infrastructure, the State Bank of Pakistan (SBP) collaborated closely with the Securities and Exchange Commission of Pakistan (SECP) to spearhead initiatives aimed at advancing the overall financial system of Pakistan (Alam et al., 2011).

The collaboration between the SBP and SECP marked a crucial step towards enhancing the resilience and efficiency of Pakistan's financial ecosystem. Through concerted efforts, regulatory frameworks were strengthened, institutional capacities were built, and market mechanisms were refined to promote stability and transparency within the banking sector. Moreover, initiatives were undertaken to foster innovation, promote investor confidence, and facilitate access to financial services for all segments of society. The interventions led by the SBP and SECP played a pivotal role in laying the foundation for a more robust and inclusive financial system in Pakistan. By addressing structural weaknesses and regulatory gaps, the collaborative efforts contributed to the emergence of a more dynamic and competitive banking landscape. Furthermore, the initiatives aimed at enhancing governance standards and risk management practices helped fortify the resilience of financial institutions and mitigate systemic risks. A significant transformation in the structure of Pakistan's banking sector took place in 1997, marked by the alignment of Pakistani banks' operations with international best practices. This pivotal shift was made possible through technical and financial support provided by international institutions, including the World Bank and other global financial

JOURNAL OF POLICY OPTIONS

2(4), 140-153

entities, as highlighted by Javaid et al. (2011). The adoption of international standards represented a strategic move aimed at enhancing the efficiency, transparency, and competitiveness of Pakistan's banking sector. By aligning with global best practices, Pakistani banks sought to improve their risk management frameworks, governance structures, and operational efficiency. This transition was instrumental in bolstering investor confidence, attracting foreign investment, and positioning Pakistani banks on a more solid footing within the global financial landscape. The support extended by international institutions played a crucial role in facilitating this transition, providing Pakistani banks with the necessary expertise, resources, and guidance to navigate the complexities of international banking standards. Similar institutional collaborations have been found to significantly improve economic resilience and foster integration into global markets (Desiree, 2019; Iqbal & Raza, 2018). Through capacity-building initiatives, training programs, and technical assistance, Pakistani banks were able to strengthen their institutional capabilities and adapt to the evolving regulatory environment. Furthermore, the collaboration with international partners facilitated knowledge exchange and peer learning opportunities, enabling Pakistani banks to benchmark their performance against global benchmarks and identify areas for improvement (Iqbal & Nasir, 2018; Khalid & Noor, 2019). This process of convergence with international standards not only enhanced the resilience and stability of Pakistan's banking sector but also fostered greater integration with the global economy. The alignment of Pakistani banks with international best practices in 1997 represented a significant milestone in the evolution of the country's banking sector. By embracing global standards and leveraging international support, Pakistani banks were able to modernize their operations, enhance their competitiveness, and contribute to the broader goal of financial inclusion and economic development. Following the enactment of the State Bank of Pakistan (SBP) Act in 1956, which delineated the roles and responsibilities of the central bank, there was a concerted effort to foster private sector involvement in the development of the banking sector. This legislative framework provided clarity and stability, laying the groundwork for private entities to actively participate in the financial landscape. Moreover, the Government of Pakistan's initiation of privatization in 1992 further incentivized private and foreign sector investment in the banking sector. The privatization drive not only attracted domestic private entities but also foreign investors, catalyzing a wave of investment and expansion within the banking industry. This influx of private capital injected dynamism and competition into the sector, prompting banks to innovate and improve their services to remain competitive. As highlighted by Ahmad et al. (2010), the privatization process played a pivotal role in creating a more competitive environment, driving efficiency enhancements across various facets of banking operations.

The competitive landscape spurred by privatization compelled banks to adopt modern practices, streamline processes, and enhance service quality to differentiate themselves in the market. This heightened focus on efficiency and customer service yielded tangible benefits for consumers, as banks competed to offer innovative products, streamlined processes, and superior customer experiences. Research highlights that privatization has enabled performance gains and improved institutional delivery across multiple sectors, including banking (Hussain, 2018; Ahmad & Rahman, 2019). Additionally, the influx of private investment facilitated the modernization and expansion of banking infrastructure, enabling banks to extend their reach and improve accessibility for customers across the country (Awan & Sohail, 2018; Raiz & Zulfaqir, 2019). The privatization initiative in Pakistan's banking sector not only attracted much-needed investment but also catalyzed a transformative shift towards greater efficiency and competitiveness. By fostering a more dynamic and innovative banking ecosystem, privatization has played a pivotal role in driving the sector's evolution and contributing to the broader goals of economic development and financial inclusion. The banking sector holds a pivotal position within any economy, serving as a cornerstone of financial stability and prosperity. A robust and efficient banking industry is well-equipped to withstand adverse shocks and contribute significantly to the overall performance of the financial sector, as noted by Athanasoglou et al. (2008). A thriving banking sector not only facilitates the efficient allocation of capital but also plays a crucial role in mobilizing savings, facilitating investment, and supporting economic growth. By providing

JOURNAL OF POLICY OPTIONS

2(4), 140-153

essential financial services such as lending, deposit-taking, and payment processing, banks serve as vital intermediaries that channel funds from savers to borrowers, thereby fostering productive economic activity. Moreover, a sound and well-regulated banking sector instills confidence among investors, depositors, and other stakeholders, contributing to overall financial stability. Banks play a crucial role in managing risk, ensuring liquidity, and maintaining the integrity of the financial system, thereby safeguarding the interests of depositors and investors. Furthermore, a dynamic and competitive banking industry fosters innovation, encourages efficiency gains, and enhances service quality, ultimately benefiting consumers and businesses alike. Through technological advancements and product innovation, banks can improve access to financial services, lower transaction costs, and enhance the overall customer experience.

The banking sector's importance stems from its ability to support economic growth, promote financial stability, and facilitate the efficient functioning of the broader economy. A well-functioning banking industry is essential for promoting investment, fostering entrepreneurship, and ensuring inclusive economic development. Scholars have emphasized that a resilient banking system encourages innovation and productive investment while contributing to the reduction of poverty and income inequality (Toth & Paskal, 2019; Manzoor & Agha, 2018). As such, policymakers and regulators must prioritize the development and resilience of the banking sector to realize the full potential of the economy (Ashiq & Akhlaque, 2019; Labeeque & Sanaullah, 2019).

2. LITERATURE REVIEW

This section provides an overview of previous research endeavors concerning the factors influencing working capital management within the banking sector of Pakistan, highlighting the robust interplay between the financial and real sectors. Existing literature indicates a scarcity of studies exploring both internal and external factors impacting working capital management in Pakistani banks. While profitability emerges as a significant determinant, it is not the sole metric affecting working capital management, as evidenced by various measures such as return on assets, cash conversion cycle, and return on equity utilized in scholarly investigations. Moreover, the backdrop of financial crises and other systemic shifts has contributed to an evolving landscape within the banking sector, prompting increased scholarly interest in understanding the intricacies of working capital dynamics. These pivotal shifts have underscored the importance of comprehensive analyses that consider a multitude of factors influencing working capital management, ranging from internal operational efficiencies to external economic conditions. In recent years, scholars have delved deeper into exploring the multifaceted nature of working capital management, recognizing its far-reaching implications for financial stability, performance, and resilience of banks. This growing scholarly attention reflects a broader recognition of the interconnectedness between working capital dynamics and the overall health of the banking sector, underscoring the need for nuanced analyses that capture the complexities inherent in managing working capital effectively. Moving forward, it is imperative for researchers to continue exploring and unraveling the intricate relationships between various determinants of working capital management in the context of Pakistani banks. By conducting comprehensive analyses that encompass both internal and external factors, scholars can provide valuable insights that inform strategic decision-making and contribute to the ongoing evolution of banking practices in Pakistan.

Beck et al. (2006) observed that in financial systems characterized by greater concentration, the likelihood of encountering budgetary emergencies is reduced. Conversely, in less competitive environments and countries with less developed legal frameworks, the probability of facing such emergencies is heightened. Furthermore, their study suggested that adherence to stricter rules and regulations within the banking sector's routine operations tends to correlate positively with higher profitability. Daniel and Jones (2007) conducted an extensive analysis encompassing data from the banking sectors of 35 countries across the globe. Their research shed light on a notable paradox: even in nations with robust and well-structured banking systems, characterized by efficient execution of routine tasks and a cautious approach to risk management, the specter of economic downturns looms

JOURNAL OF POLICY OPTIONS

2(4), 140-153

ominously. Despite the sophistication and resilience of these banking systems, they remain susceptible to the broader fluctuations and challenges inherent in the global economy. This underscores the interconnectedness and interdependence of financial systems worldwide, emphasizing the need for proactive measures and strategic risk mitigation strategies to navigate through periods of economic turbulence effectively.

Gul et al. (2011) conducted a comprehensive study investigating the factors influencing the profitability of the banking sector in Pakistan. Utilizing data from the top fifteen commercial banks spanning the period from 2005 to 2009, their research employed the pooled Ordinary Least Squares (OLS) approach to analyze the impact of various factors on market performance indicators such as return on assets (ROA), return on equity (ROE), and net interest margin (NIM). The study examined the effects of assets, equity, economic growth, deposits, inflation, and market concentration on bank profitability. The observational findings yielded compelling evidence that both micro-level and macro-level factors significantly influence the profitability of banking firms. This underscores the intricate interplay between internal operational dynamics and external economic conditions in shaping the financial performance of banks in Pakistan. The study's insights provide valuable implications for policymakers, regulators, and banking practitioners, highlighting the importance of considering a holistic set of factors when assessing and enhancing the profitability and resilience of the banking sector.

Ali et al. (2011) conducted a study focused on the banking sector of Pakistan, employing return on equity (ROE) and return on assets (ROA) as key metrics to assess profitability. Their research delved into the influence of both micro and macro factors on the profitability of the banking sector. Through the utilization of descriptive statistics and regression analysis, the study sought to uncover the relationships between various factors and banking profitability. The findings of the study revealed significant insights. Specifically, assets management and economic growth emerged as influential factors positively associated with profitability in the banking sector. These results underscore the importance of effective management of assets and robust economic conditions in driving profitability within the banking industry. The study contributes valuable knowledge to the understanding of the determinants of banking profitability in the context of Pakistan, offering insights that can inform strategic decision-making and policy formulation within the financial sector.

In their research, Akhtar et al. (2011) delved into the intricate realm of liquidity risk management within the Pakistani banking sector, offering insights into the practices and dynamics shaping this crucial aspect of financial management. By examining both Islamic and conventional banks and analyzing secondary data spanning a four-year period, the study provided a comprehensive overview of liquidity management strategies and their determinants. One of the key focal points of the study was the exploration of the relationship between various factors and liquidity levels within banks. Through rigorous analysis, the researchers identified significant associations between bank size and liquidity, with larger banks demonstrating a notably positive correlation with liquidity levels. This finding underscores the importance of considering institutional size as a critical determinant of liquidity risk management effectiveness within the Pakistani banking landscape. The study's emphasis on networking capital, return on assets, and return on equity offered a nuanced understanding of the multifaceted nature of liquidity risk management. By examining these factors alongside bank size, the research provided valuable insights into the complex interplay of financial metrics influencing liquidity positions and risk exposure.

In their comprehensive study, Pilloff and Rhoades (2002) delved into the intricate dynamics of the banking sector, with a particular focus on the impact of bank size on routine activities and overall profitability. Through meticulous regression analysis, the researchers uncovered a notable positive association between bank size and profitability, shedding light on the pivotal role that institutional size plays in shaping financial performance. One of the key insights gleaned from the study was the utility of the structural performance model in facilitating managerial decision-making and problem appraisal within banks. By leveraging this analytical framework, managers were able to gain deeper

JOURNAL OF POLICY OPTIONS

2(4), 140-153

insights into the underlying factors influencing bank operations and performance, thereby enhancing their ability to effectively navigate challenges and capitalize on opportunities.

Furthermore, Pilloff and Rhoades (2002) highlighted the significance of deposit growth as a key indicator of competitive dynamics within the banking industry. The growth trajectory of deposits not only served as a barometer of market competition but also provided valuable insights into the broader strategic positioning of banks within the financial landscape.

In their seminal study spanning from 1987 to 1991, Molyneux and Thornton (1992) meticulously analyzed the determinants of banking performance in the United States. Leveraging the expense preference expenditure theory, they unearthed a compelling finding: larger banks outperformed their smaller counterparts, primarily attributed to their size advantage. This advantage stemmed from the larger banks' ability to capitalize on economies of scale, enabling them to operate more efficiently and effectively within the competitive banking landscape. Building upon this foundational research, Molyneux and Seth (1998) delved deeper into the intricate relationship between bank size, efficiency, and working capital management. Their findings echoed those of Molyneux and Thornton, revealing a positive association between bank size and various facets of banking performance. This correlation underscored the pivotal role that institutional size plays in driving operational efficiency and optimizing working capital management practices within the banking sector. By elucidating the nexus between bank size and performance metrics, both studies provided invaluable insights into the underlying dynamics shaping the competitive landscape of the banking industry. Armed with this knowledge, industry stakeholders could devise more informed strategies to enhance efficiency, profitability, and overall performance in a rapidly evolving financial environment.

In his comprehensive survey conducted in Korea, Sufian (2011) explored the intricate relationship between macroeconomic factors and banking performance. One notable finding of the study was that banks in Korea with lower levels of liquidity tended to achieve higher profits. This observation underscores the strategic importance of liquidity management in driving profitability within the banking sector. Moreover, Sufian's investigation shed light on the resilience of Korean banks during the global financial crisis of 2008. Despite the widespread turmoil and upheaval experienced by financial institutions worldwide, Korean banks emerged relatively unscathed and, in some cases, even recorded increased profits. This resilience highlights the robustness of Korea's banking sector and its ability to navigate through turbulent economic conditions with commendable stability and effectiveness. In his study focusing on 23 commercial banks in Pakistan spanning from 2009 to 2012, Dawood (2014) delved into the intricate interplay of internal and external factors affecting bank profitability. Employing the ordinary least squares method for analysis, Dawood's findings suggested that liquidity emerges as a pivotal determinant of a bank's profitability. This underscores the critical importance of effective liquidity management strategies in ensuring sustained profitability within the banking sector. Furthermore, Dawood's study challenged conventional wisdom by revealing that the size of the firm and the volume of deposits held by the bank may not exert as significant an impact on profitability as previously assumed. This nuanced understanding suggests that while size and deposit levels are undoubtedly important considerations, other factors such as liquidity dynamics play an equally crucial role in shaping a bank's financial performance. Such insights can inform strategic decision-making within the banking industry, prompting a reevaluation of traditional metrics and a greater emphasis on holistic performance indicators.

In his examination of Greek banks spanning the period from 1990 to 2002, Kosmidou (2008) underscored the critical importance of efficient management of routine operations in driving declarations and boosts in profitability within the banking sector. Analyzing time-series data from 23 banks, Kosmidou's findings revealed several key associations between various factors and working capital management. Of particular note was the positive and significant relationship identified between bank size and sales growth with working capital management. This suggests that larger banks and those experiencing robust sales growth tend to exhibit more effective management of working capital, potentially reflecting greater economies of scale and enhanced operational efficiencies within these institutions. Interestingly, Kosmidou also uncovered a negative yet significant association

between return on assets (ROA) and working capital management. This finding implies that banks with higher returns on assets may face challenges in optimizing their working capital management practices, possibly due to a variety of factors such as capital allocation decisions or risk management strategies.

Understanding the factors influencing working capital management in the banking sector holds paramount importance, as it directly correlates with the growth and performance of banks. The primary objective of effective working capital management is to enhance the efficiency and efficacy of routine operations, ultimately bolstering overall organizational performance. Therefore, identifying the determinants impacting working capital management and comprehending their effects on the banking sector's day-to-day activities in Pakistan are crucial endeavors. While previous studies predominantly examined the relationship between working capital management and profitability, this study ventures beyond by delving into additional factors such as bank size, leverage, assets tangibility, and sales growth. By exploring how these variables interplay with working capital management in the Pakistani banking sector, a more comprehensive understanding of the dynamics at play can be achieved. Such insights are invaluable for strategic decision-making and performance optimization within financial institutions.

3. RESEARCH METHODOLOGY

The time series data has been accessed from the time period of 2006-2011 of 27 banks which includes 14 banks from private sector, 04 banks from public sector, 07 banks from investment sectors and 02 banks from foreign sector. All those banks which are included in the study are listed in Pakistan stock exchange. The data has been collected from the annual reports of all banks as well as from the State bank of Pakistan website. This study tried to investigate the relationship between the factors such as profitability, firm size, leverage, assets tangibility and sales growth with the working-capital-management for banking sector operating in Pakistan. To fulfill the objectives and to test the hypotheses, statistical tools of descriptive statistics, Pearson correlation and analysis of regression were used. All variables of the study have been put together in single regression equation as suggested by (Wasiuzzaman, 2014).

$$WCM_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 FIRM\ SIZE_{it} + \beta_3 LEVERAGE_{it} + \beta_4 TANGIBILITY_{it} + \beta_5 SALES\ GROWTH_{it} + \varepsilon$$

Where,

WCM = working-capital-management

β_0 = Intercept of the equation

β_j (j = 1,2,...,5) coefficient of variables (independent variable)

ROA= Profitability

Firm Size = In of Total assets

Leverage = Total annual debt of firm

Tangibility = Total fixed assets

Sales Growth = Total annual Revenue of firm

it: Time = 6, 7... 17years

ε = the error term

4. ANALYSIS

Table 1 presents the descriptive statistics for the variables used in the model that examines the determinants of working capital management. The model specifies working capital management as a function of profitability, firm size, leverage, tangibility of assets, and sales growth, with 324 observations for each variable in the sample. The dependent variable, working capital management, has a mean value of -6.77421 and a standard deviation of 78.920413, indicating substantial variation in working capital positions across firms. The large standard deviation relative to the mean suggests the presence of extreme values or highly dispersed practices in managing current assets and liabilities within the sample. Profitability, measured by return on assets (ROA), shows a mean of -0.00921 and

JOURNAL OF POLICY OPTIONS

2(4), 140-153

a standard deviation of 0.127615. The negative mean indicates that, on average, the firms in the sample experienced slight losses relative to their total assets. However, the moderate standard deviation suggests that while many firms operated near breakeven, some firms either performed well or suffered significant losses. Firm size, expressed as the natural logarithm of total assets, has a mean of 17.78467 and a standard deviation of 2.401078. This reflects moderate dispersion, indicating that the sample includes firms of varying scales, from relatively small to quite large entities. Leverage, defined as the ratio of total debt to total assets, has a mean of 0.61174, showing that debt represents a significant portion of the capital structure for the average firm. The standard deviation of 0.285202 suggests a wide range in capital structure decisions across firms, with some being highly leveraged and others less so. Tangibility, measured as the proportion of fixed assets to total assets, shows a relatively low mean of 0.03412, with a standard deviation of 0.049972. This indicates that most firms in the sample rely more heavily on intangible or current assets rather than fixed capital assets, though there is still some variation across firms. Sales growth, calculated as the annual change in total revenue, has a mean of 1.01248 and a high standard deviation of 8.326537. The large standard deviation indicates significant differences in growth rates across firms, with some experiencing rapid growth and others facing declines or stagnant sales. In summary, the descriptive statistics reveal substantial heterogeneity in working capital management, profitability, and sales performance among firms. This variation provides a strong foundation for estimating the proposed regression model to assess how these firm-level characteristics influence working capital management practices.

Table 1: Descriptive Statistics

Variables	Mean	Std. Deviation	N
WCM	-6.77421	78.920413	324
ROA	-0.00921	0.127615	324
SIZE	17.78467	2.401078	324
LEVERAGE	0.61174	0.285202	324
TANGIBILITY	0.03412	0.049972	324
SALES GROWTH	1.01248	8.326537	324

Table 2 presents the Pearson correlation matrix, which outlines the strength and direction of the linear relationships between working capital management and its key explanatory variables: profitability (return on assets), firm size, leverage, asset tangibility, and sales growth. The correlation coefficients range between -1 and 1 , where values close to 1 indicate a strong positive relationship, values near -1 indicate a strong negative relationship, and values around zero suggest no linear relationship. The correlation between working capital management and profitability is 0.029 , which is positive but extremely weak, indicating that profitability has little to no linear influence on working capital management. The relationship between working capital management and firm size is slightly negative, at -0.109 , suggesting that larger firms may manage their working capital more efficiently or with different strategies compared to smaller firms, but the relationship is still weak. Leverage has a correlation of -0.036 with working capital management, indicating a negligible negative relationship. This suggests that the level of a firm's debt relative to its assets has almost no direct association with how it manages its working capital. Tangibility of assets, with a correlation of -0.014 , shows virtually no relationship with working capital management, implying that the proportion of fixed assets within a firm's asset structure has little impact on current asset and liability management.

In contrast, sales growth exhibits a strong negative correlation of -0.709 with working capital management, which is the most pronounced relationship in the matrix. This indicates that firms experiencing higher sales growth tend to maintain lower levels of working capital. This could reflect a more aggressive working capital strategy where growing firms are utilizing resources more

JOURNAL OF POLICY OPTIONS

2(4), 140-153

efficiently or are operating with tighter liquidity positions. Among the explanatory variables themselves, firm size and leverage show a strong positive correlation of 0.823, suggesting that larger firms tend to carry more debt. Profitability also shows a moderate positive relationship with both firm size (0.314) and leverage (0.199), indicating that more profitable firms are generally larger and moderately more leveraged. Meanwhile, tangibility has weak to moderate negative correlations with size (-0.198), leverage (-0.087), and profitability (-0.066), implying that firms with higher levels of tangible assets are typically smaller, less profitable, and less reliant on debt. Lastly, sales growth is negatively correlated with profitability (-0.379), firm size (-0.058), and leverage (-0.069), and positively but weakly with tangibility (0.044), indicating that rapid revenue expansion may be more common among smaller, less profitable, and less leveraged firms, potentially due to their growth-phase characteristics. Overall, the correlation matrix provides initial insights into the potential directions and strengths of relationships that will be explored more rigorously through regression analysis. The particularly strong negative relationship between sales growth and working capital management stands out as an area for further examination.

Table 2: Pearson Correlation Matrix

	WCM	ROA	SIZE	LEVERAGE	TANGIBILITY	SALES GROWTH (S.G)
WCM	1.000					
ROA	0.029	1.000				
SIZE	-0.109	0.314	1.000			
LEVERAGE	-0.036	0.199	0.823	1.000		
TANGIBILITY	-0.014	-0.066	-0.198	-0.087	1.000	
SALES GROWTH (S.G)	-0.709	-0.379	-0.058	-0.069	0.044	1.000

Table 3 presents the summary statistics for the regression model estimating the determinants of working capital management. The R value of 0.762 indicates a strong positive correlation between the observed and predicted values of working capital management, suggesting that the independent variables in the model collectively explain a substantial portion of the variation in the dependent variable. The R-squared value is 0.581, meaning that approximately 58.1% of the variability in working capital management is explained by the model's independent variables—profitability, firm size, leverage, tangibility of assets, and sales growth. This reflects a relatively good fit, especially in corporate finance models where complex interactions often limit the explanatory power of linear regressions. The adjusted R-squared, which accounts for the number of predictors and the sample size, is slightly lower at 0.574. This small reduction suggests that all included variables contribute meaningfully to the model without overfitting. The standard error of the estimate, reported as 51.728340, measures the average distance that the observed values fall from the regression line. While this value seems high, it should be interpreted in the context of the scale and dispersion of the dependent variable, which—as shown in the descriptive statistics—also exhibits high variability. In summary, the model shows strong explanatory power, with more than half of the variance in working capital management being accounted for by the selected firm-level financial indicators. The adjusted R-squared confirms the robustness of the model, indicating that the explanatory variables are jointly significant in understanding variations in working capital practices.

Table 3: Summary of the Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.762	0.581	0.574	51.728340

Table 4: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1,186,374.215	5	237,274.843	90.863	.000
Residual	842,130.952	318	2,647.611		
Total	2,028,505.167	323			

Table 4 presents the results of the Analysis of Variance (ANOVA), which tests the overall significance of the regression model explaining variations in working capital management using firm-specific financial indicators. The regression sum of squares is 1,186,374.215, representing the variation in working capital management that is explained by the independent variables—profitability, firm size, leverage, tangibility of assets, and sales growth. This is contrasted with the residual sum of squares of 842,130.952, which captures the unexplained variation or the error component in the model. The total sum of squares, combining both explained and unexplained variation, is 2,028,505.167. The model uses 5 degrees of freedom for the regression (equal to the number of predictors), and 318 degrees of freedom for the residuals (based on the sample size minus the number of predictors and the intercept). The mean square for regression is calculated as 237,274.843, and for residuals, it is 2,647.611. The F-statistic is 90.863, which is a measure of the overall significance of the regression model. The associated significance level (p-value) is 0.000, indicating that the model is statistically significant at well below the 1% level. This means that the joint impact of the independent variables on working capital management is highly significant and that the model provides a reliable explanation for the observed variation in the dependent variable. In conclusion, the ANOVA results confirm that the regression model is statistically sound and that the combination of profitability, firm size, leverage, tangibility, and sales growth significantly contributes to explaining variations in working capital management. It shows the absence of multicollinearity among variables as suggested by (Gujarati and Porter, 2003).

Table 5: Coefficients
Dependent Variable: WCM

Model	Unstandardized Coefficients	Std. Error	Standardized Coefficients Beta	t	Sig.	Tolerance	VIF
(Constant)	95.432	32.781		2.911	.004		
ROA	-149.382	24.912	-0.244	-5.996	.000	0.754	1.327
SIZE	-6.117	2.280	-0.185	-2.683	.008	0.271	3.689
LEVERAGE	31.014	17.981	0.114	1.725	.085	0.288	3.472
TANGIBILITY	-20.703	56.925	-0.013	-0.364	.716	0.935	1.069
SALES GROWTH	-7.524	0.362	-0.808	-20.788	.000	0.843	1.186

Table 5 reports the regression results for the model investigating the impact of firm-specific factors on working capital management (WCM), with WCM as the dependent variable. The model includes key independent variables such as profitability (measured by Return on Assets, ROA), firm size, leverage, asset tangibility, and sales growth. These variables are commonly employed in financial literature to evaluate internal determinants of a firm's liquidity and operational efficiency (Deloof, 2003; Sharma & Kumar, 2011). The intercept value of 95.432 is statistically significant (p = .004), suggesting a baseline level of working capital management when all predictors are held constant. Among the predictors, ROA has a highly significant and negative effect on WCM (coefficient = -

JOURNAL OF POLICY OPTIONS

2(4), 140-153

149.382, $p < .001$), indicating that more profitable firms tend to operate with lower levels of working capital. This inverse relationship aligns with the pecking order theory, which posits that profitable firms are more likely to finance operations internally and thus may rely less on current assets (Padachi, 2006). The standardized beta value of -0.244 further supports the moderate strength of this negative association.

Firm size, measured as the natural logarithm of total assets, also has a significant negative effect on WCM (coefficient = -6.117, $p = .008$). Larger firms likely enjoy economies of scale, stronger bargaining power with suppliers, and better credit access, enabling them to operate with lower working capital (Lazaridis & Tryfonidis, 2006). The negative association implies that as firms grow, they tend to manage working capital more efficiently, likely through improved inventory management and tighter receivables control. Leverage has a positive but marginally significant relationship with WCM (coefficient = 31.014, $p = .085$), suggesting that firms with higher debt levels may need to maintain higher working capital to ensure short-term liquidity. However, the effect is relatively weak. This finding supports the idea that highly leveraged firms often maintain buffer liquidity to mitigate financial distress (Boisjoly, Conine, & McDonald, 2020), though the significance level indicates caution in interpreting this relationship as robust. Asset tangibility does not significantly impact working capital (coefficient = -20.703, $p = .716$). Since tangible assets are non-current in nature, their relevance to current asset and liability management may be limited. The lack of significance implies that fixed assets like property, plant, and equipment do not directly affect the firm's day-to-day liquidity strategies (Afza & Nazir, 2007).

Sales growth, however, has a highly significant and strong negative effect on WCM (coefficient = -7.524, $p < .001$; beta = -0.808), indicating that firms experiencing higher sales growth tend to optimize their working capital. High-growth firms may rely more on trade credit or generate quick turnover in receivables and inventories, reducing the need for large working capital buffers (Hill, Kelly, & Highfield, 2010). The Variance Inflation Factor (VIF) values for all variables are below the common threshold of 10, indicating no multicollinearity concerns, with the highest VIF being 3.689 for firm size. Tolerance values are also above the minimum acceptable level of 0.1, supporting the statistical reliability of the model. Table 5 highlights that profitability, firm size, and sales growth are key predictors of working capital efficiency. More profitable, larger, and faster-growing firms tend to operate with leaner working capital, likely reflecting more strategic financial management. The findings suggest that internal financial health and operational growth play a significant role in shaping short-term asset and liability decisions in firms.

5. CONCLUSIONS

In delving into the intricacies of working capital management, the study aimed to provide valuable insights into how financial institutions in Pakistan navigate the challenges and opportunities inherent in their operational frameworks. By examining factors such as profitability, firm size, leverage, assets tangibility, and sales growth, the research sought to unravel the underlying mechanisms driving efficient resource allocation and operational performance within the banking sector. Through a meticulous analysis of these factors, the study endeavored to uncover patterns and correlations that could offer meaningful implications for banking practices and strategic decision-making. By understanding the interplay between various determinants of working capital management, stakeholders in the banking industry can glean actionable insights to enhance their operational efficiency, optimize resource utilization, and ultimately bolster their competitive position in the market. The findings of this study underscored the notable correlation between working capital management and key performance indicators within the banking sector. Specifically, the analysis revealed statistically significant relationships between working capital management and metrics such as Return on Assets (ROA), firm size, and sales growth. These results signify the importance of effective working capital management practices in driving overall financial performance and operational efficiency within banking institutions. The significant relationship between working capital management and ROA suggests that prudent management of liquidity and cash flow dynamics

JOURNAL OF POLICY OPTIONS

2(4), 140-153

can have a tangible impact on a bank's profitability. Similarly, the positive association between working capital management and firm size underscores the role of scale in optimizing resource allocation and operational effectiveness. Furthermore, the observed relationship between working capital management and sales growth highlights the strategic significance of liquidity management in supporting business expansion and revenue generation initiatives.

By ensuring adequate levels of working capital to support day-to-day operations and capitalize on growth opportunities, banks can position themselves for sustained success in an increasingly competitive market environment. This study sheds light on the efficient management practices within the banking sector of Pakistan, focusing specifically on those institutions listed on the Pakistan Stock Exchange (PSX). By delving into the factors influencing working capital management (WCM), such as profitability, firm size, leverage, assets tangibility, and sales growth, it provides valuable insights into the operational dynamics of these banks. The significant relationships identified between WCM and factors like return on assets (ROA), size, and sales growth underscore the importance of these variables in shaping the financial performance of banking institutions in Pakistan. Additionally, while leverage and tangibility showed insignificant relationships with WCM, their inclusion in the analysis provides a comprehensive understanding of the various factors at play. Expanding the scope of future research to encompass other financial firms beyond those listed on the Pakistan Stock Exchange (PSX) could offer a broader perspective on working capital management practices across the financial sector. Additionally, exploring non-financial firms could provide valuable comparative insights into how working capital management differs between industries. Moreover, extending the timeframe of the analysis beyond the eleven years covered in this study, contingent upon data availability, could offer a more comprehensive understanding of long-term trends and fluctuations in working capital management within the banking sector of Pakistan. This expanded temporal scope would enable researchers to capture a broader range of economic conditions and market dynamics, thus enhancing the robustness and applicability of the findings. By considering these potential avenues for future research, scholars can further deepen their understanding of the factors influencing working capital management in Pakistan's banking sector and contribute to the development of more effective financial management strategies.

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2(4), 140-153

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