

The Impact of Capital and Marketing Expenditure on Revenue Growth of Pharmaceutical Companies in Pakistan



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Abstract: *This study investigates the effect of capital investment, marketing intensity, firm size and intangible assets on revenue growth of pharmaceutical companies in Pakistan. A balanced panel data set comprising of five businesses listed on the Pakistan Stock Exchange (PSX) from 2015-2024 was constructed based on the Resource-Based View (50 firm-year observations). Secondary financial data were from the audited yearly reports. The panel least squares regression (using E Views 12) were used to test the proposed hypotheses. Market intensity (marketing expenditure) positively affects revenue growth ($\beta = 3.8673$, $p = 0.1446$). In contrast, revenue growth and business size are positively but insignificantly related while intangible assets are negatively but insignificantly related. These findings provide some support for the Resource-Based View as marketing capabilities seem to be the most important strategic resource to drive revenue growth in the sample. The study adds to the literature by focusing on revenue growth and strategic investment in the pharmaceutical sector of Pakistan and offers practical insights on resource allocation for managers and policy makers.*

Keywords: Revenue Growth, Capital Expenditure, Market Intensity, Firm Size, Intangible Assets, Pharmaceutical Industry, Pakistan, Resource-Based View

Introduction

The pharmaceutical industry is a strategically important sector of Pakistan contributing significantly toward health care, employment, and industrial growth. The pharmaceutical industry in Pakistan has recently increased its investments in manufacturing facilities, technology, marketing campaigns and intangible resources to improve its competitiveness and performance. Revenue growth is an important indicator of business expansion and market performance, as it reflects a company's ability to attract consumers and capture market share. It is a more direct measure of the growth of a company than profitability, which can be skewed by accounting procedures or one-time costs.

Physical assets are the plants and machinery, and CAPEX is aimed at improving production efficiency, capacity and income generation in future. Market intensity, the expenditure on marketing as a percentage of sales, creates brand equity and consumer awareness through advertising and promotional activities, which can result in sales growth in the long run. Firm-specific effects are also important. Bigger companies tend to have more financial resources, as well as economies of scale and market dominance that make it easier to launch strategic projects. Intangible assets (patents, trademarks, intellectual property and organizational expertise) are also strategic resources which can provide a sustainable competitive advantage.

The research is based on the Resource-Based View (RBV), which suggests that organizations obtain a sustainable competitive advantage through valuable, rare, distinctive, and non-substitutable resources (Barney, 1991). Strategic assets encompass capital expenditure, marketing intensity (expenditure), business size, and intangible resources that affect success. Prior studies have looked at these elements separately, but there is little understanding of how they work together to influence revenue growth in the pharmaceutical industry of Pakistan. So the present research study examines the interaction of these variables in predicting the revenue growth of publicly listed pharmaceutical companies.

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Statement of the Problem

The pharmaceutical industry in Pakistan is highly competitive and capital intensive, with companies constantly investing in manufacturing and marketing to improve their performance. However, there is a lack of empirical information on whether these investments result in increased revenue growth. Previous studies in Pakistan have concentrated on profitability, firm value or operational efficiency and not on revenue growth per se. Finally, the literature has typically analyzed capital expenditure, marketing intensity, firm size and intangible assets separately, leading to difficulties for policymakers and managers in identifying the most efficient investment strategies for fostering company growth. This research attempts to fill this gap by investigating the combined impact of capital expenditure, marketing intensity, firm size and intangible assets on the revenue growth of pharmaceutical companies listed on PSX.

Research Objectives

The main purpose of this research work is to identify the factors influencing revenue growth in Pakistan's pharmaceutical industry. The specific aims are as follows:

1. To examine the impact of capital expenditure on revenue growth in the pharmaceutical industry in Pakistan.
2. To examine the impact of marketing expenditure (market intensity) on revenue growth of pharmaceutical companies in Pakistan.
3. To study the impact of firm size on the revenue growth of pharmaceutical firms in Pakistan.
4. This study aims to examine the impact of intangible assets on the revenue growth of pharmaceutical companies in Pakistan.

Significance of the Study

This research contributes both theoretically and practically. Theoretically, it contributes to the corporate finance and strategic management literature by focusing on revenue growth as a primary performance measure and integrating capital expenditures, marketing intensity, firm size, and intangible assets in an integrated empirical model. These linkages have not been empirically studied in Pakistan, and hence the results provide insights into strategic resource allocation in an emerging-market economy and a major industry sector.

The results have practical implications for managers, investors and governments. Managers of pharmaceutical companies can use the information to better allocate funds between capital projects and marketing operations, focusing on investments that significantly increase revenue. Investors might use the information to evaluate firms' plans and prospects. This information can be used by policymakers to design policies that enhance investment, innovation and competitiveness in the pharmaceutical business, thereby supporting economic growth and public health goals.

Literature Review

Capital Expenditure and Performance

Capital expenditure (CAPEX) is spending on long-term physical assets. These investments are expected to increase efficiency and capacity, and therefore future income. Empirical research has shown that CAPEX has a positive effect on business performance under certain conditions. For instance, Cheema et al. (2021) find that CAPEX positively affects the performance of pharmaceutical firms in Pakistan when cash flows are sufficient. According to Asimakopoulous et al. (2009), firms which make more long-term investments are better financial performers. Other studies, however, indicate the conditions for effectiveness. Chung et al. (2003) argue that the benefits of CAPEX depend on strong corporate governance and management capability. Aivazian et al. (2005) suggest that high-leverage firms are likely to reduce their capital expenditure due to debt constraints. The conflicting results suggest that while CAPEX might foster growth, its effect could vary depending on the firm's situation.

Marketing Intensity and Growth

Marketing spending, as a percentage of income, is an investment in promotion and market development. Increased brand exposure, customer recognition and retention lead to intangible assets that provide long-term benefits. More marketing investment significantly improves business performance through an increase in sales and profit (Haryanto & Retnaningrum, 2020). Marketing creates long-term value by building lasting assets such as brand equity and customer connections (Rust et al., 2004; Moorman & Rust, 1999). Kim and Joo (2013) provide evidence that investment in advertising has a positive effect on future sales, especially in competitive markets. In the pharmaceutical industry, where product differentiation and physician-patient interaction are important, marketing is expected to be a major driver of revenue growth.

Firm Size

Firm size is often associated with increased resource availability, economies of scale and market dominance. Generally, the bigger the company, the more financial flexibility it has and the wider the range of tasks it can do. The larger the organizations, the better they perform due to more efficient use of resources (Asimakopoulos et al., 2009). According to Ezeoha (2008), in developing economies, large enterprises have more investment and finance opportunities than small firms. While size is not a managerial decision variable, it does correspond with a company's total resources (tangible and intangible). The impact of firm size on revenue growth is ambiguous: larger organizations may expand steadily due to scale, whereas smaller firms may develop quicker from a lower foundation. As a result, it is used as both a control and an explanatory variable in this study.

Intangible Assets

Intangible assets (such as patents, branding, R&D, and organizational knowledge) are difficult for competitors to copy and are fundamental to the Resource-Based Perspective. According to Barney (1991), valuable, unique, and inimitable resources (such as intangibles) can provide a durable competitive advantage. Empirical evidence supports the long-term value of intangibles: Chung et al. (2003) find that R&D investments boost business value under excellent governance, and Rust et al. (2004) underline that customer knowledge and brand equity established through marketing have lasting financial returns. Kim and Joo (2013) point out that advertising creates intangible brand assets that generate future income. However, stated intangibles on financial statements may understate their true value, and the influence on short-term revenue growth is unclear.

Research Gap

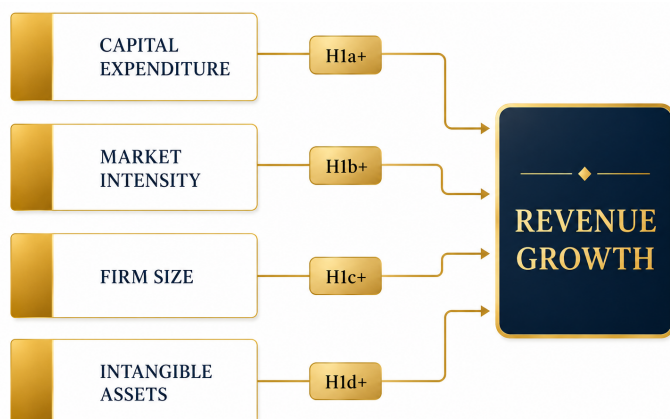
In summary, the literature demonstrates that capital expenditure, marketing expenditure, firm size, and intangible assets all have an impact on corporate success. However, most research focuses on profitability or market value and examines variables independently. There has been little empirical research into the combined effect on revenue growth, particularly in Pakistan's pharmaceutical business. This study fills that gap by empirically analyzing how these four factors influence revenue growth in Pakistani pharmaceutical companies using the Resource-Based View framework.

Research Framework

Based on the Resource-Based View, the conceptual framework posits that a firm's strategic resources influence its revenue growth. Specifically, capital expenditure, market intensity, firm size, and intangible assets are hypothesized to have positive effects on revenue growth (Figure 1).

Figure 1

Conceptual Framework Illustrating the Proposed Relationships between Capital Expenditure, Marketing Intensity, Firm Size, Intangible Assets, And Revenue Growth



Research Hypotheses

The following hypotheses are formulated based on the literature and theoretical framework:

- **H1a:** Capital expenditure has a positive and significant effect on the revenue growth of pharmaceutical companies in Pakistan.
- **H1b:** Market intensity (marketing expenditure) has a positive and significant effect on the revenue growth of pharmaceutical companies in Pakistan.
- **H1c:** Firm size has a positive and significant effect on the revenue growth of pharmaceutical companies in Pakistan.
- **H1d:** Intangible assets have a positive and significant effect on the revenue growth of pharmaceutical companies in Pakistan.

Data Collection and Source

The study utilized secondary data of five pharmaceutical companies listed on the Pakistan Stock Exchange, such as Abbott Laboratories (Pakistan) Limited, GlaxoSmithKline Pakistan Limited, Sanofi-Aventis Pakistan Limited, Highnoon Laboratories Limited and Ferozsons Laboratories Limited. The selection of these companies was based on the fact that they were continuously listed on the PSX from 2015 to 2024 and disclosed the required financial information publicly. The period of analysis is 2015-2024, generating a balanced panel of 50 firm-year observations (5 firms over 10 years). Data were collected from the verified annual reports and financial statements to verify their veracity.

The hypotheses were tested using panel least squares regression in EViews 12. Panel data methods use both cross-sectional and time series data to control for firm-specific effects and to increase efficiency. Data were checked for consistency before regression (e.g. that all firms reported the same categories of financial items). Estimated results are presented in the next section.

Variables

- **Revenue Growth (RG)** – *Dependent variable:* Year-over-year % change in total revenue. It measures the year-on-year sales growth of the firm.
- **Capital Expenditure (CAPEX)** – *Independent variable:* Capital expenditure to total assets ratio. It is a reflection of investment in physical assets of long life.
- **Market Intensity (MI)** – *Independent variable:* Share of total income spent on marketing (selling and distribution). This is the firm's relative spend on marketing and promotion.
- **Firm Size (SIZE)** – *Independent variable:* Natural log of total assets. A logarithmic transformation is done to normalize scale effects.
- **Intangible Assets (IA)** – *Independent variable:* Intangible assets to total assets ratio. It is an abbreviation for the investment in non-physical strategic resources (patents, trademarks, brand equity, etc.),

Results and Findings

Descriptive Statistics

Table 1 presents descriptive data for the study variables. The average revenue growth (RG) is 15.44%, which means that the sampled enterprises grew a bit during the period. The average capital expenditure ratio is 5.36%, indicating that firms invest only a small portion of their assets in physical investment. In contrast, marketing intensity is rather high (mean 17.10%), which means a significant marketing expense in relation to sales. The mean firm size is 1.62%, while intangible assets account for an average of 0.89%, indicating relatively low levels of firm size and intangible asset holdings in the sampled firms. The standard deviations indicate the variations of performance and investment across enterprises and years.

Table 1
Descriptive Statistics (N = 50).

	RG	CAPEX	MI	SIZE	IA
Mean	0.154411	0.053616	0.171035	0.016172	0.008890
Median	0.152425	0.046709	0.157452	0.013759	0.000864
Maximum	0.979538	0.138925	0.270120	0.045055	0.051643
Minimum	-0.557110	0.000000	0.077077	0.002290	0.000000
Std. Dev.	0.186781	0.029631	0.060625	0.010852	0.015969
Skewness	0.781117	0.792201	0.227341	0.841224	1.726024
Kurtosis	12.75864	3.480675	1.715644	2.827244	4.415779
Jarque-Bera	203.4826	5.711198	3.867303	5.959325	29.00221
Probability	0.000000	0.057521	0.144619	0.050810	0.000001
Sum	7.720543	2.680784	8.551755	0.808606	0.444508
Sum Sq. Dev.	1.709461	0.043023	0.180095	0.005771	0.012495
Observations	50	50	50	50	50

Correlation Analysis

The Pearson correlation matrix is presented in Table 2. Revenue growth is positively correlated with market intensity (0.15) and capital expenditure (0.04), showing that firms with higher spending on marketing and capital expenditure tend to grow faster. In contrast, revenue growth is significantly negative with intangible assets (−0.14). Importantly, the correlations between independent variables are low (all < 0.35), suggesting no severe multicollinearity. This is the reason why all four explanatory variables were included in the regression model simultaneously.

Table 2
Correlation Matrix (N = 50).

Covariance Analysis: Ordinary
Date: 07/19/26 Time: 17:44
Sample: 2015 2024
Included observations: 50
Covariance
Correlation
t-Statistic
Probability

Observations	RG	CAPEX	MI	IA
RG	0.034189 1.000000 ----- ----- 50			
CAPEX	0.000220	0.000860		

	0.040488	1.000000		
	0.280737	-----		
	0.7801	-----		
	50	50		
MI	0.000243	-0.000414	0.003602	
	0.021882	-0.234901	1.000000	
	0.151639	-1.674289	-----	
	0.8801	0.1006	-----	
	50	50	50	
IA	-0.000415	2.91E-05	-0.000515	0.000250
	-0.141873	0.062772	-0.543321	1.000000
	-0.992966	0.435756	-4.483768	-----
	0.3257	0.6650	0.0000	-----
	50	50	50	50

Panel Regression Results

The results of the Panel Least Squares regression are reported in Table 3. The dependent variable is growth of revenue. Market intensity (MI) coefficient is found to be positive and statistically significant ($\beta = 0.5260$, $p = 0.0401$), thus confirming hypothesis 1b. This implies that more marketing spend results in better revenue growth. The coefficient for capital expenditure (CAPEX) is positive ($\beta = 0.6036$), but statistically insignificant ($p = 0.5481$). Thus, H1a is not supported. The coefficient for firm size has a positive sign ($\beta = 2.1739$), but the p-value is insignificant (0.4622), which shows that H1c is not supported. The coefficient for intangible assets is negative ($\beta = -1.0370$) but insignificant (0.5943), which is contrary to H1d. The Durbin-Watson statistic (2.27) does not show any significant autocorrelation. Overall, the model indicates that of the variables considered, only market intensity has a significant effect on revenue growth in the sample.

Table 3

Panel Least Squares Regression Results

Dependent Variable: RG

Method: Panel Least Squares

Date: 07/19/26 Time: 17:50

Sample: 2015 2024

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAPEX	0.603635	0.997528	0.605131	0.5481
MI	0.526027	0.248979	2.112739	0.0401
IA	-1.036982	1.933162	-0.536417	0.5943
SIZE	2.173872	2.932074	0.741411	0.4622
Root MSE	0.185943	R-squared		-0.011279
Mean dependent var	0.154411	Adjusted R-squared		-0.077232
S.D. dependent var	0.186781	S.E. of regression		0.193859
Akaike info criterion	-0.366752	Sum squared resid		1.728742
Schwarz criterion	-0.213790	Log likelihood		13.16880
Hannan-Quinn criter.	-0.308503	Durbin-Watson stat		2.271700

Hypothesis Testing

The empirical results provide some support to the Resource Based View. Marketing expense (MI) is viewed as an important strategic resource which has a positive impact on sales growth (supporting H1b). Capital

expenditure and company size are positively associated with growth but statistically not significant (H1a and H1c are not supported). Intangible assets do not have the expected positive influence. The coefficient of intangible assets is negative and insignificant (H1d not supported). This means that, for the organizations and time periods studied, marketing competency exerted a stronger direct effect on revenue growth than investment in physical or intangible assets.

Conclusion

The present study investigates the effect of capital expenditure, marketing intensity, firm size and intangible assets on the revenue growth of pharmaceutical firms in Pakistan. The study analyzed the panel data of 5 PSX listed firms from 2015 to 2024. The study found that only marketing intensity (marketing expenditure) has a statistically significant positive impact on sales growth. Capital expenditure and firm size were insignificant. Intangible assets had a small negative relation with growth. The results indicate that marketing activities are a major driver of sales growth in this environment, but physical investments and intangible resources might take longer to pay off or might be conditional on other factors.

The results have practical implications for managers and investors. Pharmaceuticals companies need to recognize that marketing is a strategic investment in growth. Building brand awareness and relationships with customers can immediately boost sales. While capital investment in manufacturing and technology is important for long-term capacity and efficiency, its short-term impact on growth may be less important. When evaluating growth opportunities, marketers must consider marketing efficiency alongside the corporate strategy. Policymakers can encourage balanced investment in production and promotion to support business growth.

Limitations of the study

The generalization of the results may be limited by the sample size of five enterprises over ten years. Other factors were not included and may have impact on growth such as R&D spending, company governance and macroeconomic conditions. More research could be done by increasing the sample size, including more variables and industries, or using more sophisticated models (e.g., dynamic panel estimation) to better understand the development factors in emerging markets.

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