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CASE STUDY ON FINANCIAL MODELLING FOR START-UP AND FINANCIAL MODEL DEVELOPMENT

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Abstract

Financial modelling is one of the current trend in modern finance which explore the various techniques, methodologies, and real-world applications. The objective of this study are to explore the importance of Financial Modelling in finance, to investigate different types of Financial Model with financial functions in Excel. This study also focuses on preparation and investigation financial model based data collected from company and discussion with finance department. This study also covered to explore the role of Financial Modelling in for start-up. It also addresses the challenges in financial modelling, assumptions and data quality issues. It was observed that assumptions and limitations affect the decision-making process and the reliability of financial models in real-world applications. This research was conducted using a combination of qualitative and quantitative data from primary and secondary source.

Keywords: Financial Modelling for Start-up, use of financial Model, Finance and Technology, Forecasting.

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Introduction

Financial modelling is the process of creating a summary of a company's expenses and earnings in the form of a spreadsheet that can be used to calculate the impact of a future event or decision. It represents in numbers of a company's operations in the past, present, and forecasted future. Such models are intended to be used as decision-making tools. Company executives might use them to estimate the costs and project the profits of a proposed new project.

Financial experts are use them to explain or anticipate the impact of events on a company's stock, from internal factors such as a change of strategy or business model to external factors such as a change in economic policy or regulation. It used to estimate the valuation of a business or to compare between peers in the industry. They are also used in strategic planning to test various scenarios, calculate the cost of new projects, decide on budgets, and allocate corporate resources.

Role and Importance of Financial Modelling:

ISSN : 2583-6404
Mar - Apr 2025

Forecasting:
- Projecting future revenues, expenses, and cash flows.

Decision-making:
- Evaluating the financial impact of different business decisions (e.g., investments, pricing changes, expansion plans).

Fundraising:
- Demonstrating financial viability to potential investors.

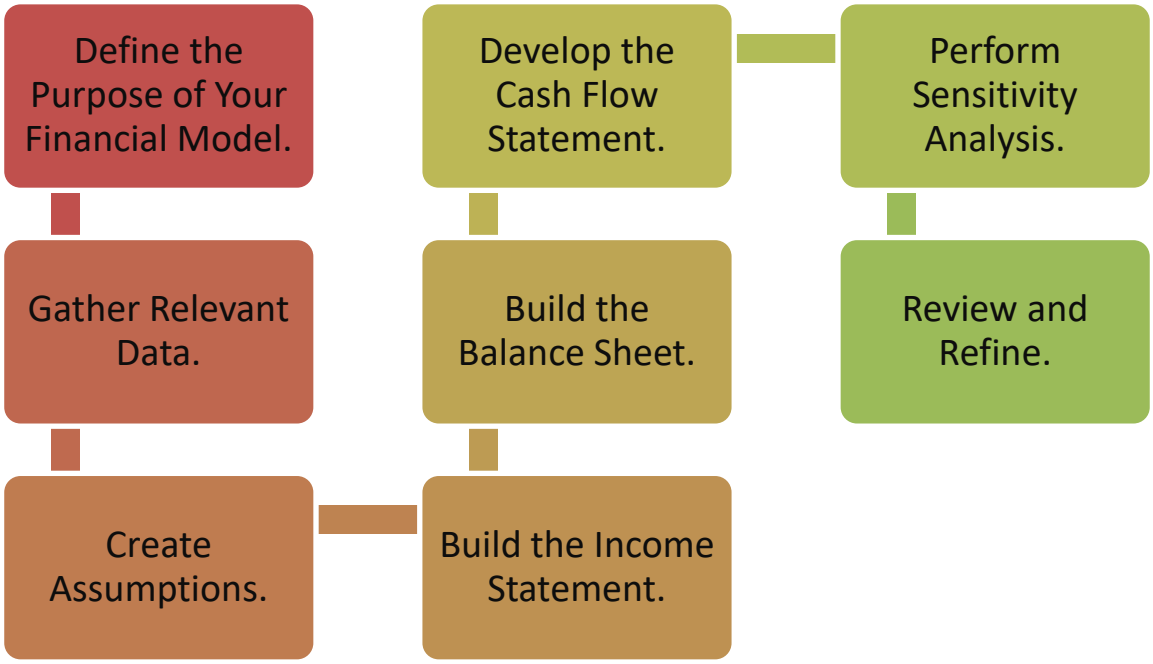
Budgeting and planning:
- Creating financial budgets and tracking performance against those budgets.

Scenario analysis:
- Assessing the impact of different economic or market conditions on the business.

Importance

ISSN : 2583-6404
Mar - Apr 2025

Preparation of financial Model Process



Objectives of the Study

1. To Explore the Importance of Financial Modeling
2. To Investigate Different Types of Financial Models
3. To Investigate the Role of Financial Modeling in Forecasting and prepration of financial model for start-up with case study
4. To Examine the Limitations and Challenges in Financial Modeling

Literature Review

(Marcin Majka) The most of the defining characteristic of a start up's financial model is its revenue streams, which are typically limited and in a constant state of evolution. Unlike large organizations that benefit from diversified and stable sources of income, start-ups often rely on a few, if not a singular, primary revenue stream that may be untested or emerging. This focus on a limited number of revenue sources stems from the start up's need to validate its business model, market t, and product viability. The journey from product development to market acceptance involves iterating on offerings and pivoting strategies, resulting in revenue streams that are not only unpredictable but also highly dependent on the start up's ability to scale rapidly. In this context, start-ups often prioritize customer acquisition and market share over immediate portability. This strategic focus on growth at the expense of short-term profits is essential for building a substantial user base, gaining market traction, and attracting further investment. The financial model, therefore, must accommodate the inherent uncertainty and fluctuation in revenue, with an emphasis on scaling potential rather than current financial returns. The cost structure of a start up further distinguishes its financial model.

Methodology

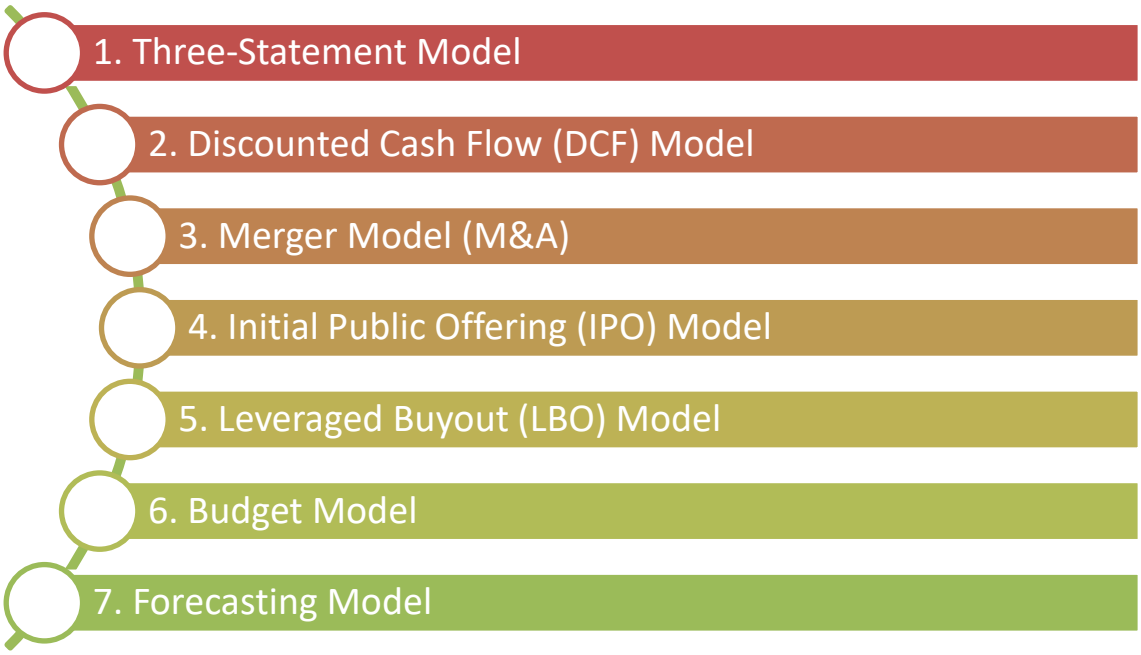
This research will be conducted using a combination of qualitative and quantitative methods from primary and secondary sources.A comprehensive review of academic papers, industry reports, and

ISSN : 2583-6404
Mar - Apr 2025

books related to financial modeling techniques, applications, and challenges as studied from secondary souces. Analysis of real-world case study discussed based on primary data and secondary data.

Conceptual Background

Types of Financial Models



Technological Advancements in Financial Modeling

- **Forecasting:** Forecasting estimates a company's future financial performance based on past and present data and industry trends. Finance professionals often use forecasting to make short-term financial models. For
- **Scenario Analysis:** Scenario analysis evaluates how future events could impact a business's operations and performance over a long-term period. This method allows finance professionals to predict the effects of a wide range of deterrents, such as cyber threats, government collapse, hiring shortages, new technological developments, and terrorism.
- **A valuation model:** Assesses the current or future worth of a company, an asset, or an investment. An analyst can use six factors to create a valuation model for a business: Analysis of cash distributions to shareholders, Historical changes in the company's debt-to-equity-ratio, Past and present economic conditions in the industry, Market volatility in regions where the company and its competitors are located, Weighted forecasts of the company's revenue growth, Weighted forecasts of the company's margin growth, This data allows finance professionals to forecast how a company's value will change over time.
- **Monte Carlo Simulation**: The Monte Carlo simulation–also known as the multiple probability simulation–uses statistical analysis to predict every possible outcome of an uncertain scenario that involves one or more undefined variables. The Monte Carlo method has many practical applications.
- **Case Study:** Preparation of Financial Model through advance Excel

Due to Confidentiality Issue Unable to Disclose company name. Financial Model

ISSN : 2583-6404
Mar - Apr 2025

1. Income Statement for the Year 2024-25 (Jan-March 2025 Projected)

	Current					Projected		
	INR	INR	INR	INR	INR	INR	INR	INR
Particulars	August 24	Sept 24	October 24	Nov 24	Dec 24	Jan 25	Feb 25	March 25
Revenue	150,000	145,000	160,000	210,000	212,000	220,000	235,000	250,000
COGS	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)
Gross Profit	**140,000**	**135,000**	**150,000**	**200,000**	**202,000**	**210,000**	**225,000**	**240,000**
SG&A	(80,000)	(79,000)	(82,000)	(95,000)	(93,000)	(98,000)	(105,000)	(110,000)
Other	–	–	–	–	–	–	–	–
EBITDA	**60,000**	**56,000**	**68,000**	**105,000**	**109,000**	**112,000**	**120,000**	**130,000**
Depreciation	(20,000)	(20,000)	(20,000)	(25,000)	(25,000)	(30,000)	(30,000)	(30,000)
EBIT	**40,000**	**36,000**	**48,000**	**80,000**	**84,000**	**82,000**	**90,000**	**100,000**
Interest Expense	–	–	–	–	–	–	–	–
Interest Income	–	–	–	–	–	–	–	–
EBT	**40,000**	**36,000**	**48,000**	**80,000**	**84,000**	**82,000**	**90,000**	**100,000**
Provision for Taxes	(12000)	(10800)	(14400)	(24000)	(25200)	(24600)	(27000)	(30000)
Net Income		**25,200**	**33,600**	**56,000**	**58,800**	**57,400**	**63,000**	**70,000**

Source: Primary Data (Self)

Assumptions in Preparing Income Statement

1. Estimates about the future: Since financial models project future performance, they inherently rely on assumptions about what will happen in the future.

2. Based on research and analysis: Assumptions should not be arbitrary guesses. They should be based on thorough research, historical data, industry trends, and competitive analysis.

3. Key drivers of the model: Assumptions directly influence the model's outputs, such as projected revenues, profits, and cash flows.

ISSN : 2583-6404
Mar - Apr 2025

2. Cash Flow Statement for the Year 2024-25 (Jan-March 2025 Projected)

CASH FROM OPERATING	August 24	Sept 24	October 24	Nov 24	Dec 24	Jan 25	Feb 25	March 25
Net Income	28,000	25,200	33,600	56,000	58,800	57,400	63,000	70,000
Depreciation	(20,000)	(20,000)	(20,000)	(25,000)	(25,000)	(30,000)	(30,000)	(30,000)
Cash From Accounts Receivable	10,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Cash From Inventory	1,000	-	-	2,000	-	-	-	-
Cash From Accounts Payab	(5,000)	500	11,500	3,000	5,000	5,000	5,000	5,000
Subtotal	14,000	10,700	30,100	41,000	43,800	37,400	43,000	50,000
CASH FROM INVESTING								
Capital Expenditure	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-
CASH FROM FINANCING								
Change in Long-Term Debt	-	-	-	-	-	-	-	-
Change in Common Equity	-	-	-	-	20,000	-	-	-
Dividends	-	-	-	-	-	-	-	-
Change in Revolving Credit Line	-	2,000	(1,000)	1,000	1,000	1,000	-	-
Subtotal	-	2,000	(1,000)	1,000	21,000	1,000	-	-

CASH BALANCE								
Beginning of the Year	6,000	12,800	(11,100)	(15,000)	(34,800)	(5,900)	(8,000)	(12,500)
Increase / (Decrease)	14,000	12,700	29,100	42,000	64,800	38,400	43,000	50,000
End of the Year	20,000	25,500	18,000	27,000	30,000	32,500	35,000	37,500

Source: Primary Data (Self)

ISSN : 2583-6404
Mar - Apr 2025

Assumptions in a cash flow statement for financial modeling focus on the timing of cash inflows and outflows, which differ from how revenue and expenses are recognized on the income statement.

Key areas include:

Operating Activities:

Revenue/COGS Timing: When cash is received from sales and paid for goods/services (payment terms like net 30).

Working Capital: How quickly customers pay (accounts receivable), inventory is sold (inventory turnover), and the company pays suppliers (accounts payable).

Investing Activities: Timing and amount of investments in long-term assets (CAPEX), acquisitions, or divestitures.

Financing Activities: New debt, repayments, equity funding, and dividends.

3. Balance Sheet for the Year 2024-25 (Jan-March 2025 Projected)

	Current					Projected		
ASSETS	**August 24**	**Sept 24**	**October 24**	**Nov 24**	**Dec 24**	**Jan 25**	**Feb 25**	**March 25**
Cash	20,000	25,500	18,000	27,000	30,000	32,500	35,000	37,500
Accounts Receivable	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000
Inventories	10,000	10,000	10,000	20,000	20,000	20,000	20,000	20,000
Total Current Assets	**45,000**	**55,500**	**53,000**	**77,000**	**85,000**	**92,500**	**100,000**	**107,500**
PPE	160,000	160,000	160,000	180,000	180,000	180,000	180,000	180,000
Total Assets	**205,000**	**215,500**	**213,000**	**257,000**	**265,000**	**272,500**	**280,000**	**287,500**
LIABILITIES								
Accounts Payable	50,000	50,500	62,000	60,000	65,000	70,000	75,000	80,000
Revolving Credit Line	5,000	7,000	6,000	7,000	8,000	9,000	9,000	9,000
Total Current Liabilities	55,000	57,500	68,000	67,000	73,000	79,000	84,000	89,000
Long-Term Debt	-	-	-	-	-	-	-	-
Total Liabilities	**55,000**	**57,500**	**68,000**	**67,000**	**73,000**	**79,000**	**84,000**	**89,000**
EQUITY								
Common Equity	80,000	80,000	80,000	80,000	100,000	100,000	100,000	100,000
Retained	70,000	78,000	65,000	110,000	92,000	93,500	96,000	98,500

ISSN : 2583-6404
Mar - Apr 2025

Earnings								
Total Shareholders' Equity	150,000	158,000	145,000	190,000	192,000	193,500	196,000	198,500
Total Liabilities & Equity	205,000	215,500	213,000	257,000	265,000	272,500	280,000	287,500

4. Ratios based on Financial Statements of Clearby Services (August 24 to March 25)

Ratios	August 24	Sept 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	March 25
Return on Equity	18.67%	15.95%	23.17%	29.47%	30.63%	29.66%	32.14%	35.26%
Return on Assets	13.66%	11.69%	15.77%	21.79%	22.19%	21.06%	22.50%	24.35%
Return on Net Assets	20.74%	18.06%	25.26%	32.94%	34.59%	33.76%	37.06%	41.18%
Gross Margin	93.33%	93.10%	93.75%	95.24%	95.28%	95.45%	95.74%	96.00%
SG&A % of Revenue	53.33%	54.48%	51.25%	45.24%	43.87%	44.55%	44.68%	44.00%
EBITDA Margin	40.00%	38.62%	42.50%	50.00%	51.42%	50.91%	51.06%	52.00%
EBIT Margin	26.67%	24.83%	30.00%	38.10%	39.62%	37.27%	38.30%	40.00%
EBT Margin	26.67%	24.83%	30.00%	38.10%	39.62%	37.27%	38.30%	40.00%
Net Profit Margin	18.67%	17.38%	21.00%	26.67%	27.74%	26.09%	26.81%	28.00%
Effective Tax Rate	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%

Limitations and Challenges for Preparation of Financial Model

1. Data Limitations: limited Historical Data: Start-ups often lack extensive historical financial data, making it challenging to establish reliable trends and forecasts.

2. Data Reliability: Available data may be incomplete or inaccurate, especially in early-stage start-ups.

ISSN : 2583-6404
Mar - Apr 2025

3. Assumption Uncertainty: Forecasting Challenges: Predicting future market conditions, customer behaviour, and competitive dynamics is inherently uncertain, which can affect the accuracy of financial projections.
4. Subjectivity: Many assumptions in financial models and valuations involve subjective judgments, which can introduce bias.
5. Methodological Limitations: DCF Limitations: DCF is sensitive to assumptions about discount rates and terminal values, which can be difficult to estimate for start-ups.
6. External Factors: . Market Volatility: Economic downturns, changes in investor sentiment, and unexpected events can significantly impact start up valuations.
7. Regulatory Changes: Changes in regulations or government policies can affect a start-up's business model and financial performance.

Start-up-Specific Challenges
1. Early Stage Uncertainty: Early-stage startups face a high degree of uncertainty regarding their technology, market acceptance, and ability to scale.
2. Rapid Growth: Rapid growth can make it difficult to accurately forecast future financial performance.
3. Availability and Quality of Data: Financial models rely heavily on the quality of data that they are built upon. However, data may not always be available, and finding the right data source is a significant challenge, especially for startups that lack historical data. Obtaining timely data can also be a challenge, particularly in rapidly changing markets or industries. This makes it difficult to establish accurate baseline assumptions for financial projections. As a result, it may be necessary to use alternative data sources and make assumptions based on market research and industry benchmarks.
4. Dealing with Model Complexity: Financial models can become increasingly complex due to various factors, such as the multitude of variables, mathematical equations, and underlying assumptions. This complexity can arise as they attempt to replicate real-world financial scenarios, resulting in reduced transparency. As a result, users may find difficulty comprehending the derivations of inputs within these models.
5. System Integration: Financial models must seamlessly integrate with various enterprise systems such as Enterprise Resource Planning (ERP) software, and Customer Relationship Management (CRM) tools. However, this integration process can cause compatibility issues, while real-time data access can be complex. Additionally, ensuring data security and preventing it from getting compromised can also pose significant challenges.
6. Human Errors and Bias: Financial models are created, executed, and analyzed by humans. This implies that they are susceptible to human error and bias, which can have a significant influence on the results of the financial models. Inaccuracies in inputs, such as data entry mistakes or biases in assumptions, can negatively affect the model's accuracy and projections.
7. Fragile forecast formulas: Interdependent formulas are common in financial models, wherein one output influences other. This creates a complex network where even small changes across multiple models or users can break the forecast formulas, resulting in inaccurate and potentially misleading results.
8. Scalability and flexibility: The financial models must keep up with the constantly changing business environment. Nevertheless, it can be challenging to incorporate new factors such as regulatory requirements, new markets, or products. Moreover, as the amount of data continues to

grow, financial modellers find it challenging to handle larger datasets with no compromise in accuracy or performance.

Recommendations

Although the financial modelling challenges may seem daunting, they can be overcome by following some best practices.

- These practices are designed to ensure transparency, comprehension, and precision in your financial models.
- Company should set a clear objective, simplifying the model for clarity, ensuring data integrity, conducting regular reviews and tests, documenting the process, and providing adequate training.
- Acquired financial modelling skills from recognized training programs empowers individuals to significantly advance their proficiency in implementing these best practices.
- Models serve many useful functions, but they may also pose certain risks to companies. Because these tools try to forecast events and trends that haven't occurred yet, they're inherently uncertain. As a result, they may lead businesses to make risky decisions based on incorrect or flawed predictions.
- Model validation from Professionals. This process examines every part of a financial model to detect errors and ensure that the model works as expected. Model validation also helps identify limitations in the model so that business leaders can account for these imperfections when making decisions.

Conclusion

This paper will highlight the crucial role of financial modeling in modern finance, from enhancing investment strategies to improving risk management. While financial models are powerful tools, their limitations and ethical concerns must be carefully considered. The integration of advanced technologies and improvements in model design will contribute to more effective and responsible decision-making in the financial world.

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ISSN : 2583-6404
Mar - Apr 2025

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