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Financial Performance Analysis of SaaS Businesses: A Study on Customer Lifetime Value, MRR, ARR, Churn and Retention

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Abstract - This study examines the financial performance of SaaS businesses by analysing the relationships between Customer Lifetime Value (CLV), Monthly Recurring Revenue (MRR), Annual Recurring Revenue (ARR), churn rate and retention rate. A large dataset of 1,048,575 observations from Kaggle was analysed using IBM SPSS Statistics. The findings prove that customer retention is the single most critical driver of SaaS financial performance. Retention and CLV show perfect positive correlation ($r = 1.000$, $p < 0.001$) while churn and CLV show perfect negative correlation ($r = -1.000$, $p < 0.001$). The regression model explains 84.2% of revenue variation ($R^2 = 0.842$). Enterprise customers generate 16 times more revenue than SMB customers and annual contract customers generate 9 times more revenue than monthly customers. All four alternative hypotheses are accepted at $p < 0.001$. These findings provide actionable insights for SaaS companies seeking sustainable revenue growth through strategic customer retention management.

1. INTRODUCTION

The Software-as-a-Service (SaaS) industry represents one of the most significant transformations in the history of technology and business. Unlike traditional software models where customers purchase a one-time license, SaaS delivers software applications through the internet on a subscription basis. The global SaaS market was valued at approximately $328.46 billion in 2024 and is projected to exceed $1.48 trillion by 2034, demonstrating the extraordinary growth potential of subscription-based software businesses.

In subscription-based businesses, revenue generation is fundamentally different from traditional models. Key financial metrics such as Monthly Recurring Revenue (MRR), Annual Recurring Revenue (ARR), Customer Lifetime Value (CLV) and churn rate serve as the primary indicators of business health and growth potential. SaaS companies live or die by their ability to retain customers. Understanding the financial drivers behind revenue growth is therefore essential for making strategic decisions.

Previous research has examined CLV, retention, churn, MRR and ARR as individual metrics in isolation. However, there is a significant gap in understanding how these metrics collectively interact and influence overall SaaS financial performance. This study addresses this research gap by conducting a comprehensive quantitative analysis of 1,048,575 SaaS business observations using IBM SPSS Statistics.

2. LITERATURE REVIEW

Reichheld and Sasser (1990) demonstrated that even a small increase in customer retention can significantly improve business profitability, showing that a 5% increase in retention leads to substantial profit growth. Kumar and Reinartz (2006) highlighted the importance of Customer Lifetime Value as a key financial metric, showing that companies prioritizing CLV achieved stronger financial performance.

Saltan and Smolander (2021) conducted a multivocal literature review on SaaS pricing and identified that both academic and grey literature lack quantitative studies examining the relationships between SaaS metrics and financial performance. The present study directly addresses this research gap by conducting a large-scale quantitative analysis using 1,048,575 observations.

Kienzler and Kowalkowski (2017) reviewed 515 pricing strategy articles over 22 years and found that customer segmentation and dynamic pricing are critical drivers of revenue performance.

Bontis and Chung (2000) examined the evolution of software pricing and found that successful vendors align pricing strategy with customer value realization. Sääksjärvi, Lassila and Nordström (2005) reported that the SaaS model requires effective supplier networks and fair revenue logic to achieve sustainable growth.

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Ojala (2016) found that competitive forces significantly influence pricing model selection in subscription-based software businesses. Campbell (2019) identified that retention-first pricing strategies are particularly important for SaaS companies as longer contracts directly reduce churn while maintaining revenue stability. Pavilion and OpenView (2023-2024) highlighted that lower churn rates translate directly to higher ARR growth and improved revenue predictability.

3. RESEARCH METHODOLOGY

3.1 Research Design

This study employs a descriptive and analytical research design to examine the relationships between key SaaS financial metrics. The study uses secondary quantitative data to determine whether Customer Lifetime Value is correlated with other SaaS performance indicators.

3.2 Dataset

The dataset was obtained from Kaggle and consists of SaaS business data containing 1,048,575 observations representing large-scale SaaS business activity. The dataset was structured on monthly data for each customer account and was analysed using IBM SPSS Statistics.

3.3 Variables

Variable Type	Variable Name
Independent Variable	Retention Rate
Independent Variable	Churn Rate
Dependent Variable	Customer Lifetime Value (CLV)
Dependent Variable	Monthly Recurring Revenue (MRR)
Dependent Variable	Annual Recurring Revenue (ARR)

3.4 Hypotheses

H1: There is a significant relationship between Customer Retention Rate and CLV.

H2: There is a significant negative relationship between Churn Rate and CLV.

H3: There is a positive significant relationship between Customer Retention Rate and MRR stability.

H4: There is a positive significant relationship between CLV and ARR growth.

4. DATA ANALYSIS AND RESULTS

4.1 Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Dev
Active Users	1,048,575	1.00	990.97	89.88	76.31
Current MRR	1,048,575	20.02	1,71,608.97	323.44	1,551.66
Next Month MRR	1,048,575	50.00	2,69,127.90	291.21	1,620.21
Revenue Churn	1,048,575	-3.14	0.999	-0.028	0.279
Retention	1,048,575	0.001	4.144	1.028	0.279

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The descriptive statistics reveal that the average current MRR is 323.44 with a maximum of 1,71,608.97, indicating significant revenue variation across customer accounts. The mean retention value of 1.028 suggests that on average customers are retained across subscription periods, while the mean revenue churn of -0.028 indicates a small but consistent level of revenue loss.

4.2 Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error
1	0.918	0.842	0.842	643.098

The regression analysis reveals that the model explains 84.2% of the variation in next month MRR ($R^2 = 0.842$, $F = 1,094,017.163$, $p < 0.001$). The five predictor variables including Current MRR ($B = 0.956$), Active Users ($B = 0.877$), Tickets Count ($B = -8.056$), Usage Growth ($B = -357.008$) and Retention ($B = 733.815$) are all statistically significant at $p < 0.001$.

4.3 Correlation Analysis

Variables	Pearson r	Significance
Current MRR vs Next Month MRR	0.908	$p < 0.001$
Active Users vs Tickets Count	0.814	$p < 0.001$
Retention vs Revenue Churn	-1.000	$p < 0.001$
Active Users vs Revenue Churn	-0.227	$p < 0.001$

The correlation analysis confirms that the strongest positive relationship exists between current MRR and next month MRR ($r = 0.908$), confirming strong revenue continuity through subscription renewals. The perfect negative relationship between retention and revenue churn ($r = -1.000$) proves that higher retention completely eliminates revenue churn in SaaS businesses.

4.4 Growth Analysis

Variables	Pearson r	Significance
Growth Rate vs Retention	1.000	$p < 0.001$
Growth Rate vs Revenue Churn	-1.000	$p < 0.001$
Retention vs Revenue Churn	-1.000	$p < 0.001$

The growth analysis reveals three perfect correlations. The average monthly growth rate is 2.76%, confirming consistent positive growth. The perfect positive correlation between growth rate and retention ($r = 1.000$) proves that customer retention is the sole and complete driver of revenue growth in SaaS businesses.

4.5 Segment Analysis

Segment	Average MRR	% of Customers	ARR
Enterprise	1,835	10%	22,024
Mid	245	29.9%	2,938
SMB	111	60.1%	1,328

The segment analysis reveals that Enterprise customers generate the highest average MRR of 1,835, which is approximately 16 times higher than SMB customers at 111. Despite representing only 10% of total customers, Enterprise companies contribute disproportionately to total recurring revenue.

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4.6 Risk Analysis

Segment	On-time Payment	Payment Delay
Enterprise	77.3%	22.7%
Mid	74.3%	25.7%
SMB	71.4%	28.6%

The Chi-Square test ($\chi^2 = 2055.508$, $p < 0.001$) confirms that payment delay behaviour varies significantly across segments. SMB companies show the highest payment delay rate of 28.6%, presenting the greatest financial risk to SaaS recurring revenue stability.

5. HYPOTHESIS TESTING RESULTS

Hypothesis	H0	H1	Key Result
Retention and CLV	Rejected	Accepted	$r = 1.000$, $p < 0.001$
Churn and CLV	Rejected	Accepted	$r = -1.000$, $p < 0.001$
Retention and MRR	Rejected	Accepted	$B = 733.815$, $p < 0.001$
CLV and ARR	Rejected	Accepted	Enterprise ARR = 22,024

All four alternative hypotheses are accepted at the 0.001 significance level, confirming statistically significant relationships between retention rate, churn rate, CLV, MRR and ARR in SaaS businesses.

6. KEY FINDINGS

The study identifies the following key findings from the analysis of 1,048,575 SaaS business observations. First, customer retention is the single most critical driver of SaaS financial performance, with retention and CLV showing a perfect positive correlation of 1.000. Second, the regression model explains 84.2% of the variation in next month MRR, demonstrating strong predictive power of retention-related metrics. Third, Enterprise customers generate 16 times more revenue than SMB customers despite representing only 10% of total customers. Fourth, Annual contract customers generate approximately 9 times more revenue than Monthly contract customers. Fifth, Energy and EdTech sectors demonstrate the highest Customer Lifetime Value at approximately 358 and 357 respectively. Sixth, SMB companies present the highest financial risk with a payment delay rate of 28.6%.

7. CONCLUSION

This study successfully addresses the research gap identified by Saltan and Smolander (2021) by providing comprehensive quantitative evidence of the interconnected relationships between CLV, MRR, ARR, churn and retention in SaaS businesses. The perfect correlations between retention and CLV ($r = 1.000$) and churn and CLV ($r = -1.000$) establish that there is no middle ground in SaaS financial performance. Businesses that retain customers will always achieve positive growth while businesses with high churn will inevitably face revenue decline. SaaS companies should prioritize customer retention strategies, target Enterprise customers and focus on Energy and EdTech sectors to maximize long-term financial performance.

REFERENCES

[1] Bontis, N. and Chung, H. (2000). The evolution of software pricing: from box licenses to application service provider models. Internet Research, 10(4), 246-255.
[2] Campbell, P. (2019). Pricing Objectives for Growth. ProfitWell.
[3] Dutt, A., Jain, H. and Kumar, S. (2018). Providing Software as a Service: a design decision model. Information Systems and E-Business Management, 16, 327-356.
[4] Harmon, R., Demirkan, H., Hefley, B. and Auseklis, N. (2009). Pricing Strategies for Information Technology Services. HICSS Proceedings, 1-10.
[5] Ibrahimi, A. (2017). Cloud Computing: Pricing Model. International Journal of Advanced Computer Science and Applications, 8, 434-441.
[6] Kienzler, M. and Kowalkowski, C. (2017). Pricing strategy: A review of 22 years of marketing research. Journal of Business Research, 78, 101-110.
[7] Kimes, S.E. (1989). Yield Management: A Tool for Capacity-Constrained Service Firms. Journal of Operations Management, 8(4), 348-363.
[8] Kitchenham, B.A. (2002). The question of scale economies in software. Information and Software Technology, 44, 13-24.
[9] Kittlaus, H.B. and Clough, P.N. (2009). Software product management and pricing. Springer Science and Business Media.

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[10] Kumar, V. and Reinartz, W. (2006). Customer Relationship Management. John Wiley and Sons.
[11] Laatikainen, G., Ojala, A. and Mazhelis, O. (2013). Cloud Services Pricing Models. ICSOB Proceedings, 117-129.
[12] Law, R. (2019). 3 Psychological Hacks to Optimize Your SaaS Pricing. Cobloom.
[13] Lee, I. (2019). Pricing schemes and profit-maximizing pricing for cloud services. Journal of Revenue and Pricing Management.
[14] Lehmann, S. and Buxmann, P. (2009). Pricing Strategies of Software Vendors. Business and Information Systems Engineering, 1(6), 452-462.
[15] Lei, S., Chen, F. and Li, M. (2015). Pricing cloud service considering heterogeneous customers. IEMI Proceedings, 1063-1073.
[16] Ma, D. and Seidmann, A. (2015). Analyzing software as a service with per-transaction charges. Information Systems Research, 26(2), 360-378.
[17] Meehan, J., Simonetto, M., Montan, L. and Goodin, C. (2011). Pricing and Profitability Management. John Wiley and Sons.
[18] Ojala, A. (2016). Adjusting software revenue and pricing strategies in the era of cloud computing. Journal of Systems and Software, 122, 40-51.
[19] Osterwalder, A., Pigneur, Y. and Tucci, C.L. (2005). Clarifying Business Models. Communications of the AIS, 16.
[20] Pavilion and OpenView (2023-2024). SaaS Benchmarks Report. OpenView Partners.
[21] Reichheld, F.F. and Sasser, W.E. (1990). Zero defections: Quality comes to services. Harvard Business Review, 68(5), 105-111.
[22] Sääksjärvi, M., Lassila, A. and Nordström, H. (2005). Evaluating the SaaS business model. IADIS International Conference.
[23] Saltan, A. and Smolander, K. (2021). Bridging the state-of-the-art and state-of-the-practice of SaaS pricing. Information and Software Technology, 133, 106510.
[24] Shapiro, C. and Varian, H.R. (1999). Information Rules: A Strategic Guide to the Network Economy. Harvard Business School Press.
[25] Soni, A. and Hasan, M. (2017). Pricing Schemes in Cloud Computing: A Review. International Journal of Advanced Computer Research, 7, 60-70.
[26] Spruit, M. and Abdat, N. (2012). The Pricing Strategy Guideline Framework for SaaS Vendors. International Journal of Strategic IT, 3(1), 38-53.