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ECONOMIC SUSTAINABILITY IN FRANCHISING DEVELOPING A PREDICTIVE MODEL FOR FRANCHISOR SUCCESS AND FAILURE

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ABSTRACT

This research identifies what makes a franchisor successful or unsuccessful, and then uses that information to build a prediction model that looks at the economic sustainability of franchising. With 220 franchisors from the retail, hotel, and service industries included in the sample, the model incorporates 17 financial factors and 10 contractual governance variables. Royalties, franchise fees, franchisor age, and franchised outlet ratios are among the aspects of contractual information that are culled from the SABI database relative to financial data. To solve the problem of multicollinearity and make the model more understandable, a Lasso regression method is used. Financial success and contractual design are also important factors in predicting a franchisor's longevity, as shown by the results' high prediction accuracy (80.57%).

Keywords: Franchisor, Contractual, Franchising, Failure, Prediction, Governance.

I. INTRODUCTION

In fast-paced, competitive marketplaces, the longevity and prosperity of franchise systems depend on their economic viability. With the help of franchisees' entrepreneurial spirit and comparatively little initial investments, businesses may flourish via franchising. But not all franchisors succeed in the long run; many fail because to problems with finances, operations, and governance. In order to help investors, lawmakers, and business strategists make better decisions inside franchise networks with less risk, it is vital to establish a model that can forecast the success or failure of franchisors.

Profitability in the near term is not the only measure of economic sustainability in franchising. Stability in the financial sector, effective use of resources, balanced growth, strong contractual governance, and resistance to external economic shocks are all part of it. By balancing the needs of franchisees with those of the franchisor, a financially stable franchise may continue to operate for the long term. The sustainability of franchise systems over the long run is heavily dependent on both financial success and governance methods.

In order to foretell franchisor results, the predictive model incorporates contractual and financial elements. Financial metrics that assess operational efficiency and the likelihood of bankruptcy include asset growth, liquidity ratio, and solvency ratio, return on equity, return on assets, leverage ratio, and return on equity. Concurrently, the relational and structural aspects of franchise agreements are captured by contractual governance factors including royalty rates, upfront franchise fees, percentage of franchised outlets, and yearly fluctuations in fees and outlets. Through the integration of these factors, the model offers a thorough framework for assessing the long-term viability of franchising.

Modern statistical methods that are adept at dealing with multicollinearity and high-dimensional data were used to build the model. When the number of variables is enormous in comparison to the sample size or when predictors are strongly linked, traditional regression models often encounter difficulties. The work uses Lasso regression, a penalized regression approach that picks the most important variables and decreases less significant coefficients toward zero, to overcome these problems. This method keeps the model realistic and strong for stakeholders by improving prediction accuracy and interpretability.

Using up-to-date financial and contractual data, the model predicts the likelihood of franchisor failure in the next term. Incorporating delayed data allows for proactive decision-making via the provision of early warning signals. A high-risk franchisor may enhance their sustainability by adjusting their financial strategies, reshaping contractual conditions, optimizing royalty arrangements, or rebalancing their outlet mix. Credit risk is determined by investors and financial institutions using the model, and

franchise stability is determined by prospective franchisees using the model before committing resources.

The model does double duty by both forecasting failure and revealing what factors contribute to franchisor success. Profitability, regulated leverage, liquidity, cost management, and steady asset and equity development are the hallmarks of a sustainable franchisor. In order to foster collaboration inside the franchise network, mitigate agency disputes, and strike a balance between incentives, they craft contractual agreements. An ideal combination of franchised and company-owned locations enhances operational oversight while fostering entrepreneurial spirit. Trust and long-term cooperation between franchisors and franchisees are fostered by transparent and reliable royalty schemes.

Strategic planning and industrial regulation are also aided by the predictive framework. Sectoral stability and good governance are both tracked by regulators and policymakers with the use of predictive analytics. In their models for evaluating risk, financial institutions use predictive metrics. In order to make the model more applicable and reliable, researchers continue to modify and verify it across many industries. Sustainability trends are best understood by comparing the retail, hotel, and service sectors.

Strong financial management and sound contractual governance are essential for the economic viability of franchising. An aggressive strategy for handling uncertainty and improving performance is provided by the predictive model. Instead of reacting to failure after the fact, stakeholders plan ahead to mitigate potential risks. The approach enhances the competitiveness and sustainability of franchise systems in the long run by integrating financial measurements with governance indicators, which helps with both theoretical comprehension and practical decision-making.

II. REVIEW OF LITERATURE

Othman, nor et al., (2025) one of the most prominent business models of the modern era is the franchise model. Nevertheless, franchisees often encounter substantial obstacles while trying to weather economic downturns while still turning a profit. The purpose of this research is to determine what variables have the most impact on a company's ability to stay in Malaysia. The study used a questionnaire to gather data from 165 franchise firm owners, selected using a purposive sample method. A multiple linear regression analysis was performed on the data using IBM SPSS version 26. Franchisees are more likely to succeed if they have access to capital, a compelling value offer, and official backing, according to the research. When it comes to these considerations, government assistance stands out as the most important for companies to survive crises and pandemics. To strengthen franchisee resilience are provided by this research, which contributes significantly by combining the Resource-Based View with Institutional Theory. Furthermore, it provides a thorough

framework for assessing the capacity of franchisees to survive, which in turn yields insightful data on the franchising sector. For franchisees to succeed in today's ever-changing market, future studies should investigate the game-changing possibilities of tech-driven initiatives.

Shah, Sujal et al., (2024) this research looks at the franchise model's expansion in Ahmedabad's café and restaurant industry, specifically how franchisees of all ages regard it. We tested 10 alternative hypotheses on operational elements including training adequacy, brand awareness, and market rivalry using data from 172 franchisees using a quantitative methodology. There were no statistically significant variations in opinions among age groups among franchisees, according to the findings. In particular, franchisees had a high degree of agreement on the franchise model's efficacy, the sufficiency of assistance, and the impact of brand awareness, suggesting that they all understood the model's advantages. The results did, however, stress the need for tactical adjustments due to the high level of competition from locally owned cafés. According to the study's practical implications, in order for franchisors to drive development, they should promote standardised training and support systems, enhance their marketing methods, and foster strong connections between franchisees and franchisors. stress the need to manage competitive dynamics and enhance support systems on an ongoing basis. The incorporation of digital transformation into franchise operations, the effects over time, and the role of varied demographics are all areas that can benefit from more investigation. This research sheds light on the efficacy of franchises and may help professionals in the restaurant and café industries maximise franchise performance.

Luu, Tien et al., (2023) With cultural sensitivity serving as a moderator, this research seeks to disclose the influence mechanism of franchisor-owned resources, franchise relationship quality, and franchisee's dynamic capacities on franchisee performance. A total of 290 team leaders and middle managers from 113 different hotels and food and beverage establishments in Ho Chi Minh City, Vietnam, who were part of both foreign and local franchisees, made up the sample. The data is analysed using a PLS-SEM, which stands for partial least squares structural equation model. show that franchisee performance was greatly affected by franchisor-owned resources, the quality of the franchise relationship, and the franchisee's dynamic skills. In addition, the impact of franchise relationship quality on franchisee performance is positively impacted by cultural sensitivity. Contributing to the integration of international business theory in franchising research, this study presents an integrated analytical framework of franchisee performance from the franchisee's viewpoint, namely the resource-based view, dynamic capability view, and relationship-marketing theory.

Bui, Thi Thao et al., (2022) despite decades of study, little is known about the factors that influence franchisee success or what factors contribute to poor performance. Using data from credible studies carried out in a variety of nations between 2013 and 2021—mostly in industrialised nations with well-

structured franchise systems—this research will examine and debate the factors that influence franchisee success in diverse settings. It seems that no previous study has ever compiled scholarly publications on franchisee performance and presented them in a global context as this one does. In order to accomplish the research goals, forty papers were retrieved by employing a systematic literature review process on research journals. According to the results, there are four elements that influence franchisee performance: the franchisor, the franchise, the relationship, and the external environment.

III. RESEARCH METHOD

Here we detail the steps that went into creating a model that can foretell whether franchisors would succeed or fail. The majority of models used to forecast when businesses would collapse use financial statistics as their foundation. However, factors pertaining to contractual governance processes may also reveal the chances of success or failure for franchisors.

Sample and Variables

The retailing industry had 123 franchisors, the hotel sector had 80, and the services sector had 17 franchisors. We also tested the efficacy of formal governance measures at failure prediction using contractual data for each franchisor. The following variables were included in the collected contractual data: percentage of outlets that were franchised, royalties, upfront franchise fees, average royalties, average franchise fees, number of years the franchisor's chain had been operating, and annual variation in royalties and franchise fees. The model also includes three interactions among contractual variables to test our predictions. As a result, there were a total of 27 variables in the model; 10 of them related to franchises and 17 to finances.

We picked 17 financial indicators that might explain the likelihood of insolvency. The literature has made extensive use of these factors. Their inclusion in earlier research makes our findings more comparable. Furthermore, information on the franchisors' contracts was collected. All of the model's variables are listed in Table 1.

Table 1 Description of financial and contractual variables

Variable Type	Variable Code	Variable Description	Variable Measure
Financial variables	Var1	Return on equity (ROE) (%)	Profitability
	Var2	Return on capital employed (%)	Profitability

	Var3	Return on assets (ROA) (%)	Profitability
	Var4	Profit margin (%)	Profitability
	Var5	Interest coverage ratio (%)	Debt
	Var6	Credit period (days)	Debt
	Var7	Solvency ratio (%)	Solvency
	Var8	Liquidity ratio (%)	Liquidity
	Var9	Financial autonomy ratio (%)	Solvency
	Var10	Leverage ratio (%)	Debt
	Var11	Profit per employee (thousand Euro)	Profitability
	Var12	Operating income per employee (thousand Euro)	Profitability
	Var13	Personnel expenses/operating income (%)	Efficiency
	Var14	Total equity per employee (thousand Euro)	Size/Efficiency
	Var15	Total assets per employee (thousand Euro)	Size/Efficiency
	Var16	Annual variation in total assets (%)	Growth
	Var17	Annual variation in total equity (%)	Growth
Contractual variables	Var18	Royalties (%)	
	Var19	Up-front franchise fees (thousand Euro)	
	Var20	Age of franchise chain (years)	

	Var21	Annual variation in number of franchised outlets	
	Var22	Annual variation in royalties	
	Var23	Annual variation in up-front franchise fees	
	Var24	Franchised outlets as percentage of total outlets (%)	
Interaction variables	Var25	Age and number of franchised outlets	

Lasso Regression

0.8057 But that's not all we're aiming for statistically. It is crucial to find a happy medium between the model's accuracy and how easy it is to grasp, especially if people who need to comprehend the model's dynamics and linkages are going to be using the models. It may be more difficult to understand the most advanced hybrid models than the models themselves.

While not without its flaws, logistic regression manages to find a happy medium between precision and interpretability. While logistic regression is able to manage many of the stringent assumptions of ordinary least squares regression, such as normalcy, heteroscedasticity, and linearity, it is unable to handle multicollinearity, according to the researchers. High levels of variability are possible when the number of observations is marginally more than the number of covariate variables (p). Overfitting occurs when the model's likelihood is enhanced by increasing the number of parameters.

Model parameters and variance are anticipated to be inflated in the presence of strongly correlated variables or collinearity. Good predictors cannot account for high variance; instead, it is the result of a model that has been incorrectly defined and contains unnecessary predictors. Some methods have been developed to circumvent these restrictions by implementing penalties that scale with the number of model predictors. The three most prevalent methods in this category are elastic net, ridge regression, and least absolute shrinkage and selection operator (Lasso).

Recent applications to business forecasting have shown that Lasso excels at mitigating the drawbacks of the other options. Lasso narrows the final model's predictor set. It produces parsimonious and

interpretable models, making it an effective variable selection strategy. As a result, we created a Lasso model to identify trends that could indicate a franchisor's demise. During the research period, 21 out of 220 franchisors failed. Table 2 shows that, perhaps as a result of the worldwide financial crisis, the number of franchisors that have failed has been on the rise in recent years.

Table 2 Number of failed franchisors 2002–2013.

Year	Total Franchisors	Failed Franchisors	Failure Rate (%)
2003	3	0	0.00
2004	12	1	8.33
2005	24	0	0.00
2006	17	2	11.76
2007	16	2	12.50
2008	25	1	4.00
2009	18	3	16.67
2010	20	4	20.00
2011	26	2	7.69
2012	18	2	11.11
2013	41	4	9.76
Total	220	21	9.55

Two samples were gathered for every period: one to learn from in order to estimate the parameters of the model, and another to verify how well the model worked. Not a single company from the learning sample was included in the test sample. An interval of one year separated the data collection for these two sets of samples. This meant that the model could use this year's financial and governance data to forecast next year's failures. Over the course of the research period (2003–2013), 9.55 percent of franchisees failed.

IV. RESULTS

Lasso reduces parameter estimates to zero or even sets parameters to zero in some instances, which means that certain variables aren't included in the model. The model was created in R program with the help of the package.

The estimated parameters are shown in Table 3. Twenty of the first twenty-seven variables produced coefficients that were greater than zero. The up-front franchise price (Var19) and the interaction between age and royalties (Var26) were the only two factors pertaining to franchise governance control systems that were unexpectedly non-significant. Profit per employee (Var11), return on equity (Var1), liquidity ratio (Var8), personnel expenditures divided by operational revenue (Var13), and total assets per employee (Var15) were not adequately representative factors to predict franchisor failure. As predicted, all of the model variables were negatively skewed. The variables were constrained in this way due to the weight of evidence (Woe) transformation.

Table 3 Model estimation.

Variable	Description	Coefficients	Standardized Coefficients	Estimate Weight (%)
Intercept		−2.162	−2.593	
Var2	Return on capital employed	−0.112	−0.045	1.51
Var3	Return on assets (ROA)	−0.215	−0.151	5.09
Var4	Profit margin	−0.300	−0.142	4.79
Var5	Interest coverage ratio	−0.114	−0.098	3.31
Var6	Credit period	−1.620	−0.187	6.29
Var7	Solvency ratio	−0.388	−0.318	10.70
Var9	Financial autonomy ratio	−0.003	−0.002	0.06
Var10	Leverage ratio	−0.068	−0.013	0.44

Var12	Operating income per employee	−0.184	−0.222	7.49
Var14	Total equity per employee	−0.003	−0.023	0.78
Var16	Annual variation in total assets	−0.479	−0.235	7.91
Var17	Annual variation in total equity	−0.315	−0.186	6.27
Var18	Royalties	−0.732	−0.202	6.81
Var20	Age of franchise chain	−0.229	−0.056	1.90
Var21	Annual variation in no. franchised outlets	−0.306	−0.058	1.97
Var22	Annual variation in royalties	−0.561	−0.188	6.33
Var23	Annual variation in up-front franchise fees	−0.734	−0.418	14.10
Var24	% franchised outlets to total outlets	−0.830	−0.163	5.50
Var25	Interaction (age and no. franchised outlets)	−0.468	−0.132	4.46
Var27	Interaction (age and up-front franchise fees)	−0.621	−0.127	4.28

The relative weight of each model variable is established by the standardized coefficients. The financial variables accounted for 53.88% of the total weight in the model, meaning that the contractual variables, which reflected the franchisors' governance procedures, were responsible for 46.22% of the success or failure of the franchisors. For financial purposes, the most important metrics were operational income per employee, total asset fluctuation annually, and solvency ratio. The model's most crucial governance

component was the annual change in upfront franchise fees. Royalties, as well as the yearly fluctuation in royalties, were also significant factors in determining the likelihood of franchisor failure.

Franchise chains had a higher chance of failing in their early years of operation, but a higher chance of survival over longer periods of operation, according to the research. All signs point to Hypothesis 1 being correct. Hypotheses 2 and 3 are likewise borne out by the facts. When there was a high ratio of franchised outlets to company-owned outlets and a lesser number of franchised outlets in the early years of operations compared to later years, the chance of franchise chain survival was higher. There was an inverse relationship between royalties and success rates. Therefore, we may dismiss Hypothesis 4. Hypothesis 5, which posits that younger franchise chains charging lower royalties have a better chance of survival than younger chains charging higher royalties, is similarly rejected by our results. There was no correlation between franchise fee and franchise survival, disproving Hypothesis 6. There was a substantial interaction between age and franchise fee, but the most influential variable was the yearly change in the cost. Supporting Hypothesis 7, we find that nascent franchise chains with lower franchise fees have a better chance of surviving than those with higher fees. Lastly, franchise businesses that relied only on sales revenue to measure success fared worse than those that prioritized efficiency and profitability. Therefore, we may dismiss Hypothesis 8. This conclusion makes sense given that royalties are calculated as a proportion of sales, and that franchisors are less likely to survive if royalties are increased.

For both the training and test samples, the model's accuracy in predicting franchisor failure is shown in Tables 4 and 5, respectively. With an accuracy of 81.82% in the test sample and 82.47% in the training sample, the model successfully predicted the survival of franchisors. Regardless of the sizes of the two groups (failed and non-failed franchisees), we were able to evaluate performance using the area under the receiver operating characteristic (ROC) curve (AUC—area under curve). A receiver operating characteristic (ROC) plot shows how a binary classifier system's diagnostic performance changes with different discrimination thresholds. When several thresholds are tested, the ROC curve is generated by comparing the TPR and FPR at different values. There is a 0–1 range for ROC values. A flawless prediction model is indicated by a ROC value of 1, but a predictor with a ROC value of 0.5 might be called random. The excellent predictive capability of the model was shown by the ROC values of 0.8203 in the training sample and 0.8057 in the test sample.

Table 4 Training sample

Observed/Predicted	Non-Failed	Failed	Total	Accuracy
Non-failed	114	25	139	82.01%

Failed	2	13	15	86.67%
Total	110	44	154	82.47%

Table 5 Test sample.

Observed/Predicted	Non-Failed	Failed	Total	Accuracy
Non-failed	49	11	60	81.67%
Failed	1	5	16	83.33%
Total	46	20	66	81.82%

V. CONCLUSION

The research shows that franchise systems can't succeed in the long run unless they can maintain a healthy economy. Predictive modeling shows that financial success and the efficacy of contractual governance systems are both critical to a franchisor's ability to stay in business. The model gives a thorough framework for detecting possible failure warning signals by combining financial ratios with factors that are particular to franchises. This exemplifies the characteristics of a sustainable franchisor, including moderate expansion, manageable debt levels, consistent profits, and clear royalty and fee structures. Lasso regression and other sophisticated statistical methods improve predicted accuracy while keeping the results interpretable, according to the results. Franchisors, investors, banks, and lawmakers can all use the model to help them make better strategic decisions with less guesswork. By taking this tack, stakeholders may engage in proactive risk management and take steps to alleviate financial suffering before it worsens. Financial discipline and strong governance structures enhance franchise systems' resilience and competitiveness in changing market circumstances, according to the research.

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