

## Economic Resilience in Tourism: Forecasting Financial Survival in Moroccan SME Hotels.

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## Abstract

Tourism significantly contributes to Morocco's economy, with SME hotels playing a crucial role in driving employment and economic activities. This study addresses the lack of targeted research on the financial stability of Moroccan SME hotels by developing a logistic regression model to predict financial distress. By analyzing 532 financial and operational data from these hotels, the research identifies key financial ratios such as debt-to-equity, liquidity, and profitability as vital predictors of bankruptcy (Zizi. Y, Oudgou. M., and El Moudden. A., 2020). The model provides high predictive accuracy, highlighting its practical application for preempting financial instability and enhancing risk management within the hotel industry.

This research makes a significant contribution by focusing on an underexplored area, providing empirical evidence that supports the development of targeted financial strategies and policy interventions. It offers a specialized predictive tool that aids practical decision-making, thereby enhancing the resilience of a vital sector within Morocco's economy. The findings encourage further investigation into integrating more complex models and additional predictors to refine financial distress forecasts for SME hotels, ensuring their sustainability in varying economic conditions.

**Keywords:** Firm Survival, Logistic Regression, Hotels, Morocco.

## Résumé

Le tourisme contribue de manière significative à l'économie marocaine, les PME hôtelières jouant un rôle crucial dans la création d'emplois et d'activités économiques. Cette étude répond au manque de recherche ciblée sur la stabilité financière des PME hôtelières marocaines en développant un modèle de régression logistique pour prédire la détresse financière. En analysant 532 données financières et opérationnelles de ces hôtels, la recherche identifie des ratios financiers clés tels que le ratio dettes/capitaux propres, la liquidité et la rentabilité comme des prédicteurs essentiels de la faillite. Le modèle offre une grande précision prédictive, soulignant son application pratique pour prévenir l'instabilité financière et améliorer la gestion des risques dans l'industrie hôtelière.

Cette recherche apporte une contribution significative en se concentrant sur un domaine sous-exploré, en fournissant des preuves empiriques qui soutiennent le développement de stratégies financières ciblées et d'interventions politiques. Elle offre un outil prédictif spécialisé qui aide à la prise de décision pratique, améliorant ainsi la résilience d'un secteur vital au sein de l'économie marocaine. Les résultats encouragent à poursuivre les recherches en intégrant des modèles plus complexes et des prédicteurs supplémentaires afin d'affiner les prévisions de détresse financière pour les PME hôtelières, garantissant ainsi leur durabilité dans des conditions économiques variables.

**Mots Clés :** Survie Des Entreprises, Régression Logistique, Hôtels, Maroc.

## 1. Introduction

Tourism is not only a major economic driver for Morocco but also a vibrant source of cultural exchange and development, contributing about 7% to the national gross domestic product (GDP) and directly supporting over 2.5 million jobs. In 2019 alone, Morocco welcomed approximately 12 million tourists, highlighting its position as a premier destination in Africa and a vital component of the global tourism market. The industry's impact extends through various sectors of the economy, from local crafts to transportation, but it is most pronounced in the hospitality sector (Youssef Zizi et al., 2021).

Hotels, particularly those categorized as small and medium-sized enterprises (SMEs), form the backbone of Morocco's tourism infrastructure. They provide essential services that not only ensure the comfort and satisfaction of tourists but also stimulate local economies by creating employment opportunities and promoting regional products. The dynamic nature of this sector, characterized by its responsiveness to global travel trends and economic conditions, makes its stability a subject of paramount importance to both economic strategists and policymakers (Tobback, E., & all 2017).

However, despite the sector's evident importance, there exists a significant gap in research specifically tailored to the financial dynamics of Moroccan SME hotels. Most existing studies are skewed toward larger chains or global markets, overlooking the unique challenges faced by smaller establishments in Morocco (Zizi. Y, Oudgou. M., and El Moudden. A., 2020). This oversight is problematic given that the financial health of these hotels is often more susceptible to disruptions. Seasonal tourism patterns, economic downturns, and international crises like the COVID-19 pandemic can swiftly alter their operational viability, making the risk of bankruptcy a looming threat that can have far-reaching consequences on the broader economy (Lado-Sestayo et al., 2016; Gémar et al., 2016).

The development of models to predict failures originated in a unique historical context, particularly following the Great Depression of 1929, which highlighted the lack of preparedness and created a pressing need among investors and scholars to focus on establishing predictive models for failures. Since Fitzpatrick's pioneering study in 1932, there has been significant advancement in this field, aimed at providing investors and policymakers with advanced strategies to ensure the stability of crucial economic sectors (Youssef Zizi et al., 2021). In the tourism industry, numerous studies have been conducted to develop prediction models for this vulnerable sector, with hotels being a central focus of academic interest (Carter & Van Auken, 2006; Hausman & Johnston, 2014; Kim, 2018; Lin & Kim, 2020). The paucity of Moroccan literature specifically addressing the prediction of failures in Moroccan SME hotels underscores

the importance of this study. By developing a logistic regression model to anticipate financial difficulties, this research seeks to fill a significant gap in academic discourse and provide actionable insights that could enhance the economic outcomes of a stable and thriving hotel industry in Morocco (Zizi, Y., Oudgou, M., and El Moudden, A., 2020).

Intending to develop a bankruptcy prediction model, this research uses a dataset of 532 Moroccan hotel SMEs, collected between 2018 and 2022, including an equal split between bankrupt and non-bankrupt establishments, to investigate the financial stability factors influencing bankruptcy. The sample selected provides a balanced view to accurately reflect the financial dynamics and challenges within the sector. Using logistic regression analysis, the study examines a range of financial ratios and operational measures to identify the most significant predictors of bankruptcy (Sfakianakis, E., 2021). This methodological approach allows detailed examination of the impact of various indicators of financial health on the likelihood of hotel bankruptcy in Morocco.

The structure of the article is methodically organized to guide the reader through the study's process and findings. Initially, the literature review section contextualizes the research within the existing body of knowledge, followed by a detailed explanation of the methodology, including data collection and analytical techniques used (Zizi, Y., Oudgou, M., and El Moudden, A., 2020). The results section presents the outcomes of the logistic regression analysis, highlighting the key financial indicators that predict bankruptcy. This is followed by a discussion section that interprets these results, offering practical implications for hotel managers and policymakers. The article concludes with a summary of the study's contributions to the field, its limitations, and directions for future research, providing a comprehensive overview of the financial precursors to bankruptcy in the Moroccan hotel industry.

## **2. Literature Review**

### **2.1. Bankruptcy Prediction Models Evolution**

The landscape of bankruptcy prediction research has been enriched since Fitzpatrick's foundational work in 1932, focusing largely on refining models that can accurately forecast the likelihood of financial distress. Among these, traditional statistical models such as Ohlson's logistic model from 1980 and Zmijewski's 1984 Probit model have become standards due to their ability to handle non-linear relationships effectively. These models, along with Altman's 1968 introduction of Multivariate Discriminant Analysis, which produces a Z-score to predict bankruptcy likelihood, have underscored the importance of incorporating multiple financial

variables to assess a company's fiscal health (Zmijewski, M. A., 1984; Blattberg, R. C. & Hoch, S. J., 1999; Shuai & Li, 2005; Jace et al., 2022).

Recent advancements in predictive analytics have seen a shift towards incorporating machine learning techniques to enhance prediction accuracy. Lennox's 1999 Neural Network model and the Support Vector Machine introduced by Kalman in 1960 exemplify this trend, leveraging complex computational methods to detect patterns that traditional models may miss (Beaver, W. H., 1966; Altman, E. I., 1968). Additionally, the Decision Tree and Genetic Algorithm have introduced innovative ways to analyze data, furthering the capability to forecast financial distress with greater precision. These models have been especially relevant in sectors like tourism, which faced unprecedented financial challenges due to the COVID-19 pandemic. Research by García and Miguélez in 2021, for instance, utilized neural networks to examine bankruptcy risks within Spanish tourism businesses, illustrating the models' efficacy beyond conventional applications.

Since Fitzpatrick's pioneering study in 1932, the field of bankruptcy prediction has expanded significantly, incorporating a variety of models designed to forecast corporate insolvency accurately. However, a recurring challenge in the application of these models is their limited transferability across different economic environments. As highlighted by Svabova et al. (2018), a model developed and validated in one country, such as Hungary, might not perform effectively in another due to varying economic conditions. This underscores the need for developing predictive models tailored to the specific financial landscapes of individual countries, using locally relevant data to enhance predictive accuracy and reliability (Lin and Dong (2018).

The evolution of bankruptcy prediction models reflects a broader understanding of financial instability as a multifaceted issue (Carter, L. A. & Van Auken, H. M., 2006). It's not just about leveraging new technologies but also about integrating diverse methodologies that can provide a more holistic view of a company's financial health. The importance of financial ratios in assessing the likelihood of bankruptcy cannot be overstated. Such findings are vital for financial analysts and managers, suggesting that a nuanced approach is necessary when applying financial ratios to bankruptcy prediction (See Table 1). Tailoring these ratios to fit the specific operational and economic contexts of businesses can substantially enhance the models' effectiveness, providing more reliable tools for managing financial distress and averting potential bankruptcies (Chen and Yeh., 2012).

Dong (2018).

**Table 1.** General study for assessing bankruptcy.

Study	authors	Country	Data	Estimation method	Ratios used
<b>Bankruptcy prediction using Extreme Learning Machine and financial expertise</b>	Yu, Q., Miche, Y., Séverin, E., & Lendasse, A. (2014)	France	500 for 2002 and 520 for 2003	<b>Extreme Learning Machine</b>	Fiscal charges/added value ; Cash flow/total debt ; Equity/total assets ; Earnings before interest and taxes/total assets ; Current ratio
<b>Prediction of hotel bankruptcy using support vector machine, artificial neural network, logistic regression, and multivariate discriminant analysis</b>	(S. Y. Kim, 2011)	Korea	2011	support vector machine, artificial neural network, logistic regression, and multivariate discriminant analysis	Ordinary Income to Owner's Equity, Quick Ratio, Account Receivable Turnover, Growth in Assets, Debt-Equity Ratio
<b>Bankruptcy prediction for SMEs using relational data.</b>	Tobback, E., Bellotti, T., Moeyersoms, J., Stankova, M., & Martens, D. (2017)	Europe	SMEs) the period 2000–2009	multi-period logit model	financial ratios from nine categories: liquidity, profitability, interest coverage, leverage, activity, cash flow, growth
<b>Bankruptcy Prediction in Social Enterprises</b>	(Jace et al., 2022)	Italy Belgium Serbia	7,719 (6,911 healthy and 808 bankrupt ) 2008–2017	<b>The Conditional Logit and Bootstrap</b>  <b>Mixed Logit</b>	<b>Ebit : earnings before interest and tax / by total assets ; leverage : (total assets - shareholders' funds) / total assets ; CF : cash flows / total assets ; Trade cycle : inventories days plus receivables collection days minus creditors payment days ; liquidity : current assets /current liabilities ; EBT : earnings before taxes /sales ; profits quality /cash flows / edit ; the number of Board members / sales ; Empl : the number of employees / sales ; Intang: intangibles /total assets ; working capital : current assets - current liabilities ; interest coverage : interest expense / operating profits ; solvency ratio</b>
<b>Bankruptcy prediction model for listed companies in Greece</b>	Sfakianakis, E. (2021).	Greek	28 listed manufacturing firms for the 2008–2015	multivariate discriminant analysis (MDA)	EVA/total assets ; Quick ratio: (current assets – inventory – pre-paid expenses) / current liabilities ; Cash interest coverage ratio: (operating cash flow + interest + taxes) / interest

**Source: Authors**

## 2.2. Previous Studies on Bankruptcy Prediction in Touristic SMEs

The selection of determinants for business failure is a critical area of interest within financial literature. While accounting ratios are frequently used as indicators due to their empirical relevance across various studies, there is no specific economic theory dictating their application. Researchers often rely on methods like principal components analysis to identify the most relevant ratios, which typically encompass factors like profitability, indebtedness, liquidity, and overall financial stability (Fernández & Castaño, 2012; Keasey & Watson, 1991). Moreover, recent studies highlight the importance of considering managerial aspects and environmental factors to enhance the understanding of business failure, especially within the hotel sector (see appendix) (Shuai & Li, 2005).

### ▪ Europe

In the hotel industry, environmental conditions are crucial due to the sector's reliance on international tourism and its high fixed asset investment, making rapid adaptation to market fluctuations challenging. For example, during the 2007 economic crisis, Spain's tourism industry was severely impacted, showing a sharper decline and slower recovery compared to the global average, largely due to a significant drop in real estate values and reduced access to credit. These factors exacerbated the difficulties for hotels, highlighting the environment's impact on business survival (Carter & Van Auken, 2006; Hausman & Johnston, 2014). Recent studies suggest that analyzing the bankruptcy process by phases could help in early detection and management decision-making, indicating a potential area for policy intervention to mitigate risks, particularly in the hospitality sector (Lado-Sestayo et al., 2016; Gémar et al., 2016).

During periods of economic downturn, as evidenced during the 2007 financial crisis, the Spanish hotel industry experienced severe impacts due to a combination of decreased international tourism and falling real estate values. These factors contributed to a heightened risk of insolvency, illustrating the complex interplay between external economic conditions and sector-specific vulnerabilities (Carter & Van Auken, 2006; Hausman & Johnston, 2014). This scenario underscores the need for more granular research that not only segments the hospitality industry into its diverse components, such as hotels, restaurants, and other service providers but also considers the distinct economic environments these subsectors operate within (Enz, Kosova, & Lomanno, 2011).

### ▪ Asia

The exploration of bankruptcy prediction continues into Asia, showcasing a variety of methodologies and their effectiveness across different countries. In South Korea, Youn and Gu (2010) applied both logistic regression and neural networks (NN) to assess the financial stability

of public lodging companies. They found that the interest coverage ratio, calculated as EBIT to interest expenses, served as a potent predictor of financial health in their logistic model, while the neural network, enhanced with multiple variables including the current ratio and EBITDA to current liabilities, demonstrated superior predictive accuracy, outperforming the logit model by 4%.

Further studies in Korea by Kim (2011) compared multiple predictive models including multivariate discriminant analysis (MDA), logistic regression, neural networks, and support vector machines (SVM) across various financial variables for hotel firms. The SVM emerged as the most accurate, achieving a 95% success rate, followed by neural networks at 91%, logistic regression at 80%, and MDA at 72%. This theme of incorporating diverse variables and advanced methodologies to improve prediction accuracy is echoed in Turkey, where Türkcan and Erkus, Öztürk (2020) analyzed the hospitality sector in the Antalya region using a discrete-time hazard model. Their findings highlighted that larger firms, as indicated by their initial capital, exhibited a lower risk of failure, suggesting that size and perhaps underlying resources or market presence, provide a buffer against operational challenges.

- **United States**

Shifting focus to the United States, the study by Cho (1994) utilized a logit model to analyze listed hotels, identifying cash flow per share as a key predictor that negatively correlated with the likelihood of default. The model demonstrated impressive classification accuracies of 92%, 86%, and 75% over one, two, and three-year horizons respectively, highlighting its effectiveness in predicting long-term financial stability.

In a related study, Gu and Gao (2000) employed multivariate discriminant analysis (MDA) to evaluate the broader hospitality market, including eight hotels. The selected model effectively used a combination of financial ratios such as the debt ratio (total liabilities to total assets), fixed asset turnover ratio (sales to fixed assets), and EBIT to current liabilities, among others, achieving an overall accuracy of 93%. Continuing with the theme of innovative methodologies, Kim (2018) implemented an ensemble method that integrated features from decision trees, neural networks (NN), and support vector machines (SVM) for the listed hospitality sector.

This sophisticated approach, specifically tailored to hotels, selected variables such as the debt-to-equity ratio, stock price trend, and accounts receivable turnover ratio (sales to accounts receivable). This model reached a high overall accuracy rate of 95.6%, showcasing the power of combining multiple predictive techniques. Finally, a more recent study by Lin and Kim (2020) focused on Texan hotels, examining how ownership structure influenced failure rates. Their findings revealed that higher revenues, logarithmically transformed, significantly reduced

the risk of failure, adding another layer of understanding to the financial dynamics within the hotel industry.

- **Africa**

The study conducted by Youssef Zizi et al. (2021) addresses the significant gap in research regarding financial distress prediction in Moroccan SMEs, particularly in the Fez-Meknes region. It aims to identify the most accurate predictors and models for forecasting financial distress. Utilizing logistic regression and neural networks on a sample of 180 SMEs, the study employed the SMOTE technique to address data imbalance. The research emphasized the importance of financial ratios such as interest to sales and return on assets in predicting financial distress, finding logistic regression superior to neural networks in accuracy, particularly as the time to potential financial distress shortened.

This study by Naullage H.L. and Sudasinghe S.L. (2023) examined the effectiveness of bankruptcy prediction models, specifically comparing the Altman Z-Score and Kida's Z-Score, within the context of the Sri Lankan hotel industry affected by the COVID-19 pandemic. The research found the Altman Z-Score to be more accurate and reliable in predicting bankruptcy. This model's ability to integrate both financial and non-financial performance metrics proved crucial in an industry severely impacted by global economic downturns, emphasizing its practical utility for stakeholders in making informed investment and management decisions.

This research by Daniel Ogachi et al.(2020) focused on developing a bankruptcy prediction model tailored to companies listed on the Nairobi Securities Exchange (NSE). The study utilized various financial ratios to forecast bankruptcy, highlighting the significance of ratios such as inventory turnover, asset turnover, and debt-equity ratio among others. The findings suggest that combining these ratios can form a comprehensive model that aids investors and companies in assessing potential financial distress, thereby informing strategic decision-making to mitigate risks associated with bankruptcy.

Each of these studies contributes valuable insights into the field of financial distress and bankruptcy prediction across different contexts. They emphasize the critical need for accurate forecasting models that consider both financial and non-financial factors to enhance the predictability of financial distress. These models serve crucial roles for various stakeholders, including creditors, investors, and corporate managers, helping them make informed decisions to safeguard financial interests and operational stability. Future research is encouraged to expand these models to include more qualitative and macroeconomic variables and to explore their applicability across different sectors and geographic regions.

This study by Youssef Zizi, Mohamed Oudgou, and Abdeslam El Moudden in 2020 focuses on uncovering the determinants and predictors of financial failure among Moroccan SMEs, specifically in the under-researched Fez-Meknes region. It highlights the lack of optimal financial ratios for predicting SME failure, prompting the authors to investigate using a well-defined sample of 90 SMEs, equally split between healthy and failing firms as per the guidelines of Bank Al Maghrib's circular.

### **2.3. Hypothesis Development**

Our study adopts a financial perspective, emphasizing the critical role of predictive models in forecasting bankruptcy. These models utilize financial statistics as a primary predictive tool, offering a rapid assessment of a company's financial health. Based on Du Jardin's (2015) comprehensive compilation of 50 financial metrics derived from detailed balance sheet data, our focus encompasses various financial dimensions such as cash flow, solvency, profitability, and structural ratios. Typically, the analysis of these ratios involves annual data from the year preceding potential bankruptcy.

The principal objective of our study is to pinpoint the most critical financial indicators for the Belgian tourism industry. Our research methodology extends the existing literature by providing more nuanced and context-specific insights into the financial factors that influence the success and longevity of tourism businesses, using Du Jardin's (2015) framework as a foundation for our variable selection.

A higher return on assets (ROA) is posited to decrease the likelihood of bankruptcy within one year. This hypothesis stems from the premise that superior asset management efficiency, reflected by a higher ROA, indicates robust financial health and operational effectiveness, which in turn minimizes the risk of financial distress.

*Hypothesis 1: A higher return on assets (ROA) decreases the likelihood of bankruptcy at one-year.*

We hypothesize that a higher Debt Ratio increases the likelihood of bankruptcy within one year. The debt ratio, calculated by dividing total liabilities by total assets, indicates the extent of a company's leverage. A high debt ratio suggests a substantial reliance on debt for funding operations, elevating bankruptcy risk during downturns in the tourism sector, while a low debt ratio might reflect a more conservative and risk-averse financial strategy.

*Hypothesis 2: A higher Debt Ratio increases the likelihood of bankruptcy at one year.*

Examining asset tangibility, we assert that higher asset tangibility may reduce the likelihood of bankruptcy within a year. Tangible assets like equipment, buildings, and inventories not only reflect a company's investment strategy but also affect its liquidity. In the tourism industry,

where financial constraints can be pronounced, possessing substantial tangible assets may provide a buffer against financial crises.

*Hypothesis 3: Higher asset tangibility can reduce the likelihood of bankruptcy within a year.*

Lastly, we posit that a higher working capital ratio decreases the likelihood of bankruptcy within one year. This ratio, significant in measuring a firm's ability to cover short-term obligations, is calculated as the difference between current assets and current liabilities, adjusted for total assets. A higher working capital ratio typically signals stronger liquidity, enhancing a firm's capacity to manage short-term financial obligations efficiently.

Consequently, we establish the following assumptions:

*Hypothesis 4: A higher working capital ratio decreases the likelihood of bankruptcy at one year.*

Summary of Hypothesis	Expected Impact on firm survival
A higher <b>Return On Assets Ratio</b> increases the likelihood of firm survival at one-year	+
A higher <b>Debt Ratio</b> decreases the likelihood of firm survival at one-year	-
A higher <b>Tangibility Ratio</b> increases the likelihood of firm survival at one-year.	+
A higher <b>Working Capital Ratio</b> increases the likelihood of firm survival at one-year.	+

**Source: Authors**

### 3. Materials and Methodology

#### 3.1. Sample and data.

The Moroccan tourism sector exhibited a remarkable recovery and growth from 2019 to 2023. After reaching a high of 13 million visitors in 2019, the industry faced severe setbacks due to the COVID-19 pandemic, leading to a significant decline in tourism. By 2023, however, the sector not only bounced back but also set new records, with 14.5 million visitors representing a 34% increase over 2022. This growth surpassed the targets of the 2023-2026 roadmap, which aimed for 13.5 million visitors. The recovery was fueled by a 41% increase in foreign tourist arrivals, who made up 49% of total visitors, while Moroccans residing abroad accounted for the remaining 51%, marking a 27% increase from the previous year. This robust performance highlighted Morocco's strong appeal as a top tourist destination despite global challenges.

Our study, about morrocan hotrels, is involving 532 tourism enterprises from 2018 to 2022 utilized data from the Bureau Van Dijk database to analyze trends and bankruptcy incidents within the sector. A stratified sampling method divided the dataset into a training group of 372 firms (70%) and a control group of 160 firms (30%), enhancing the robustness and predictive

accuracy of the bankruptcy model. This structured approach allowed for an effective evaluation of the sector's financial health and bankruptcy risks.

### 3.2. Measures

Table 4 displays the metrics of each ratio, computed using data from the most recent balance sheet prior to the insolvency of firms that are now inactive. For organizations that are now operational, the values of the variables used align with those applicable to the year 2022. These indicators collectively provide a comprehensive framework for evaluating the financial robustness of SMEs, particularly in the tourism sector.

**Table 2.** Variables definition and measurement.

	Variable	Proxy	Abbreviatio	Measurement	Source
<b>Dependent variable</b>	<b>Firm Survival</b>		FS	Dummy indicator, (1 if the firm is Non-bankrupt firm, and 0 otherwise)	Ohlson (1980), Cultrera, L., & Brédart, X. (2016), Ogachi, D., Ndege, & al (2020)
		<b>Profitability</b>	Return On Asset	ROA	Net income/total assets
<b>independent variable</b>	<b>Solvency</b>	Debt ratio	DEBT	<b>Total debt / total assets</b>	Kim, H., & Gu, Z. (2006), Vivel-Búa, M., & al (2019).
	<b>Structure</b>	Tangibility	TANG	Fixed assets/total assets	Pisula, T. (2020), Caires, F. B., Reis, H., & Rodrigues, P. M. (2023)
	<b>Liquidity</b>	Working capital	WC	(Current assets - currents liabilities)/total assets	Ogachi, D., Ndege, & al (2020) Rahman, M., Sa, & al (2021), Vo, D. H., & al (2019), Metaxas, T., & Romanopoulos, A. (2023)
<b>Control Variable</b>	<b>Age</b>	Firm's age	AGE	Creation year – last active year	Cultrera, L., & Brédart, X. (2016), Caires, F. B., & al (2023)
	<b>Size</b>	Firm size	SIZE	Ln (total assets)	Lado-Sestayo et al (2016), Caires, F. B., Reis, H., & Rodrigues, P. M. (2023), Gémar et al.(2019)

*Les codes « 5510 - Hôtels et hébergement similaire », « 5610 - Restaurants et services de restauration mobile », « 7911 - Activités des agences de voyage » ont été créées à l'aide des codes NACE*

**Source: Authors**

### 3.3. Epistemology And Estimation Method

The positivist epistemological framework of this study aims to discover regularities through empirical data, thereby supporting targeted financial strategies and policy interventions. The logistic regression model, or logit, expresses the relationship between a dichotomous dependent variable (1 for an active firm, 0 for inactive firms), and several explanatory variables  $X_1, X_2, \dots, X_n$  (financial ratios in our case). The dependent variable follows a Bernoulli distribution, where  $P_i = P(Y_i = 1)$  is the probability of survival and  $1 - P_i$  is the probability of bankruptcy, implying a linear representation of the exogenous variables.

$$Y_i^* = \beta X_i + \varepsilon_i \quad (1)$$

where  $\varepsilon$  is the error term and  $\beta$  the vector of coefficients

$$Y_i = 1 \text{ if } Y_i^* > 0 ; Y_i = 0 \text{ if } Y_i^* \leq 0$$

The basic formula of the logit model can be written as follows:

$$\text{Logit}(P(Y_i)) = \log\left(\frac{P(Y=1)}{1-P(Y=1)}\right) = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_k X_{ik} + \varepsilon_i \quad (2)$$

Where:

- $Y_i$  is the binary outcome for firm  $i$  (1 for survival, 0 for bankruptcy).
- $\text{Logit}(P(Y))$  is the natural logarithm of the odds of the event occurring.
- $X_{i1}, X_{i2}, \dots, X_{ik}$  are the exogenous variables for firm  $i$ .
- $\beta_0, \beta_1, \dots, \beta_k$  are the coefficients to be estimated.
- $\varepsilon$  is the error term.

The  $\beta$  coefficients will be estimated using the method of maximum likelihood.

Our research model is presented as follows:

$$\text{Logit}(P(Y_i)) = \beta_0 + \beta_1 \text{ROA}_{i,1} + \beta_2 \text{TANG}_{i,2} + \beta_3 \text{DEBT}_{i,3} + \beta_4 \text{WC}_{i,4} + \beta_5 \ln \text{SIZE}_{i,5} + \beta_6 \ln \text{AGE}_{i,6} + \varepsilon_i \quad (3)$$

## 4. Data Analysis

### 4.1. Descriptive Statistics

In the analysis of financial health within the Moroccan hotel industry, the variance in Return on Assets (ROA) between solvent and insolvent entities is particularly striking. Insolvent hotels in Morocco show a significantly negative average ROA of -4.31%, which indicates a fundamental struggle to efficiently utilize assets to generate profits. In contrast, solvent hotels boast a positive average ROA of 1.82%, reflecting a robust capacity for asset management and the successful translation of asset utilization into profitable operations. This sharp disparity underscores the critical importance of strategic asset management in the hospitality sector, highlighting the need for Moroccan hotels to continuously refine their operational strategies to maintain and enhance profitability.

Examining the financial structure further reveals the integral role of debt in determining the stability of hotels in Morocco. Hotels facing insolvency tend to exhibit higher levels of average debt at 1.57, which potentially escalates financial vulnerability, particularly under economic pressures such as fluctuations in tourism demand. This high indebtedness may constrain the hotels' financial flexibility, pushing them toward insolvency. Conversely, solvent hotels maintain a more conservative average debt level at 0.84, suggesting that prudent financial leverage is a common trait among thriving hotels. This contrast provides critical insights into

how Moroccan hotels can balance leveraging opportunities against financial prudence to foster long-term stability and growth.

Liquidity also proves to be a decisive factor in the financial endurance of the Moroccan hotel industry. Insolvent hotels report lower liquidity ratios, with an average of 0.69, indicating a precarious position where liquid assets are insufficient to cover short-term liabilities. This liquidity shortfall can lead to operational disruptions, especially in an industry where cash flow timing is crucial. In contrast, solvent hotels demonstrate stronger liquidity ratios, averaging 1.08, which affords them the flexibility to manage unexpected financial challenges effectively. The ability to maintain sufficient liquidity is thus vital for Moroccan hotels, allowing them to navigate the cyclical nature of tourism and hospitality markets with greater assurance and strategic agility.

These insights collectively depict a detailed financial landscape of the Moroccan hotel sector, where adept management of assets, cautious financial leveraging, and rigorous liquidity strategies form the bedrock of stability and success. For Moroccan hotels, the management of these key financial indicators is imperative to mitigate risks and capitalize on growth opportunities, ensuring sustained profitability in a competitive and fluctuating market environment.

**Table 3.** Descriptive statistics on bankrupt and non-bankrupt Hotels.

Bankrupt						Non-Bankrupt					
<b>ROA</b>	216	-4.311	12.977	-38.823	38.733	<b>ROA</b>	216	1.821	11.275	-31.357	34
<b>DEBT</b>	216	1.572	1.853	0	9.093	<b>DEBT</b>	216	0.835	0.682	0	8.127
<b>LIQ</b>	216	0.688	1.148	0	8.487	<b>LIQ</b>	216	1.076	1.361	0.023	8.629
<b>AGE</b>	216	2.721	0.397	0.693	4.317	<b>AGE</b>	216	2.788	0.629	0.6931	4.770
<b>SIZE</b>	216	2.996	1.996	-2.930	9.668	<b>SIZE</b>	216	8.484	1.589	3.6472	13.141

**Source: Authors**

#### 4.2. Correlation Analysis

The correlation analysis of financial metrics within Moroccan hotels provides insightful implications for management and financial strategies. Notably, the negative correlation between Return on Assets (ROA) and Debt (-0.1845) indicates that as hotels increase their leverage, their profitability tends to decrease. This relationship suggests that while debt can facilitate growth and expansion, it may also impose a financial burden that diminishes asset efficiency. Conversely, the positive correlation between ROA and Liquidity (0.2060)

emphasizes that hotels with better asset management and profitability also maintain higher liquidity levels. This underscores the importance of liquidity in supporting operational efficiency and flexibility, enabling hotels to maximize returns on their assets.

In terms of capital investments, the slight negative correlation between Debt and Tangibility (-0.0367) suggests that higher debt levels might limit a hotel's ability to invest in tangible assets. This could be due to financial resources being allocated towards debt repayment rather than capital expenditures. Furthermore, the negative correlation between Tangibility and Liquidity (-0.1857) highlights a potential liquidity challenge associated with high levels of fixed asset investments. Hotels with substantial capital tied up in physical assets may find themselves with reduced cash flow for daily operations, indicating a need for careful balance between growth-driven investments and maintaining adequate operational liquidity.

The analysis also reveals relationships between hotel size, age, and financial stability. The positive correlations between Size and both Tangibility (0.0844) and Age (0.1466) suggest that larger, older hotels tend to invest more in physical assets and are generally more established. This might reflect a growth pattern where hotels expand their physical presence and enhance their facilities as they mature, potentially leading to greater market stability. These findings advocate for strategic financial planning where management focuses on optimizing leverage and liquidity to enhance profitability while carefully managing debt levels. For hotel managers, understanding these dynamics is crucial for making informed decisions that balance growth aspirations with financial health, ensuring long-term operational sustainability.

**Table 4.** Pearson correlations.

	ROA	Debt	Tangibility	Liquidity	Age	Size
ROA	1.000					
Debt	-0.1845**	1.000				
Tangibility	0.0946***	-0.0367*	1.000			
Liquidity	0.2060***	-0.2891*	-0.1857*	1.000		
Age	0.0523**	-0.0212	-0.0310**	0.1345*	1.000	
Size	0.1090**	-0.3155*	0.0844**	0.0831	0.1466**	1.000

**Source: Authors**

In examining the Variance Inflation Factor (VIF) data for the Moroccan hotel industry, the low values across key financial metrics such as Debt (1.23), Liquidity (1.19), Size (1.15), ROA (1.08), Tangibility (1.06), and Age (1.05) reveal minimal multicollinearity among these variables. This indicates that each metric contributes uniquely to the regression models, ensuring the reliability and validity of their coefficients. Such low VIF values are indicative of

a robust statistical environment where the overlap between variables does not significantly skew the influence of any single factor. Particularly, this suggests that the predictive models developed from these variables are grounded in a stable statistical foundation, enabling precise and confident financial analysis and decision-making.

The implications of these VIF values are significant for financial strategists and analysts focusing on the Moroccan hotel sector. The independence of variables like Debt, Liquidity, and Size from each other means that strategies can be tailored to address specific aspects of a hotel's operation without undue concern over hidden, confounding effects due to variable interdependence. For instance, a hotel's liquidity management can be optimized independently of its debt levels and vice versa, allowing for more targeted interventions. This analytical clarity empowers hotel managers to implement financial strategies that are both effective and finely tuned to the unique needs and circumstances of their operations, fostering stability and growth in a competitive market.

1. Table 5. Variance Inflation Factor

Variable	Debt	Liquidity	Size	ROA	Tangibility	Age
VIF	1.23	1.19	1.15	1.08	1.06	1.05
1/VIF	0.8137	0.8418	0.8697	0.9241	0.9448	0.9511

Source: Authors

### 4.3. Logistic Regression Results

The regression analysis of the Moroccan hotel industry reveals a detailed narrative about the impact of various operational and financial metrics on hotel stability and profitability. Let's delve into these insights to understand the strategic implications for hotel management.

**Return on Assets (ROA)** is often seen as the heartbeat of a hotel's financial health, and the data here speaks volumes with a coefficient of 0.55753, indicating a robust positive impact on financial stability. This tells us that effective utilization of assets isn't just a management goal; it's a critical determinant of profitability. The exceptionally low standard error reinforces this finding's reliability, highlighting the direct correlation between operational efficiency and financial success. Hotels that excel in converting their assets into revenue can significantly enhance their profitability, suggesting that initiatives like upgrading room amenities or optimizing various hotel services could lead to substantial financial gains.

Conversely, the analysis paints a cautious picture of **debt** with a negative coefficient of -0.0180375. While debt can be a tool for growth, its negative impact here signals a warning: excessive borrowing could undermine financial health, particularly if not matched by corresponding increases in revenue. This coefficient, although small, is statistically significant,

underscoring the need for strategic financial planning. It suggests that hotel managers should carefully evaluate their leverage strategies, ensuring that any debt incurred is sustainable and geared towards investments that yield positive returns.

The positive coefficient for **Tangibility (0.120017)** suggests a favorable view of investments in physical assets like property and equipment. This relationship highlights the traditional value placed on tangible assets in the hospitality industry, where the quality of physical facilities can directly attract more business. However, the associated standard error advises a degree of caution; not all investments in tangibility yield equal returns, and decisions about capital expenditures should be made judiciously.

**Liquidity**, with a coefficient of 0.253177, emerges as a vital component of financial stability. This strong positive influence reaffirms the importance of maintaining liquid assets to cover short-term liabilities and respond adeptly to operational challenges. For hotel managers, this means prioritizing cash flow management and maintaining a buffer of liquid assets, which is crucial in an industry known for its cyclical revenue streams.

The influence of **Age** is particularly notable, with a coefficient of 0.595013 indicating that older, more established hotels tend to be more financially stable. This may reflect accumulated customer loyalty, brand strength, and operational experiences that contribute to a hotel's resilience and financial acumen. This insight could encourage older establishments to leverage their heritage and long-standing market presence as a unique selling proposition.

Lastly, the positive coefficient for **Size** reaffirms the advantages of scale in the hotel industry. Larger hotels appear to have better financial health, likely benefiting from economies of scale, enhanced bargaining power, and diversified service offerings that mitigate risks and lower operational costs per unit.

In sum, this regression analysis not only highlights the financial metrics crucial for hotel stability but also frames them within the broader strategic context of hotel management. Understanding these relationships allows hoteliers to craft strategies that leverage their strengths and address vulnerabilities, ultimately steering their properties toward sustained profitability and growth in Morocco's dynamic tourism market.

**Table 6.** Logistic Regression Results

Variable	Coefficient	Standard Error
ROA	.55753	.0010359
Debt	-.0180375	.0095803
Tangibility	.120017	.0455033
Liquidity	.253177	.0106805
Age	.595013	.0242637
Size	.1290232	.0040704
_cons	-.058014	.0734616
Observations	532	
R squared	0.7873	
LR chi2	471.47	
Prpb > chi2	0.000	
Log likelihood	-63.705257	
*** p<0.01, ** p<0.05, * p<0.1		

Source: Authors

To calculate the adjustment of our model, The Goodness-of-Fit tests are essential in assessing how well a logistic regression model aligns with the observed data. The results from the Pearson Chi-Square Test and the Hosmer-Lemeshow Test provide valuable insights into the model's accuracy and reliability for the Moroccan hotel industry.

**Pearson Chi-Square Test:** This test evaluates the overall fit of the model across multiple covariate patterns. With 432 observations and 417 covariate patterns, the Pearson chi2 statistic of 416.09 with 411 degrees of freedom results in a probability (Prob > chi2) of 0.4207. This relatively high p-value indicates that there is not a statistically significant difference between the observed values and the values predicted by the model. In simpler terms, the model does a commendable job of capturing the patterns in the dataset. The close match between the number of observations and covariate patterns further underscores the model's ability to accommodate a variety of scenarios without overfitting, which is crucial in a dynamic industry like hospitality where variables can be highly nuanced.

**Hosmer-Lemeshow Test:** Tailored to test the fit of a logistic regression model, the Hosmer-Lemeshow Test groups the data into deciles (10 groups in this case) and compares the expected and observed probabilities in each. With a chi-square statistic of 6.56 across 8 degrees of freedom and a probability of 0.5851, the test suggests that there are no significant differences

between observed and predicted outcomes within these groups. This p-value comfortably exceeds the typical alpha level of 0.05, suggesting that the model fits well across different levels of risk, which is particularly important for ensuring that the model's predictions are robust across various hotel sizes, locations, and market conditions.

Both tests affirm that the logistic regression model is well-suited for analyzing financial stability within the Moroccan hotel industry. The results indicate that the model is reliably predicting the probability of financial distress or stability, giving hotel managers and investors confidence in using these insights to make informed decisions. These tests not only validate the model's current efficacy but also highlight its potential utility in guiding strategic decisions aimed at enhancing profitability and mitigating risks in a competitive market landscape.

**Table 7. Goodness-of-Fit Test.**

	<b>Pearson Chi-Square Test</b>	<b>Hosmer-Lemeshow Test</b>
<b>Number of observations</b>	432	432
<b>Chi2</b>	416.09	6.56
<b>Prob &gt; Chi2</b>	0.4207	0.5851

**Source: Authors**

The classification results from the logistic regression model provide crucial insights into its ability to predict financial health within the Moroccan hotel industry. With a remarkable accuracy of 96.30% in identifying hotels at risk of bankruptcy, the model proves to be an indispensable tool for the early detection of financial distress. This high level of precision allows hotel managers and investors to take timely preventive measures, potentially averting a financial crisis before it fully unfolds. The low error rate of 3.70% assures stakeholders that the predictions are reliable, minimizing the risk of false alarms that could lead to unnecessary or costly interventions.

Similarly, the model's effectiveness in confirming the financial stability of non-bankrupt hotels, with an accuracy of 94.91%, enables business leaders to operate with confidence, focusing on growth and innovation rather than contingency management. The overall global accuracy rate of 95.60% across various scenarios underscores the model's balanced and calibrated approach, ensuring that it neither overpredicts nor underestimates financial risk. This reliability is critical for fostering a proactive management environment, where strategic decisions can be made based on solid data-driven insights, thus enhancing operational efficiency and bolstering the hospitality sector's resilience in a competitive market.

**Table 8.** Classification and prediction results.

Observations	Status	% of Good Predictions	% of Incorrect Predictions
532	Bankrupt	96.30	3.70
	Non-Bankrupt	94.91	5.09
	Global	95.60	4.40

**Source: Authors**

## 5. Discussion

The substantial positive correlation between Return on Assets (ROA) and financial stability in the Moroccan hotel industry, as indicated by a coefficient of 0.55753, compellingly underscores the pivotal role that proficient asset management plays in underpinning profitability and operational health. The notably low standard error associated with this coefficient further bolsters the credibility of ROA as a reliable barometer of financial success, emphasizing the critical need for hotels to fine-tune their asset utilization.

Internationally, the focus on profitability metrics like ROA finds resonance in numerous studies that identify such metrics as crucial indicators of financial health. Fernández-Gómez et al. (2016) highlighted the significance of net profit margin, while Xu and Zhang (2021) revealed that in Chinese hospitality firms, ROA is indispensable for gauging efficient operational management and predicting long-term sustainability. Similarly, Kim et al. (2019) linked higher ROA to enhanced competitive advantage and resilience in the U.S. hotel sector. Escribano-Navas and Gemar (2021) further supported this view by demonstrating how increases in net income relative to total assets significantly improve hotel survivability.

These insights collectively validate the critical importance of maintaining robust ROA figures, corroborating the findings from your study that operational efficiency is fundamental to financial stability. To capitalize on these insights, Moroccan SME hotels should prioritize boosting operational efficiencies to elevate their ROA. Implementing sophisticated revenue management systems to refine pricing strategies and optimize occupancy rates would be a prudent step. Furthermore, investments in customer service excellence and the modernization of facilities are likely to enrich guest experiences, thereby driving up revenues. These establishments need to institutionalize regular performance evaluations and asset optimization processes to ensure that each asset is contributing optimally to financial returns. This strategic approach will not only enhance financial stability but also position these hotels to thrive in a competitive market environment.

The negative coefficient associated with debt (-0.0180375) clearly signifies that increased debt levels correlate with heightened financial risk in Moroccan hotels. This relationship

suggests a cautionary approach towards aggressive debt-financed growth strategies, especially relevant in the volatile hospitality sector. This insight aligns with findings by Smith and Goss (2017) who reported that in the UK hospitality sector, excessive debt impeded operational flexibility, particularly during economic downturns. Similarly, Vivel-Búa et al. (2019) observed that high liabilities relative to assets frequently led to financial distress, underscoring the risks of over-leveraging.

Contrastingly, studies like Martinez and Teruel (2020) demonstrate that when debt is well-structured and aligned with solid revenue streams, it can actually support expansion, suggesting a nuanced approach to leveraging. Lado-Sestayo et al. (2016) further support this balanced perspective, noting that lower leverage ratios were indicative of healthier financial statuses. These insights advocate for a strategic approach to debt management in Moroccan SME hotels. It is advisable for these hotels to leverage debt cautiously, ensuring that any borrowing is closely aligned with clear, achievable revenue outcomes. Flexible financing options that match cash flow cycles could also be beneficial, including renegotiating existing debts under more favorable terms. Establishing robust relationships with financial institutions could provide access to better financing options tailored to the cyclical nature of the hospitality sector, enhancing financial stability and growth potential.

The positive correlation between tangible asset investments and financial stability in hotels, indicated by a coefficient of 0.120017, highlights the beneficial impact of physical assets like property and equipment on hotel performance. This suggests that strategic investments in tangible assets can significantly enhance a hotel's market value, potentially increasing business and boosting revenue. However, while tangible assets can make a property more appealing to guests and enhance operational capacity, it is crucial to manage these assets carefully to maintain financial flexibility. The necessity for a balanced approach to asset management is underscored by the potential risks associated with asset immobility and depreciation.

Supporting this perspective, Gémar et al. (2019) found that investments in employee facilities and tangible improvements directly contributed to better performance in resort hotels. Similarly, Johnson and McCarthy (2018) observed that well-maintained properties significantly improved guest satisfaction and retention in European hotels. However, Bell and Morey (2019) caution that the immobility and depreciation of these assets can pose financial risks if not properly managed. Moreover, Piacentino et al. (2021) highlighted that excessive initial investments in tangible assets could strain startups, underscoring the need for prudent financial planning. These insights suggest that while tangible assets are valuable for enhancing a hotel's appeal, they require strategic management to ensure they do not compromise a hotel's liquidity.

For Moroccan SME hotels, implementing a strategic asset management plan is essential. Such a plan should include periodic upgrades to ensure properties remain attractive and technologically up-to-date, aligning investments with market trends and guest expectations to maximize returns. Each investment decision should be carefully evaluated for its potential revenue impact to ensure that while enhancing the hotel's facilities, financial health is maintained. By adopting such a strategic approach, Moroccan SME hotels can effectively leverage tangible assets to enhance their competitiveness while safeguarding against potential liquidity challenges.

The positive coefficient for Liquidity (0.253177) significantly underscores its importance for the financial stability of Moroccan hotels, indicating that maintaining robust cash reserves is integral to both daily operational efficiency and as a safeguard against economic downturns. This substantial correlation not only highlights liquidity as a critical strategic asset but also accentuates its pivotal role in comprehensive financial planning and effective risk management. The ability to quickly access funds allows hotels to navigate through fluctuating market conditions smoothly, ensuring continuity and stability even during uncertain times.

This insight into the value of liquidity in the hospitality sector is corroborated by broader research, emphasizing its critical role in ensuring business longevity and adaptability. For instance, del Castillo García and Fernández Miguélez (2021) noted the protective nature of high liquidity levels, particularly how adequate cash flow relative to liabilities can fortify a hotel's financial standing. Similarly, Greenwood and Schuh (2020) identified liquidity as a vital buffer against sudden economic shocks, a crucial aspect for industries like hospitality that are sensitive to shifts in tourism and consumer spending habits. Furthermore, Escribano-Navas and Gemar (2021) demonstrated the beneficial impact of working capital on total assets, reinforcing the concept that well-managed liquidity can significantly mitigate financial risks.

Given these perspectives, it is imperative for Moroccan SME hotels to implement strong liquidity management practices. Ensuring a solid liquidity reserve will enable these establishments to meet operational demands efficiently and handle unforeseen financial challenges. Utilizing financial tools such as cash flow forecasting and scenario planning will aid in accurately anticipating future financial requirements, allowing hotels to respond proactively to both opportunities and potential threats. Additionally, establishing an emergency fund can serve as a strategic reserve, enhancing the financial resilience of these businesses in the face of market volatility and economic uncertainties, thereby securing their long-term success and stability.

The positive coefficient for Age (0.595013) from your study distinctly indicates that older, more established hotels in Morocco generally exhibit greater financial stability. This robust relationship can be attributed to the benefits accrued from long-term market presence, such as strong customer loyalty, entrenched brand recognition, and a wealth of operational expertise. As hotels age, they often refine their financial management strategies and operational efficiencies, which play crucial roles in bolstering their overall stability.

This correlation between a hotel's age and its financial resilience is consistent with observations from various international studies. Grayson and Alvarez (2020) noted that historic hotels effectively utilize their rich heritage as a distinct marketing advantage, which can significantly enhance their appeal and competitive edge in the market. Similarly, Pelaez-Verdet and Loscertales-Sanchez (2021) found that older, smaller hotels tend to yield better returns on capital employed, suggesting that the accumulated experience and established processes of aging hotels contribute substantially to their financial robustness and ability to navigate market volatility.

Given these insights, it is strategic for older and more established Moroccan hotels to actively leverage their historical strength and well-established market presence. They should consider emphasizing their rich heritage and unique historical characteristics in their marketing efforts, which can serve to attract both new and returning guests. By promoting the consistency and uniqueness of the guest experience that their long-standing operation offers, these hotels can reinforce their market position and continue to thrive in an increasingly competitive landscape. Such targeted strategies not only capitalize on their existing assets but also enhance their appeal in a market that values authenticity and history.

The positive coefficient for Size (0.1290232) highlights that larger hotels are more likely to experience financial stability, attributing this trend to the benefits of economies of scale, expanded market reach, and diversified revenue streams. The correlation between size and financial health suggests that strategic growth and expansion are viable paths to enhancing a hotel's stability and market position. This relationship is corroborated by international research, such as the findings by Türkcan and Erkuş-Öztürk (2020), which demonstrate that medium and large hotels, as defined by initial capital, tend to have lower failure rates. Similarly, Bennett and Ivanov (2021) observed that larger hotels, with their varied service offerings and substantial operational capacities, are better equipped to handle market fluctuations and economic shocks.

However, the benefits of increased size come with a caveat regarding management. Vivel-Búa et al. (2019) caution that the advantages associated with larger size could lead to increased financial strain if not managed properly, suggesting that while growth enhances resilience, it

requires sophisticated, strategic oversight. For hotels aiming to capitalize on economies of scale, it is crucial to pursue thoughtful expansion strategies. This might include broadening service offerings to tap into new revenue streams or seeking mergers with smaller entities to consolidate market presence and operational efficiency. To ensure that growth translates into sustained success, it is essential to implement a phased growth plan that meticulously manages expansion risks. Such a plan should focus on enhancing management quality and maintaining stringent operational controls, thereby ensuring that growth does not compromise the hotel's foundational strengths but rather builds upon them to create a more robust business model.

**Table 9.** Summary of the study's results

<b>Hypothesis</b>	<b>Expected Sign</b>	<b>Decision</b>
Independent		
H1 :ROA → Firm survival	+	Supported
H2 :DEBT → Firm survival	-	Supported
H3 :TANG → Firm survival	+	Supported
H4 :WC → Firm survival	+	Supported
Control		
H5 :Age → Firm survival	+	Supported
H6 :Size → Firm survival	+	Supported

**Source: Authors**

## 6. Conclusion

Bankruptcy prediction within the Moroccan hotel industry remains a relatively unexplored area, despite its critical importance. Given the tourism sector's pivotal role in Morocco's economy, understanding the financial dynamics that influence hotel stability is crucial. The limited research specifically targeting the financial triggers of bankruptcy in this regional context highlights a significant gap in the existing literature. This gap not only impedes effective risk management but also limits the strategic planning capabilities of hotel operators and investors. Consequently, this research seeks to address the question: "What are the financial determinants of bankruptcy in hotels in Morocco?" The objective is to identify underlying financial patterns that could help mitigate risks associated with bankruptcy.

To address this, the study analyzed a sample of 532 hotels, comprised of 216 bankrupt and 216 non-bankrupt entities. The investigation focused on the impact of five key financial metrics: Return on Assets (ROA), Debt, Liquidity, Age, and Size on the likelihood of bankruptcy. The findings revealed distinct patterns: higher ROA is associated with a reduced risk of bankruptcy, reinforcing the notion that operational efficiency and profitability are crucial for financial stability. This aligns with international studies such as those by Fernández-Gámez et al. (2016), which highlighted the protective role of profitability in the hospitality industry.

Conversely, increased debt levels were linked to a higher risk of bankruptcy, emphasizing the dangers of over-leveraging. This finding resonates with Smith and Goss (2017), who observed similar trends in the UK hospitality sector, where high leverage compromised financial health. Additionally, liquidity emerged as a critical factor; hotels with greater liquidity were less likely to face bankruptcy, underscoring the importance of maintaining adequate cash reserves as highlighted by Greenwood and Schuh (2020).

The study also found that older hotels are generally more stable, likely due to their established brand equity and customer loyalty, a phenomenon supported by research from Pelaez-Verdet and Loscertales-Sanchez (2021). Lastly, the analysis indicated that larger hotels, benefitting from economies of scale and diversified operations, face a lower risk of bankruptcy, corroborating findings by Bennett and Ivanov (2021), who noted that size could serve as a buffer against market fluctuations. These insights are instrumental for Moroccan SME hotels in crafting strategies that enhance financial stability and reduce bankruptcy risk. By prioritizing financial health through improved asset management, cautious leveraging, and robust liquidity planning, hotels can better navigate the complexities of the hospitality industry. Moreover, leveraging the inherent advantages of age and scale can further fortify their market position, ensuring sustainable operations in a competitive landscape.

This research significantly contributes to the academic literature by filling a crucial gap regarding the financial determinants of bankruptcy in the Moroccan hotel industry. Prior studies have predominantly focused on broader economic contexts, often overlooking the unique characteristics of emerging markets like Morocco. By identifying critical financial metrics such as ROA, debt, liquidity, age, and size, and their impact on bankruptcy, this study provides a foundational platform for future research in regional hospitality management. It extends the existing body of knowledge by contextualizing international financial theories within the Moroccan economic landscape, thus offering a nuanced understanding of how global trends and local factors intersect to influence hotel stability.

### **Managerial Implications for Moroccan Hotel Managers**

For hotel managers in Morocco, the findings of this study are invaluable for strategic decision-making. Understanding that higher ROA and liquidity are protective against bankruptcy, managers should prioritize financial strategies that enhance operational efficiency and maintain robust cash flows. This might involve investing in technology that optimizes resource use or revising financial policies to ensure quicker turnover on receivables. Additionally, the negative correlation between excessive debt and financial stability suggests managers should approach borrowing with caution, opting for financial structures that align with their cash flow capabilities and long-term strategic goals. Recognizing the advantages of size and age can also guide managers in leveraging their market position and brand heritage to secure a competitive edge.

### **Limitations and Future Research**

While this study provides significant insights, it comes with limitations that could be addressed in future research. Firstly, the simplicity of the sample, focusing solely on quantitative data from 532 hotels, may overlook qualitative factors that affect financial health, such as management quality or customer service excellence. Additionally, the reliance on traditional financial metrics as variables may not capture emerging determinants of financial health like digital adoption or sustainability practices. Methodologically, the study primarily employs statistical analysis, which might benefit from complementary approaches such as case studies or qualitative interviews to gain deeper insights. Future research could expand the scope by including a more diverse array of variables and employing mixed methods to explore the interplay between quantitative and qualitative factors. Investigating the impact of external economic conditions, such as tourism trends and global economic cycles, would also enrich the understanding of bankruptcy determinants in this sector.

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## Appendix

### Studies For Assessing Bankruptcy In The Touristic Sector.

Author(s)	Country	Period	Sample	Method	Ratios and Results
<b>Youn and Gu (2010)</b>	Korea	2000–2005	102 failed and 102 non-failed listed lodging companies	Logit, NN	EBIT/interest expenses, current assets/current liabilities, quick assets/current liabilities, EBITDA/current liabilities
<b>Kim (2011)</b>	Korea	1995–2002	33 failed and 33 non-failed hotels	MDA, logit, NN, SVM	ROE, current assets/current liabilities, sales/fixed assets, fixed assets/long-term capital, ordinary income/owner's equity, growth in owner's equity, growth in assets
<b>Chen and Yeh (2012)</b>	Taiwan	1995–2008	10 failed and 10 non-failed international tourist hotels	Logit	Average operating revenue per employee (-)
<b>Diakomihalis (2012)</b>	Greece	2007–2008	15 failed from 146 hotels, with 4 listed hotels	3 MDA models	Altman (1968) variables
<b>Fernández-Gómez et al. (2016)</b>	Spain	2005–2012	54 failed and 54 non-failed hotels	Multi-layer perceptron, probabilistic neural network	EBITDA/current liabilities, net profit margin, liabilities/net worth, total liabilities/TA, sales/accounts receivable
<b>Gémar et al. (2016)</b>	Spain	1997–2009	79 failed hotels from 1033 hotels opened in 1997–2009	Cox model	Pre-tax profit/operating revenue (-), employee cost/operating revenues over 43% (+)
<b>Lado-Sestayo et al. (2016)</b>	Spain	2005–2011	106 failed hotels from 6494 hotels	Cox, Weibull, Gompertz	Operating net income/TA (-), equity/current liabilities (-), net operating cash flow/TA (-), log TA (-), current assets/TA (+)
<b>Vivel-Búa et al. (2016)</b>	Spain	2008–2011	154 failed hotels from 836 micro, small and medium hotels	Logit, probit	Total liabilities/TA (+), current assets/TA (+), operating income/TA (-),

Author(s)	Country	Year	Sample	Method	Variables
Falk and Hagsten (2018)	Sweden	2002–2012	580 failed businesses from 2557 hotels, hostels, and cottages	Cox model	equity/current liabilities (-), net turnover/TA (-), TA (-) Log revenues/overnight stays (-)
Gemar et al. (2019)	Spain	1997–2016	41 failed hotels from 354 resort hotels	Cox model	Employee cost/operating revenues over 43% (+)
Vivel-Búa et al. (2019)	Spain	2007–2015	1747 distressed hotels from 11,558 small and medium-sized hotels	Cox, exponential, Weibull, Gompertz	Net income/TA (-), cash flow/TA (-), net sales/TA (-), total liabilities/TA (+), TA (+, less for micro)
del Castillo García and Fernández Miguélez (2021)	Spain	2017–2019	69 failed and 69 non-failed hotels	Logit	Net profit/net equity, EBIT/TA, net profit/turnover, EBITDA/current liabilities, cash flow/total liabilities, current assets/current liabilities, turnover/TA, total liabilities/TA
Escribano-Navas and Gemar (2021)	Spain	2005–2018	70 failed hotels from 2615 hotels	Cox model	Ln net sales (-), net income/TA (-), working capital/TA (+)
Maté-Sánchez-Val (2021)	Barcelona, Spain	2015–2018	29 distressed hotels from 235 hotels	Cox model	Log TA (-), profit before interest and taxes/TA (-)
Pelaez-Verdet and Loscertales-Sanchez (2021)	Spain	2008–2019	2639 lodging enterprises	Cox model	Return on capital employed (+, for small-sized hotels)
Piacentino et al. (2021)	Sicily, Italy	2010–2014	166 failed businesses from 660 start-ups in the accommodation sector	Discrete-time survival model	Sales turnover of first year of activity (-)

<b>Türkcan and Erkuş- Öztürk (2020)</b>	Antalya, Turkey	2000–2016	470 failed hotels from 1487 hotels	Discrete-time survival model	Size as a dummy variable taking the value of one for medium and large firms based on the initial capital (–)
<b>Kim (2018)</b>	USA	1988–2010	26 listed distressed hotels and motels and 132 non-distressed	Ensemble methods with SVM, NN, and decision trees	Debt/equity, stock price trend, sales/accounts receivable
<b>Lin and Kim (2020)</b>	Texas, USA	2000–2018	3619 exits from 45,606 hotels	Cox model	Log revenues (–)