

Designing a Model for Brand Engagement Value Creation through the Integration of Gamification Technology and Explainable Artificial Intelligence (XAI)

Zahra Atf¹ , Fariz Taherikia² , kambiz Heidarzadeh Hanzaei³ 

1- Ph.D. student of business, department of business management, Islamic Azad University, Roudhen branch, Roudhen, Iran

2- Assistant Professor, Department of Business Administration, Islamic Azad University, Firuzkoh Branch, Firozkoh, Iran

3- Associate Professor, Business Management Department, Islamic Azad University, Research Sciences Unit, Tehran, Iran

Receive:

10 January 2024

Revise:

22 May 2024

Accept:

30 June 2024

Abstract

The current research has been conducted with the aim of investigating the factors affecting the financial recovery of businesses admitted to the stock exchange. This research is an interdisciplinary study; a combination of legal and financial topics with qualitative and quantitative data. In this regard, 144 companies were studied as a statistical sample of the research in the 12-year period of 2010-2021 based on the screening process. The findings of the research showed that, in the examination of the goodness of fit indices of the model, it can be seen that, based on the McFadden coefficient of determination index, the use of predictor variables in the final model of the financial recovery of companies has been able to improve the likelihood function by 71.25%. That is, it can be concluded that the main forecasting components in the final model have been able to be effective up to 71.25% in the accuracy of detecting the financial recovery of companies. Finally, the analysis of multilayer artificial neural networks in order to evaluate the reliability of the results in diagnosing and prioritizing the financial recovery of companies shows that, therefore, considering that the tenth principal component is the most important factor in the financial recovery of companies, and citing the magnitude (absolute value) of the coefficients of each variable in the formation of this component, the order of the importance of financial variables in the financial recovery of companies and their exit from bankruptcy can be determined.

Keywords:

bankruptcy,
financial recovery,
neural networks,
financial health,
stock exchange.

Please cite this article as (APA): Atf, Z., Taherikia, F., Heidarzadeh Hanzaei, K. (2024). Designing a Model for Brand Engagement Value Creation through the Integration of Gamification Technology and Explainable Artificial Intelligence (XAI). *Journal of value creating in Business Management*, 4(3), 340-365.



<https://doi.org/10.22034/jvcbm.2024.434941.1292>

Publisher: Research Centre of Resources
Management Studies and Knowledge-Based Business

Creative Commons: CC BY 4.0



Corresponding Author: Fariz Taherikia

Email: fariz.taherikia@iau.ac.ir

Extended Abstract

Introduction

Financial helplessness refers to a situation in which the company cannot fully fulfill its obligations to financial providers, and faces difficulties in fulfilling them. Financial helplessness does not necessarily lead to bankruptcy, and a set of management measures to get out of helplessness or rehabilitation can save the company from the risk of entering the bankruptcy stage (Mherani et al, 2021). The growth and revival of the company is the result of exploiting the opportunities. In fact, a company has limited resources that it uses as necessary tools to achieve growth in facing upcoming opportunities (Hussain & Waseer, 2018). Company growth has been studied by many researchers and different terms have been used to define its stages. But most researchers agree that the growth and revitalization of the company is a process. In other words, every company is born like a child, then it starts to grow and in this way it faces various challenges and crises until it finally matures and then dissolves. In this path, there are several factors that help the company's success and allow it to move from one stage to another. Of course, there are two different thoughts among researchers in this regard; some of them believe that the company's economic growth path is linear and predictable. But some others believe that the company's growth is the result of taking advantage of opportunities and is unpredictable (Guha et al, 2013).

Manufacturing companies active in the stock market, which are considered as the main players in the economy of any country, play an important role in increasing the national income. Regardless of paying taxes to the government, companies create many job opportunities and provide them with the opportunity to pay taxes to the government by hiring and paying jobseekers. Also, companies play an important role in improving the foreign balance of the country by exporting their goods to other countries. On the other hand, bankrupt companies lose the ability to pay taxes to the government and are forced to fire their employees; which brings many social and political problems. Also, since bankrupt companies are unable to pay their loans, they create problems for lending institutions (Yan & Vedoud, 2019). Therefore, this research, referring to the concept of asset pricing models of Black and Schulz; which emphasizes on the intrinsic value of debts and assets, paying attention to the importance of bankruptcy and exit and in the continuation of rehabilitation, has examined the factors affecting financial rehabilitation of businesses accepted in the stock exchange, and in fact, the main question of the research is: what factors are effective on the financial recovery of bankrupt companies in the stock exchange?

Theoretical Framework

Financial rehabilitation (exit from bankruptcy)

Company rehabilitation is a process in which the weak performance status of the company changes and its performance indicators improve (Berandez & Berg, 2020). When some organizations experience a financial crisis and face challenging and deteriorating operating margins, financial revival means a significant improvement in operational margins and financial health of the organization (Ghazavi, 2018). The financial recovery of the business unit is a process based on which the weak performance status of the company is changed and the performance indicators are improved (Brandes & Brege, 2012).

Financial recovery strategies

The increase in the bankruptcy of business units due to the economic situation attracted the attention of researchers to this field and caused research to be found to provide a model to predict the exit from helplessness of helpless companies. With the increase in the scope of the financial crisis, managers of companies in crisis have increased their efforts to implement

strategies that will save them from bankruptcy and stop their decline. In this regard, some of them use the strategy of cost reduction (Bruton & Rubanik, 2016) and asset restructuring (Sudarsanam & Lai, 2017; Hambrick & Schechter, 2014) for revival, and others consider the reorganization of the company's debts.

Dzingirai & Baporikar (2022) in a research titled "Trends and patterns in revitalization strategies" state that the most important aspect of strategic management should be the ability to respond to a world that is changing rapidly and with an increasing trend. The purpose of implementing this strategy is to take measures aimed at reducing the effects of change among organizations. As a result, it seems that the present time is the most ideal time to analyze the existing articles in this field from the perspective of bibliography. The role of revitalization strategies in strategic management articles cannot be underestimated. Three revitalization strategies, i.e. retrenchment, restructuring, and reorganization have led to the spread of articles related to the mainstream revitalization.

Ramalho & Diogo (2021) found that operational structure restructuring measures play an important role in the revitalization process of any company. In addition, this study shows that the managers of American companies during the considered time period, regardless of the effectiveness of the strategies, give more importance to financial restructuring measures.

Research methodology

This research is an interdisciplinary study; a combination of legal and financial topics with qualitative and quantitative data. In this regard, 144 companies were studied as a statistical sample of the research in the 12-year period of 2010-2021 based on the screening process.

Research findings

The findings of the research showed that, in the examination of the goodness of fit indices of the model, it can be seen that, based on the McFadden coefficient of determination index, the use of predictor variables in the final model of the financial recovery of companies has been able to improve the likelihood function by 71.25%. That is, it can be concluded that the main forecasting components in the final model have been able to be effective up to 71.25% in the accuracy of detecting the financial recovery of companies. Finally, the analysis of multilayer artificial neural networks in order to evaluate the reliability of the results in diagnosing and prioritizing the financial recovery of companies shows that, therefore, considering that the tenth principal component is the most important factor in the financial recovery of companies, and citing the magnitude (absolute value) of the coefficients of each variable in the formation of this component, the order of the importance of financial variables in the financial recovery of companies and their exit from bankruptcy can be determined.

Conclusion

The current research was conducted with the aim of investigating the factors affecting the financial recovery of businesses admitted to the stock exchange. The findings of the Ramalho, Diogo Miguel Pacífico (2021), Kazemzadeh & Moazami (2019), and Dzingirai & Baporikar (2022) also identified and introduced factors for the revival of companies in line with the results of this research. The artificial neural network composed of the main components in this research can correctly predict 90.9% of the bankruptcy or non-bankruptcy situations of companies, which can be confirmed by the research results of Lee (2021), Barzegar & Haedari (2017), and Wanita & Grace (2021) based on the acceptable and high power of the artificial neural network in the detection of aligned bankruptcy. Finally, for the revival of bankrupt companies in the stock exchange, suggestions for officials and legislators with regard to the research findings are presented:

-It is suggested to the Ministry of Security to make the necessary inquiries from the bankruptcy liquidation department of the provincial judiciary before issuing a license for production units that have been closed down or bankrupted, and provide the necessary background within the framework of laws and regulations for the activation of closed or semi-closed production units, with the least capital and the least cost, to activate the huge capital stagnant in them.