



Munich Personal RePEc Archive

Evaluating Factors of Small and Medium Hospitality Enterprises Business Failure: a conceptual approach

Anastasia Spyridou

Technological University of Gdansk

15 April 2019

Online at <https://mpra.ub.uni-muenchen.de/93997/>

MPRA Paper No. 93997, posted 21 May 2019 15:51 UTC

Evaluating Factors of Small and Medium Hospitality Enterprises Business Failure: a conceptual approach

Anastasia Spyridou

Technological University of Gdansk, Poland

Some rights reserved.

Except otherwise noted, this work is licensed under: <https://creativecommons.org/licenses/by-nc-nd/4.0>

A previous version of this paper was published in: *Tourismos: An International Multidisciplinary Journal of Tourism*, Volume 14, Issue 1, 2019, pp. 25 - 36.

Abstract:

The aim of this paper is to present a comparison between macro and micro economic factors as they are suggested by the current literature in corporate failure field. Present study answers two research questions, firstly which the causes of corporate bankruptcies in tourism are, and secondly which metrics could help more on effectively predict a corporate failure. Based on a conceptual approach authors analyze and collect different macro and micro economic factors. Results indicates how strongly the various factors affect the quantity and intensity of bankruptcy applications and suggestions are given on how different models could be developed to predict the risk of bankruptcy in a macro or micro aspect. This is one of the first studies that investigates the effectiveness of different types of Corporate Failure metrics, which has, until now, suffered a dearth of conceptual studies in the field, especially in the context of national economies due to the economic recession.

Keywords: Corporate Failure, Metrics, Macro – Micro, SMTEs

INTRODUCTION

Tourism industry is one of the most developed industries around the globe. Development rate is high and superstructure development is high too. For that reason, competition is intense as seasonality is affecting crucially this dynamic market. There are so many different types of tourism and so many different types of offered services and for that reason we can see private enterprises owned by only one entrepreneur, family companies, or huge hotel chains with hundred thousand employees. As is it generally accepted in many countries tourism industry is based on small and medium size tourism enterprises. These companies have to overcome several problems as any turbulence can kick them out of the market. Historically speaking we can see that a crisis is affecting mainly SMEs tourism companies as they don't have sufficient funds to survive. Because of the great recession in 1929, almost 85% of all hotels in the US went bankrupt. There is different terminology regarding bankruptcy as several authors call it corporate failure or distress. One of the most accepted definition is that of Altman (1993) who defined bankruptcy as a situation where a company end ups on a court asking to officially be bankrupt as it fails to meet its liabilities.

As Li and Sun (2012) mention after the global financial crisis several hotel such as Ilikai Hotel and Suites or InterContinental Montelucia Resort in US faced serious problems and they decided to bankrupt. While during the same period in China their average occupancy rate was only close to 50%, generating significant problem to the industry.

Several authors tried to investigate which are the main causes that financial performance of an SMEs in tourism is affected. For example Sardo, Serrasqueiro, and Alves (2018) observe hotel SMEs in Portugal from 2007 to 2015 and they found out that two important variables that crucially affect financial performance in Hotel SMEs are human capital and relational capital. Gu (2002) used a multiple discriminant model to examine US restaurants corporate failure and he found out that low earnings and high total liabilities can be good predictors of restaurants bankruptcy for this specific market.

As Korol (2017) mention because of the latest global financial crisis any industry and every type of company no matter if it is big, medium or small must constantly monitor their financial situation as “nowadays, in times of uncertainty, risks, and incomplete information, crisis becomes a feature of modern business, not a state of emergency” p.23. Although every company would like to know the future they usually they don't do much on trying to evaluate their market and the current trends. Especially, since small and medium companies don't have the ability to spend a great amount on money and they usually not enough skills the problems (Fotiadis, Vassiliadis, & Rekleitis, 2013; Chatzigeorgiou, 2017; Mensah & Mensah, 2018) and the need for suggested metrics is getting more and more important.

There are several studies up to date in different field dealing with corporate failure or bankruptcy (du Jardin, 2015; Meyer & Pifer, 1970; Yasser & Mamun, 2015) and only a few of studies are related to the hospitality industry and mainly hotels (Gémar, Moniche, & Morales, 2016; Li & Sun, 2012) or restaurant (Gu, 2002; Christou, 2015; Kim & Upneja, 2014; Zafiropoulou et al., 2015; Vlasic et al., 2019). As Youn and Gu (2010) comment it extremely important for hospitality related specialists, to forecast bankruptcy and take protective actions before the problem arise as if it is too late a possible incidence of a business failure might be irreversible. In the light of recent events such as intense

crisis in Greece, Spain, Portugal and Italy, there is considerable concern on how a company can predict efficiently the future. For that reason, the aim of this paper is to investigate which are the most important macro and micro economic factors that affect tourism companies and compare them based on the different types of corporate failure estimation methods. Main objective of this study is to answer two research questions, firstly which the causes of corporate bankruptcies in tourism are, and secondly which metrics could help more on effectively predict a corporate failure.

EARLY WARNING SYSTEMS

As Barreda, Kageyama, Singh, and Zubieta (2017) observes financial failures in hospitality industry is common as seasonality of operation and external factors are affecting critically the industry. During the last decades, there were different types of crises such as banking, currency, debt, equity and inflation in different continents and different countries. One of the latest crises arise around 2008 and it is still an issue for countries, like Greece where several companies bankrupt by causing serious problem to the country. In Greece, the consequences of global financial recession and the application of austerity measures created a difficult situation whose burden was not only evident in the economic field but also extended to several national or private sectors and social services (Ifanti, Argyriou, Kalofonou, & Kalofonos, 2013; Kastanioti, Kontodimopoulos, Stasinopoulos, Kapetaneas, & Polyzos, 2013; Polyzos, Karanikas, Thireos, Kastanioti, & Kontodimopoulos, 2013). The problem is, that although there were several established Early Warning Systems, they fail to forecast the crisis that transpire in 2008 (Christofides, Eicher, & Papageorgiou, 2016; Fotiadis & Williams, 2018; Küçükaltan & Pirnar, 2016; Nella & Christou, 2016; Valeri, 2016; Chatzigeorgiou et al., 2017).

There are different types of Early Warning Systems. For example, according to Ebi (2007) there are heat EWSs which are specifically designed on a way that they can signal in advance about extraordinary meteorological conditions and suggest possible alternatives to deal with the upcoming problems. As our topic is related to financial crises EWSs, we can notice that somehow, they have the same characteristics as all the other EWS. They are mainly developed to forecast the future and prevent malfunctions. The main reason a financial EWS is developed, is the attempt to identify vulnerabilities, so that anticipatory strategies can be employed (Christou, 2010; Bucevska, 2011; Nella & Christou, 2014; Nik, Jusoh, Shaari, & Sarmidi, 2016). Based to Kaur (2015) there are two main advantages in EWS:

- Main advantage is the fact that they can be a useful tool for policy makers on detecting economy's weakness and vulnerabilities.
- More of that EWS can mitigate the risk from companies by decreasing their exposure in other markets.

One of the main disadvantages of EWS is the fact that in many cases when they were applied on real condition, they were unable to predict the vulnerabilities. Although there were several established Early Warning Systems none of them manage to forecast the crisis in Greece in 2008 (Christofides et al., 2016).

"Currently, in the literature are numerous concerns with a view to refining early warning systems, materialized in identifying appropriate methodologies to quantify qualitative aspects of activity (the management quality, internal control, fraud, a culture of credit) and to allow an improvement in accuracy and in the reporting capacity of crises" (Ionela, 2014, p. 166).

Based to the existing literature there are different ways to develop an early warning system (Kimmel, Thornton, & Bennett, 2016; Zigraiova & Jakubik, 2015). More of that there are different types of companies. As Inmaculada (2017) says there are three main types of companies such as: chronic failure company, a revenue financing failure company, and an acute failure company. Time horizon is an important factor connected to EWS accuracy (Lin, Liang, Yeh, & Huang, 2014). As time horizon increase in most cases EWS accuracy decrease. Several researchers tried long time ago to develop successful EWS. One of the earliest one is by Meyer and Pifer (1970) who used a logit model to create an EWS related to banks. Other researchers used regression models to develop an EWS. The Cox regression model was used for example by Inmaculada (2017) to measure and explore the association among the risk of failure and different types of positioning for a company. A modern way to develop an EWS is discriminant analysis models like the case of Korol (2013) who used it to forecast business bankruptcy of Central European companies. There are even more sophisticated models that are based on artificial intelligence (Korol, 2012).

Based to Alaka et al. (2018) the main methods to predict a bankruptcy are more simple multiple discriminant analysis (MDA) and Logistic regression (LR) and more advanced ones such as artificial neural network (ANN), support vector machines (SVM) and others such as rough sets (RS), case based reasoning (CBR), decision tree (DT) and genetic algorithm (GA). All this method uses a series of predictors/ metric to estimate what will be the future condition for a company. In most studies regarding prediction models' financial ratios are the most vital indicators that can evaluate a company's performance (Thai Siew & Abdollahi, 2013). In those studies ratios try to estimate which is the liquidity the wealth and profitability, among many other variables. Hence, also for SMEs companies in tourism sector they can be considered as the primary and most significant indicators in finance studies.

PREDICTION MODELS IN HOSPITALITY

As hospitality environment is dynamic with frequent changes (Fotiadis, Huan, & Costantino, 2013) and as more and more sophisticated prediction models operate there is an increase on prediction models studies as it is recognized as very important for hotels, restaurants, and casinos. It is critical to diagnose any risk indicators that may reduce economic losses by cautioning hospitality stakeholders to react in a timely manner (Wu, 2004). More of that prediction

models will provide support to financial analysts and investors which can help on developing strategies before a firm decides on how to allocate resources. Therefore, these prediction models reduce losses to stakeholders, investors, and stakeholders in general (Youn & Gu, 2010). As literature delineates the most recent studies on corporate failure are those developed by Barreda et al. (2017); Sardo et al. (2018); Pereira, Basto, and das Silva (2017); Serrasqueiro and Nunes (2014). The main issue that each prediction model looks for is the prediction accuracy of the model and the period that can be used. For example, a model is considering the best if the accuracy is really high (more than 90%) and prediction can be related to a 5 year horizon. As it is normal the metrics/factors used for each model plays a significant role on success rate of the model. Usually, researchers apply their models in bankrupt and not bankrupt companies and their estimate is based on historical data. Then they compare developed different prediction methods and find the one that is the best for their data.

In a case by H. Kim (2006) they tried to develop a model based on logistic regression with an accuracy of 84% and 91% which can have these results if it will be applied one or two year prior to investigate problems in a hospitality company. Other authors develop models where they argued that multiple discriminant analysis can make an accurate prediction of corporate failure in the hospitality industry if the model is mainly related to financial ratios/metrics (Alaka et al., 2018). For example, a multiple discriminant model for restaurants was developed by Gu (2002) where he accomplished a 92% accuracy rate and where the most significant factors/metrics was lower earnings before interests and taxes and high total liabilities. Logit model was for other authors the most suitable for hospitality sectors as H. Kim and Gu (2006) examine restaurants corporate failure prediction. In their study the most important issue is operating cost.

BANKRUPTCY METRICS IN TOURISM AND HOSPITALITY SECTOR

Pereira et al. (2017) developed a paper where he used an econometric and a multivariate model to predict corporate failure in the hospitality sector in Portugal by applying logit and discriminant analysis. In their study they examine 230 Portuguese companies in the hospitality sector from 2009 to 2013 with 30 different ratios which was extracted from companies' balance sheet and income statement. The most important ratios in this study were Current assets/Short-term liabilities, Cash/Current liabilities, Cash flow/Total liabilities, Operating profit/Operating costs, Operating profit/Operating costs and Working capital/Total assets.

In a study by Barreda et al. (2017) it was examined corporate failure for hospitality sector in United States for restaurants, hotels, resorts, and casinos. In this study the ratios that was used were related to liquidity, solvency, activity and profitability. Based to their literature review the following ratios was used Liquidity Working capital/Total assets, Leverage Retained earnings/Total assets ratio Altman, Profitability EBIT/Total assets ratio, Value Market value of equity/Book value of total debt ratio, Activity (Asset turnover) Sales/Total assets.

In another study the approach was different. Gémar et al. (2016) investigate Spanish hotel survival and they used both financial and non-financial ratios. Their non-financial ratios were related to size, location and type of the hotel. Another important factor was the maturity of the hotel as they notice different behavior if the open during an expansion or crisis period. Another case is Park and Hancer (2012) research observing hospitality firms. In their study they manage to achieve a 100% accuracy rate which is not common in this type of studies and they discovered that total liabilities to total assets was the most significant variable regarding their sample. As they say extensive debt financing, when not supplemented by the competitive market value of equity, might affect substantially hospitality firms forcing them to bankrupt.

Table 1: Literature related to Hospitality Ratios

Category of Ratios Model	Authors	Model Applied	SMEs Suitability
Profitability Employee efficiency Leverage Liquidity Asset Utilization Growth Ability	(Alaka et al., 2018)	Multi Modelling	Return on capital employed (%) Profit margin (%) Turnover per employee Liquidity ratio (x) Current assets-Stocks / Current liabilities Working capital per employee (unit) Working capital / Number of employees Total assets per employee (unit) Total assets / Number employees
Liquidity ROA Solvency Activity Value Profitability	(Barreda et al., 2017)	Logit Model MDA Model	Working capital/Total assets Net Income/Average Total Assets Debt/equity Sales/Total assets
Financial Ratios	(Gémar et al., 2016; Gu,	Altman Z-Score Models	Current ratio Liquidity ratio

	2002; Kim, 2006; Kim & Gu, 2006; Park & Hancer, 2012; Pereira et al., 2017; Thai Siew & Abdollahi, 2013; Yasser & Mamun, 2015)	Logistic Regression Model Cox Estimation Model MDA Model	Working capital/Equity Return on assets Return on capital employed ratio
Macro Forecasting	(Korol, 2017)	Fuzzy logic model	Dynamics of GDP per capita Dynamics of domestic demand per capita Unemployment rate Exchange rate

Own Structure

As we can see on Table 1 most of the studies that relate with corporate failure and hospitality are based on Financial Ratios. For that reason, if SMEs want to be successful and prosper in the future based on forecasting techniques they should first focus on financial ratios such as current assets which is a ratio that almost all studies used. The most common technique in those studies is an MDA model followed by a Logistic Regression Model or a Logit Model. In most of the cases authors compare the power of each model and depending on the ratios predictions powers differs. As we can see on the table there are also more complex model which they can actually achieve better results regarding the time horizon. Those techniques can be for example fuzzy logic or artificial intelligence. It is interesting that in those studies more and much more sophisticated ratios can be used related to macroeconomics or company characteristics such as size.

CONCLUSIONS

Main objective of this study was to investigate which are the main factors that can be used for small and medium enterprises in hospitality sector to predict possible corporate failures. As the investigation was conceptual the main goal was to collect and analyze studies related to hospitality sector bankruptcies, corporate failures or distress. As this approach for this study indicates most of the studies was either related to restaurants (Gu, 2002; Kim & Gu, 2006; Kim & Upneja, 2014; Youn & Gu, 2010) or hotels (Gémar et al., 2016; Kim, 2011) and not in other significant parts of hospitality sector. Although there is a gap, it is logical as it is quite difficult to find information regarding the economic situation of a company in many cases.

This is actually the biggest problem with SMEs. As they are not required to publish their financial statement and their balance sheet is quite difficult to find the appropriate ratios for these types of companies. In our study table 1 indicates which are the most important ratios SMEs can use if they are planning to develop a model which can forecast their future. As usually companies don't have a great amount of money to invest on these kind of model we would suggest they develop simple model such as MDA and Logistic Regression Model as many other researchers did in the past.

We expect that these studies will help academician on focusing more on this topic. As it is visible most of the studies are related to Spain, Portugal and other countries which faced intense crisis. More studies are needed in developed or developing countries with a specific focus on SMEs as they are the backbone of most of the economies.

As basic rule of management is not to react on a problem when the problem occurs but be proactive before, it is suggested that managers in hospitality sector especially those in SMEs should consider seriously the development of predictive corporate failure models by using different combinations of the above mention factors as it will help them react rapidly if problems occur in the future.

Every study has its limitations. Main limitation of this studies was the fact that there are limited studies regarding this issue. More of that as any conceptual study, there might be gaps by the fact that it is not clear if any study regarding this issue is covered. In the future it is expected that a more analytic study with a metanalysis of this topic could give more impressive and more detailed results.

REFERENCES

- Alaka, H. A., Oyedele, L. O., Owolabi, H. A., Kumar, V., Ajayi, S. O., Akinade, O. O., & Bilal, M. (2018). Systematic review of bankruptcy prediction models: Towards a framework for tool selection. *Expert Systems with Applications, 94*, 164-184.
- Altman, E. I. (1993). *Corporate financial distress and bankruptcy*. New York, NY: John Wiley and Sons.
- Barreda, A. A., Kageyama, Y., Singh, D., & Zubieta, S. (2017). Hospitality Bankruptcy in United States of America: A Multiple Discriminant Analysis-Logit Model Comparison. *Journal of Quality Assurance in Hospitality & Tourism, 18*(1), 86-106.

- Bucevska, V. (2011). An analysis of financial crisis by an early warning system model: The case of the EU candidate countries. *Business & Economic Horizons*, 4(1), 13-26. doi:10.12691/jfe-2-1-2.
- Chatzigeorgiou, C. (2017). Modelling the impact of social media influencers on behavioural intentions of millennials: The case of tourism in rural areas in Greece. *Journal of Tourism, Heritage & Services Marketing*, 3(2), 25–29. <http://doi.org/10.5281/zenodo.1209125>
- Chatzigeorgiou, C., Christou, E. & Simeli, I. (2017). Delegate satisfaction from conference service quality and its impact on future behavioral intentions. 5th International Conference on Contemporary Marketing Issues, ICCMI, June 21-23, 2017 Thessaloniki, Greece, pp. 532-544.
- Christofides, C., Eicher, T. S., & Papageorgiou, C. (2016). Did established Early Warning Signals predict the 2008 crises? *European Economic Review*, 81, 103-114. doi:10.1016/j.eurocorev.2015.04.004
- Christou, E. (2010). Relationship Marketing Practices for Retention of Corporate Customers in Hospitality Contract Catering. *Tourism & Hospitality Management*, 16(1), 1-10.
- Christou, E. (2015). Branding social media in the travel industry. *Social and Behavioral Sciences*, Vol. 175, pp 607-614. <https://doi.org/10.1016/j.sbspro.2015.01.12>
- du Jardin, P. (2015). Bankruptcy prediction using terminal failure processes. *European Journal of Operational Research*, 242(1), 286-303.
- Ebi, K. L. (2007). Towards an Early Warning System for Heat Events. *Journal of Risk Research*, 10(5), 729-744. doi:10.1080/13669870701447972
- Fotiadis, A., Huan, T.-C., & Costantino, C. (2013). *An Analysis of Visitor Behaviour Using Time Blocks: The Case of E-Da Theme Park, Kaohsiung, Taiwan*. Paper presented at the The 3rd Advances in Hospitality and Tourism Marketing & Management Conference, The Grand Hotel, Taipei, Taiwan.
- Fotiadis, A., & Williams, R. (2018). “TiCoSa” a 3d matrix conceptual model to investigate visitors’ perceptions in an athletic event. *Journal of Tourism, Heritage & Services Marketing*, 4(2), 32-36.
- Fotiadis, A., Vassiliadis, C., & Rekleitis, P. (2013). The constraints and benefits of sustainable development: a case study based on the perceptions of small hotel entrepreneurs in Greece. *Anatolia: An International Journal of Tourism and Hospitality Research*, 24(2), 144-161.
- Gémar, G., Moniche, L., & Morales, A. J. (2016). Survival analysis of the Spanish hotel industry. *Tourism Management*, 54, 428-438.
- Gu, Z. (2002). Analyzing bankruptcy in the restaurant industry: A multiple discriminant model. *International Journal of Hospitality Management*, 21(1), 25-42.
- Ifanti, A. A., Argyriou, A. A., Kalofonou, F. H., & Kalofonos, H. P. (2013). Financial crisis and austerity measures in Greece: Their impact on health promotion policies and public health care. *Health Policy*. doi:10.1016/j.healthpol.2013.05.017
- Inmaculada, J. G. (2017). Trend of financial ratios in the business failure process. *International Research Journal of Advanced Engineering and Science*, 2(2), 66-77.
- Ionela, S. A. (2014). Early Warning Systems – Anticipation’s Factors of Banking Crises. *Procedia Economics and Finance*, 10, 158-166. doi:10.1016/s2212-5671(14)00289-5
- Kastanioti, C., Kontodimopoulos, N., Stasinopoulos, D., Kapetaneas, N., & Polyzos, N. (2013). Public procurement of health technologies in Greece in an era of economic crisis. *Health Policy*, 109(1), 7-13. doi:10.1016/j.healthpol.2012.03.015
- Kaur, I. (2015). Early Warning System of Currency Crisis: Insights from Global Financial Crisis 2008. *IUP Journal of Applied Economics*, 14(1), 69-83.
- Kim, H. (2006). A logistic regression analysis for predicting bankruptcy in the hospitality industry. *The Journal of Hospitality Financial Management*, 14(1), 17-34. doi:10.1080/10913211.2006.10653812
- Kim, H., & Gu, Z. (2006). Predicting restaurant bankruptcy: A Logit model in comparison with a discriminant model. *Journal of Hospitality & Tourism Research*, 30(4), 474-493. doi:10.1177/1096348006290114
- Kim, S. Y. (2011). Prediction of hotel bankruptcy using support vector machine, artificial neural network, logistic regression, and multivariate discriminant analysis. *The Service Industries Journal*, 31(3), 441-468. doi:10.1080/02642060802712848
- Kim, S. Y., & Upneja, A. (2014). Predicting restaurant financial distress using decision tree and AdaBoosted decision tree models. *Economic Modelling*, 36, 354-362. doi:10.1016/j.econmod.2013.10.005
- Kimmel, R. K., Thornton, J. H., & Bennett, S. E. (2016). Can statistics-based early warning systems detect problem banks before markets? *The North American Journal of Economics and Finance*, 37, 190-216. doi:10.1016/j.najef.2016.04.004

- Korol, T. (2012). *Warning Systems of Enterprises Against the Risk of Bankruptcy – Artificial Intelligence in Financial Management*. Saarbrücken: LAP Lambert Academic Publishing.
- Korol, T. (2013). Early warning models against bankruptcy risk for Central European and Latin American enterprises. *Economic Modelling*, 31, 22-30. doi:10.1016/j.econmod.2012.11.017
- Korol, T. (2017). Evaluation of the factors influencing Business Bankruptcy Riski in Poland. *Financial Internet Quarterly „e-Finanse”*, 13(2), 22-35.
- Küçükaltan, E., & Pinar, I. (2016). Competitiveness factors of a tourism destination and impact on residents' quality of life: The Case of Cittaslow-Seferihisar. *Journal of Tourism, Heritage & Services Marketing*, 2(1), 22-29. doi:10.5281/zenodo.3763
- Li, H., & Sun, J. (2012). Forecasting business failure: The use of nearest-neighbour support vectors and correcting imbalanced samples – Evidence from the Chinese hotel industry. *Tourism Management*, 33(3), 622-634. doi:10.1016/j.tourman.2011.07.004
- Lin, F., Liang, D., Yeh, C.-C., & Huang, J.-C. (2014). Novel feature selection methods to financial distress prediction. *Expert Systems with Applications*, 41(5), 2472-2483.
- Mensah, I. & Mensah, R. (2018). Effects of Service Quality and Customer Satisfaction on Repurchase Intention in Restaurants on University of Cape Coast Campus. *Journal of Tourism, Heritage & Services Marketing*, 4(1), 27–36. <http://doi.org/10.5281/zenodo.1247542>
- Meyer, P. A., & Pifer, H. W. (1970). Prediction of bank failures. *The Journal of Finance*, 25(4), 853-868. doi:10.2307/2325421
- Nella, A., & Christou, E. (2016). Extending tourism marketing: Implications for targeting the senior tourists' segment. *Journal of Tourism, Heritage & Services Marketing*, 2(1), 36-42. doi:10.5281/zenodo.376336
- Nella, A. & Christou, E. (2014) Linking Service Quality at the Cellar Door with Brand Equity Building, *Journal of Hospitality Marketing & Management*, 23:7, 699-721. <https://doi.org/10.1080/19368623.2014.891959>
- Nik, P. A., Jusoh, M., Shaari, A. H., & Sarndi, T. (2016). Predicting the Probability of Financial Crisis in Emerging Countries Using an Early Warning System: Artificial Neural Network. *Journal of Economic Cooperation and Development*, 37(1), 25-40.
- Park, S.-S., & Hancer, M. (2012). A Comparative Study of Logit and Artificial Neural Networks in Predicting Bankruptcy in the Hospitality Industry. *Tourism Economics*, 18(2), 311-338. doi:10.5367/te.2012.0113
- Pereira, M. J., Basto, M., & das Silva, A. F. (2017). Comparing logit model with discriminant analysis for predicting bankruptcy in Portuguese hospitality sector. *European Journal of Tourism Research*, 16, 276-280.
- Polyzos, N., Karanikas, H., Thireos, E., Kastanioti, C., & Kontodimopoulos, N. (2013). Reforming reimbursement of public hospitals in Greece during the economic crisis: Implementation of a DRG system. *Health Policy*, 109(1), 14-22. doi:10.1016/j.healthpol.2012.09.011
- Sardo, F., Serrasqueiro, Z., & Alves, H. (2018). On the relationship between intellectual capital and financial performance: A panel data analysis on SME hotels. *International Journal of Hospitality Management*, 75, 67-74. doi:10.1016/j.ijhm.2018.03.001
- Serrasqueiro, Z., & Nunes, P. M. (2014). Financing behaviour of Portuguese SMEs in hotel industry. *International Journal of Hospitality Management*, 43, 98-107. doi:10.1016/j.ijhm.2014.09.001
- Thai Siew, B., & Abdollahi, M. (2013). Corporate Failure Prediction: Malaysia's Emerging Market. *International Journal of Finance*, 25(4), 7985–8011.
- Wu, C. Y. (2004). Using non-financial information to predict bankruptcy: A study of public companies in Taiwan. *International Journal of Management*, 21(2), 194-201.
- Valeri, M. (2016). Networking and cooperation practices in the Italian tourism business. *Journal of Tourism, Heritage & Services Marketing*, 2(1), 30-35. doi:10.5281/zenodo.376333
- Vlasic, D., Poldrugovac, K. & Jankovic, S. (2019). The Competitive pricing in marina business: Exploring relative price position and price fluctuation. *Journal of Tourism, Heritage & Services Marketing*, 5(1), 3–8. <http://doi.org/10.5281/zenodo.2640935>
- Yasser, Q. R., & Mamun, A. A. (2015). Corporate Failure Prediction of Public Listed Companies in Malaysia. *European Researcher*, 9(2), 114-126. doi:10.13187/er.2015.91.114
- Youn, H., & Gu, Z. (2010). Predict US restaurant firm failures: The artificial neural network model versus logistic regression model. *Tourism and Hospitality Research*, 10(3), 171-187. doi:10.1057/thr.2010.2
- Zafiroopoulos, K., Vrana, V. & Antoniadis, K. (2015). Use of twitter and Facebook by top European museums. *Journal of Tourism, Heritage & Services Marketing*, 1(1), 16–24. <http://doi.org/10.5281/zenodo.376326>

Zigraiova, D., & Jakubik, P. (2015). Systemic event prediction by an aggregate early warning system: An application to the Czech Republic. *Economic Systems*, 39(4), 553-576. doi:10.1016/j.ecosys.2015.04.004