






The influence of new technologies on the economic efficiency of rural businesses. The case of Andalusia




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Introduction

-  Rural development depends on various external factors: globalization, transport networks, ICT (OECD, 2010a).
-  Rural tourism is a strategic pillar for economic diversification and sustainability (Tirado-Ballesteros & Hernández, 2018).
-  Local restaurant enterprises contribute by offering authentic experiences, creating jobs, and preserving traditions.

Research Gap and Aim

-  **Research Gap:**
Few studies link technological variables with efficiency in rural restaurant businesses.
-  **Research Aim:**
To assess how business-related technological variables influence the efficiency of rural restaurant enterprises in Andalusia.
-  **Hypotheses:**
H1: Technological variables affect financial performance.
H2: Financial variables affect business efficiency.

Methodology

- **Population:** 88 rural restaurant enterprises in Andalusia.
- **Financial data source:** SABI (Iberian Balance Sheet Analysis System)
- **Technological data source:** Social Searcher
- **Methodologies:** Economic, technological, and techno-economic Data Envelopment Analysis (DEA)
Reflective Structural Equation Modeling (PLS-SEM):
 - "Economic" dimension (2 items): BCC and CCR efficiency scores
 - "Technological Impact" dimension (8 items): Positive, neutral, and negative online reviews; videos, photos, links; business status; online reputation
 - "Financial Variables" dimension (4 items): Financial expenses, personnel costs, material costs, and sales revenue

Methodology



Super-efficiency Model (DEA)

- Used to identify and remove outliers from the sample.
- Cases with super-efficiency scores greater than 2 were considered atypical.
- A total of 2 outlier cases were excluded from the analysis to ensure the robustness and reliability of the results.

BCC-O

$$\max \varphi, \lambda, S+, S-$$

$$z_0 = \varphi + \varepsilon * 1 S+ + \varepsilon * 1 S-$$

$$\text{Subject to: } \varphi Y_0 - Y \lambda + s+ = 0$$

$$X \lambda + s- = X_0$$

$$1 \lambda = 1$$

$$\lambda, s+, s- \geq 0$$

CCR-O

$$\max \varphi, \lambda, S+, S-$$

$$z_0 = \varphi + \varepsilon * 1 S+ + \varepsilon * 1 S-$$

$$\text{Subject to: } \varphi Y_0 - Y \lambda + s+ = 0$$

$$X \lambda + s- = X_0$$

$$\lambda, s+, s- \geq 0$$

Results

ECONOMIC-TECHNOLOGICAL EFFICIENCY

	CCR-O	BCC-O
Efficient DMUs	20	31
Average Efficiency (%)	75.79%	84.98%
Standard Deviation	0.202	0.157
Average Inefficiency (%)	24.21%	15.02%
Efficient DMUs (%)	23.81%	36.91%

BBC-O

On average, companies in the restaurant sector exhibit a good level of efficiency (84.98%).

However, only one in three companies qualifies as truly efficient.

The relatively high standard deviation (0.157) reveals a significant disparity in efficiency levels across companies.

CCR-O

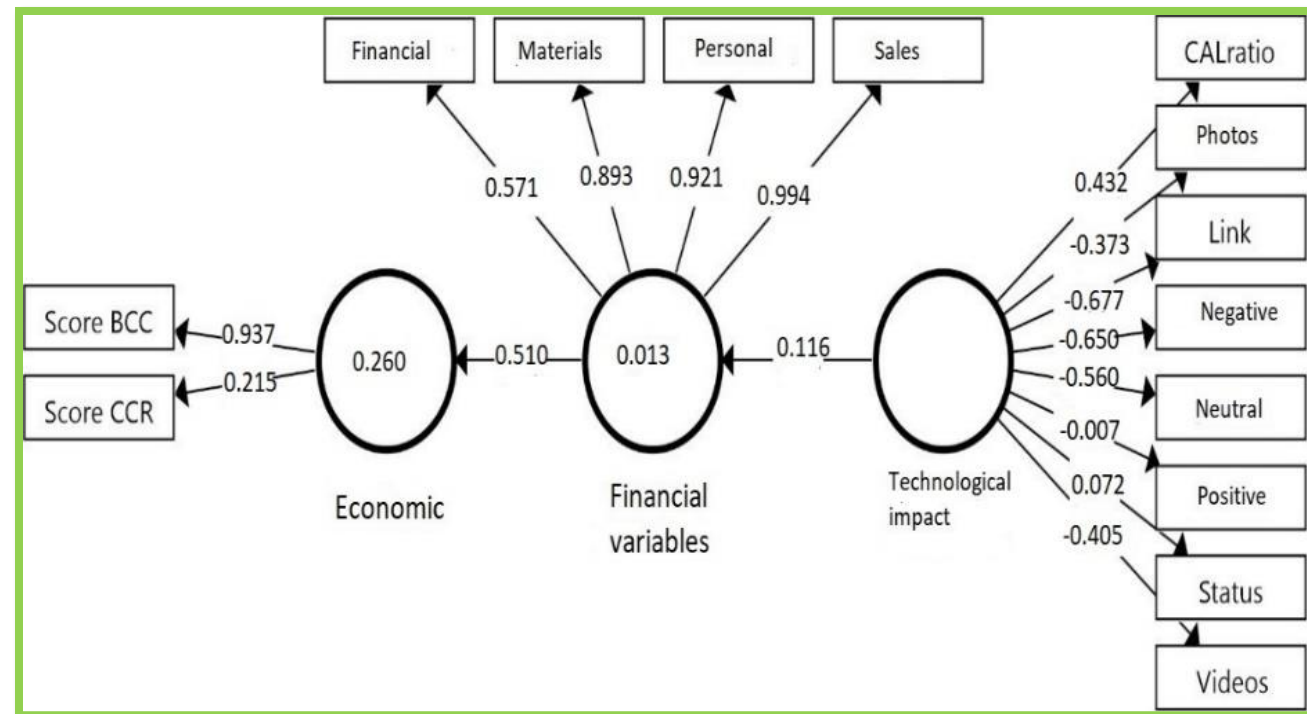
Companies in the restaurant sector show a relatively solid average efficiency of 75.79%.

However, only one in four companies meets the threshold to be considered efficient.




The high standard deviation (0.202) indicates a significant disparity in performance among the evaluated firms.

Results




- All relevant analyses for the PLS model have been conducted, including the assessment of reliability, convergent and discriminant validity, as well as robustness checks and overall model quality evaluation.



Discussion

-  Confirmed importance of digital tools in rural business success (Durand, 2022; González-Tortolo, 2022).
-  Supports previous findings on financial-efficiency link (Chen et al., 2019; Dalwai & Salehi, 2021).
-  Enhancing online reputation = greater resilience and competitiveness.

Conclusions

-  Integration of rural tourism, online reputation, and business efficiency is essential.
-  Digitalization and local identity are not contradictory—they are complementary.
-  ICT and reputation management can drive sustainable growth in rural regions.



Thank you for your attention.

I remain at your disposal for any questions or comments.

