Artificial Intelligence to Forecast Diversity in the Tourism Industry

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Abstract

Diversity plays a pivotal role in the success of tourism and entrepreneurial ventures. This paper explores the multi-dimensional facets of diversity within these sectors, encompassing workforce, cultural, customer, product, destination, and environmental diversity. Embracing diversity fosters innovation, enhanced customer experiences, broader market reach, effective problem-solving, and improved overall performance. While financial data may not directly measure a company's diversity initiatives, it provides valuable indirect insights, such as budget allocations for diversity programs and economic impact assessments. Furthermore, this study introduces the Financial Times and Statista Diversity Index, which gauges diversity based on employee perceptions.

The research hypothesis assesses whether artificial intelligence (AI) can predict a company's diversity score using economic and financial data. Utilizing Weka's machine learning algorithms, the study demonstrates AI's potential in predicting a company's diversity level, achieving a 74% retrospective validation accuracy.

In summary, this study underscores the importance of diversity in tourism and entrepreneurship and reveals the potential of AI to predict diversity levels in a statistically significant manner. Through diversity and AI integration, companies can adapt to market dynamics and contribute to a more inclusive and culturally sensitive industry.

Keywords: Diversity, tourism, artificial intelligence, sustainability, predictive modelling, retrospective validation.

Inteligencia artificial para predecir la diversidad en la industria del turismo

Resumen

La diversidad desempeña un papel fundamental en el éxito del turismo y los emprendimientos empresariales. Este estudio explora las múltiples dimensiones de la diversidad en estos sectores, incluyendo la diversidad en la fuerza laboral, cultural, de clientes, de productos, de destinos y ambiental. Fomentar la diversidad impulsa la innovación, mejora la experiencia del cliente, amplía el alcance del mercado, facilita la resolución de problemas y mejora el desempeño general. Aunque los datos financieros no miden directamente las iniciativas de diversidad de una empresa, sí ofrecen indicios indirectos valiosos, como asignaciones presupuestarias para programas de diversidad y evaluaciones del impacto económico. Además, se introduce el Índice de Diversidad de Financial Times y Statista, el cual mide la diversidad según la percepción de los empleados. La hipótesis de investigación evalúa si la inteligencia artificial (IA) puede predecir el nivel de diversidad de una empresa utilizando datos económicos y financieros. Usando algoritmos de aprendizaje automático con Weka, el estudio demuestra el potencial de la IA para predecir el nivel de diversidad de una empresa, alcanzando un 74% de precisión en la validación retrospectiva. En resumen, este estudio resalta la importancia de la diversidad en el turismo y el emprendimiento, y revela la promesa de la IA para prever niveles de diversidad. Mediante la integración de diversidad e IA, las empresas pueden adaptarse mejor a la dinámica del mercado y contribuir a una industria más inclusiva y culturalmente sensible.

Palabras clave: Diversidad, turismo, inteligencia artificial, sostenibilidad, modelado predictivo, validación retrospectiva.

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I. INTRODUCTION

Diversity in the context of tourism companies typically refers to the variety of aspects within the workforce and the company's approach to serving a diverse range of customers and clients. It encompasses various dimensions, including (Köllen, 2021):

- Workforce Diversity: This pertains to having a diverse employee base in terms of gender, age, race, ethnicity, nationality, sexual orientation, and other demographic factors. A diverse workforce can bring different perspectives, skills, and experiences to the company, which can lead to innovation and improved decision-making.

- Cultural Diversity: In the tourism industry, cultural diversity often refers to employees and customers from various cultural backgrounds. Tourism companies may serve travellers from all over the world, making it important to understand and respect cultural differences.

- Customer Diversity: Tourism companies cater to a wide range of customers, each with unique needs and preferences. Customer diversity can include differences in travel preferences, age groups, cultural backgrounds, and more.

  » Racial and Ethnic Diversity: It's essential for tourism companies to have a workforce that reflects the racial and ethnic diversity of their customer base. This can create a more inclusive and welcoming environment for travellers.

  » LGBTQ+ Inclusivity: Recognizing and respecting the rights and needs of LGBTQ+ travellers and employees is vital. Tourism companies should create an inclusive environment where all individuals can feel safe and welcome.

  » Religious Diversity: Acknowledging and respecting different religious beliefs and practices is important. This may involve providing appropriate facilities or dietary options for travellers with specific religious requirements.

- Product and Service Diversity: Tourism companies may offer a diverse range of products and services to meet the needs of different customer segments. This can include various types of accommodations, transportation options, tours, and experiences.

  » o Ability and Disability Inclusivity: Ensuring that facilities and services are accessible to people with different abilities and disabilities is crucial for a tourism company. This includes considerations for physical accessibility, as well as accessible information and communication.

- Destination Diversity: In the context of travel, destination diversity refers to offering a wide variety of travel destinations and experiences to cater to different interests and travel motivations.

- Sustainability and Environmental Diversity: Many tourism companies are also focusing on diversity in terms of environmental and sustainability practices to protect and preserve diverse ecosystems and natural resources (Martínez-Navalón, et al., 2020).

Incorporating diversity in all these dimensions can result in a more inclusive and welcoming tourism industry. It allows companies to better understand the needs and preferences of a wide range of customers and create more authentic and enriching travel experiences. Additionally, diverse workforces often bring fresh perspectives, creativity, and innovation, which can benefit the company's overall success in a competitive industry.

The specific interpretation of diversity in a tourism company may vary depending on the company's size, location, target market, and values. Embracing diversity can enhance a company's competitiveness, expand its customer base, and contribute to a more inclusive and culturally sensitive tourism industry.

Diversity can have a positive impact on tourism companies' performance in several ways. A diverse workforce can better understand and cater to the needs and preferences of a broad range of customers. Employees from different backgrounds can offer insights into cultural nuances, languages, and expectations, leading to a more personalized and enjoyable customer experience. Inclusive and diverse workplaces tend to have higher levels of employee satisfaction. When employees feel valued and included, they are more likely to be engaged and committed to their work, leading to improved customer service and company performance. Moreover, diversity fosters a variety of perspectives and ideas. Employees with different backgrounds and experiences can bring fresh insights and innovative solutions to challenges within the tourism industry. This can lead to the development of new products, services, and marketing strategies. Luu (2019) demonstrates the interactive effects of group diversity and diversity climate on fostering service innovative behavior.

Tourism is a global industry, and diversity within a company can help it expand its reach into international markets. Employees who are familiar with various cultures and languages can facilitate market entry and build relationships with clients from diverse regions. Tourism often involves interactions with people from various cultural backgrounds. A diverse workforce is more likely to be culturally sensitive and respectful, reducing the risk of cultural misunderstandings and conflicts. Companies that embrace diversity may have a competitive edge. They can appeal to a wider customer base and attract top talent from diverse backgrounds, giving them an advantage over less diverse competitors. (Im and Chung, 2023).

As market demographics and trends change, diversity within a company can help it adapt and stay relevant. For example, catering to the preferences of different age groups or emerging markets can be easier with a diverse team. On the other hand, tourism companies are often deeply integrated into their local communities. A diverse workforce can foster positive relationships and engagement with local communities, contributing to a company's reputation and sustainability (Malik, Madappa and Chitranshi, 2017).

Diverse teams tend to be more effective at problem-solving. They can approach issues from multiple angles, leading to well-rounded solutions. In the tourism sector, where unexpected challenges can arise, this can be particularly valuable. Therefore, to leverage the benefits of diversity, tourism companies should also focus on creating an inclusive and supportive workplace culture that values and respects all employees. This can lead to better collaboration and the full realization of the advantages of diversity in the industry (Getz and Jamal, 1994).

Predicting the diversity of a company's workforce or customer base directly from financial data can be challenging. Diversity is a multifaceted concept that encompasses a wide range of factors, including the composition of the workforce, customer demographics, cultural sensitivity, and more. Financial data typically focuses on the company's monetary performance and may not directly reflect its diversity initiatives or the diversity of its customers.

However, financial data can indirectly provide some insights into diversity. Here's how financial data can be used in this context:

- Diversity initiatives budget: Companies that invest in diversity and inclusion initiatives may allocate a budget for these efforts. It is possible to examine financial statements to identify budget allocations for diversity-related programs, such as recruitment, training, and inclusion efforts.
- Employee demographics: While financial data won't provide specific employee demographic information, some financial reports may disclose high-level information about the workforce, such as the total number of employees or changes in headcount. This can offer a basic understanding of the company's workforce size.
- Customer segmentation: Financial reports may include information about revenue sources and customer segments. While this won't provide detailed demographic information, it can offer insights into the types of customers the company serves. For example, a hotel chain might report

revenue from business travellers, leisure travellers, or specific geographic regions.

- Economic impact of diversity: Companies may report on the economic impact of their diversity and inclusion efforts, such as the effect on employee retention, customer satisfaction, or market reach. This data can indirectly indicate the importance of diversity to the company.

Predicting the diversity of a company is a complex task that often requires a combination of quantitative and qualitative data from various sources. Financial data is just one piece of the puzzle, and it may not provide a complete picture of a company's diversity efforts or outcomes.

Artificial Intelligence (AI) can play a valuable role in assessing and analysing various aspects of diversity within a company. While financial data alone may not directly predict diversity, AI can be applied to provide more insights into a company's diversity. AI can use historical data to predict future diversity trends within a company. For example, it can project changes in workforce diversity over time based on hiring and retention patterns. In this way, AI can integrate and analyze data from various sources, including financial data, HR records, and customer data, to provide a more comprehensive view of diversity within the company.

It's important to note that the accuracy and effectiveness of AI-driven diversity analysis depend on the quality and availability of data. Additionally, any AI analysis must consider ethical and privacy concerns when handling sensitive demographic information.

While AI can provide valuable insights into a company's diversity efforts, it may not completely replace the need for proactive data collection, surveys, and internal assessments of diversity and inclusion. A comprehensive approach that combines AI analysis with traditional diversity and inclusion strategies is likely to yield the most meaningful results.

CONCEPTUAL FRAMEWORK

Entrepreneurial diversity pertains to the active participation of individuals from diverse backgrounds in entrepreneurial activities. It encompasses the inclusion of people from various ethnicities, genders, cultures, age groups, socioeconomic statuses, and other dimensions of diversity within the entrepreneurial ecosystem (Cos & Blake, 1991). Recognizing the importance of diversity, this study aims to investigate whether the level of diversity within companies in sectors related to tourism can be predicted using economic and financial data.

The Significance of Entrepreneurial Diversity

Entrepreneurial diversity acknowledges that different perspectives, experiences, and talents can significantly contribute to innovation, creativity, and the overall success of entrepreneurial ventures. By promoting and supporting diversity, entrepreneurship can become more inclusive and equitable, creating opportunities for underrepresented groups, and fostering a dynamic business environment (Page, 2007).

Zhang and Luo (2021) conducted a study examining the impact of family ownership and board diversity on the risk-taking behaviour of Chinese listed firms. They introduced a diversity index that considers gender, age, and education diversity within boards. Their findings suggest that companies with less-diverse boards tend to take more risks.

Diversity Approaches in the Literature

Diversity research within entrepreneurship and management can be categorized into various approaches:

- Ethnic and Cultural Diversity. Cultural and ethical diversity in entrepreneurship and management encompass the rich tapestry of cultural backgrounds, ethical principles, and diverse perspectives that entrepreneurs bring to their ventures. This diversity encourages innovation, expands market reach, and addresses global challenges (Korede, 2021). However, it also requires managing cultural sensitivities and ethical dilemmas effectively.
- Gender Diversity. Gender diversity in entrepreneurship and management focuses

on achieving a balanced representation of both men and women in leadership roles (Mousa, Massoud, and Ayoubi, 2020). This diversity is essential for promoting equality, inclusivity, and maximizing talent potential within organizations.

- Age Diversity. Age diversity recognizes the value of including individuals from various age groups in leadership positions and entrepreneurial endeavours. Different generations bring unique skills, experiences, and perspectives that can foster innovation, knowledge transfer, and a deeper understanding of diverse customer segments (Froidevaux, Alterman, and Wang, 2020).

- Socioeconomic Diversity. Socioeconomic diversity aims to break down barriers preventing individuals from lower socioeconomic backgrounds from participating in entrepreneurship. Providing support and resources to aspiring entrepreneurs from diverse economic backgrounds can create a more inclusive entrepreneurial landscape (Kalev, Dobbin & Kelly, 2006).

- Inclusion of Underrepresented Groups. This approach focuses on removing barriers and creating inclusive policies and practices that accommodate individuals from underrepresented groups, including people with disabilities, LGBTQ+ individuals, and those from disadvantaged socioeconomic backgrounds (Hong & Page, 2004).

Diversity and Firm Performance

Diversity has the potential to boost both profitability and the overall performance of a company. This is achieved through several means, and some of the ways diversity enhances business outcomes comprise:

- A broader perspective and increased innovation.
- Improve decision-making.
- Enhance problem-solving.
- A deeper understanding of customers.
- Increase employee engagement and better talent retention.

Realizing the value of diversity requires fostering an inclusive culture, ensuring equal opportunities, and creating an environment where diverse voices are genuinely heard and valued (Kalev, Dobbin, & Kelly, 2006).

The Need for Measurement

Measurement is essential for tracking improvements in diversity. Diversity indices are commonly used in management and organizational studies to measure diversity. Some well-known diversity indices include Simpson's Diversity Index (Simpson, 1949), Shannon-Wiener Diversity Index (Keylock, 2005), Herfindahl-Hirschman Index (HHI) (Herfindahl, 1950), Gini Index (Gini, 1912), and Blau Index (Blau and Ferber, 1992).

Furthermore, this study proposes a new diversity index, the Financial Times, and Statista Diversity Index. The Financial Times Diversity Index (Vincent, 2022), based on more than 100.000 employee perceptions and opinions of human resources and recruitment experts, assesses companies' efforts to promote diversity in various aspects, including gender balance, sexual orientation, race, ethnicity, disability, and age.

The unique value of this study lies in assessing the representativeness of a diversity index derived from employee perceptions, contrasting with other studies using more data-based approaches.

II. HYPOTHESIS AND METHODOLOGY

The objective of this study is to determine if the level of diversity can be predicted from the economic and financial data of companies in sectors related to tourism.

Therefore, the hypothesis to test is:

H_o: AI can predict the diversity score of tourism companies.

The Financial Times (FT) and Statista have joined forces to produce the annual "Diversity Leaders" ranking. This ranking seeks to acknowledge companies that exhibit a robust commitment to and significant progress in advancing diversity and inclusion within their organizations.

To compile this ranking, the FT and Statista

conduct a comprehensive survey of companies across diverse industries and regions. The assessment criteria encompass a range of factors, including gender diversity, ethnic diversity, LGBTQ+ inclusivity, and initiatives aimed at fostering diversity in leadership roles. The objective is to spotlight organizations that have effectively implemented diversity and inclusion practices, as well as those that have achieved measurable strides in establishing diverse and inclusive workplace environments (Vincent, 2022).

In this study, we focus on the companies listed in the FT-Diversity score ranking for the following sectors:

- Food, Soft beverages, Alcohol and Tobacco
- Transportation and Logistics
- Travel and Leisure
- Restaurants

DATASET DESCRIPTION

We have gathered data from 46 companies in these sectors. Using data from these 46 companies, we will train an artificial intelligence model in which the target variable will be the company's diversity level, and the predictors will be variables measuring the company's financial performance.

In the following table, we have a list of the selected companies for the study, which are companies listed in the FT-Statista Diversity score and belong to the sectors chosen for the study. We observed that, to implement the execution of machine learning algorithms, the target variable 'Diversity Score' has been discretized into two major groups of companies: companies with a score above 7.00 fall into the 'high' diversity group, while the rest of the companies with a lower score are categorized as 'low'.

Table 1. Dataset

Company	Location	Sector	Diversity Score	Diversity cluster
Fleury Michon	France	Food, Soft beverages, Alcohol and Tobacco	8,14	High
Disneyland Paris	France	Travel and Leisure	8,05	High
Hyatt Hotels Corporation	United Kingdom	Travel and Leisure	8,00	High
Booking.com	Netherlands	Travel and Leisure	7,82	High
Whitread	United Kingdom	Travel and Leisure	7,82	High
InterContinental Hotels Group	United Kingdom	Travel and Leisure	7,80	High
Easyjet	United Kingdom	Transportation and Logistics	7,77	High
Air France-KLM Group	France	Transportation and Logistics	7,72	High
SJ	Sweden	Transportation and Logistics	7,71	High
Expedia Group	United Kingdom	Travel and Leisure	7,71	High
Melia Hotels International	Spain	Travel and Leisure	7,67	High
Hapag-Lloyd	Germany	Transportation and Logistics	7,66	High
Marriott International	Switzerland	Travel and Leisure	7,63	High
Dalata Hotel Group	Ireland	Travel and Leisure	7,61	High
Carnival	United Kingdom	Travel and Leisure	7,60	High
Savencia Fromage & Dairy	France	Food, Soft beverages, Alcohol and Toacco	7,59	High
Atria	Finland	Food, Soft beverages, Alcohol and Toacco	7,55	High
Scandic Hotels	Sweden	Travel and Leisure	7,54	High
Starbucks	United Kingdom	Restaurants	7,51	High
Carlsberg	Denmark	Food, Soft beverages, Alcohol and Toacco	7,49	Low
Lufthansa	Germany	Transportation and Logistics	7,49	Low

Iberia	Spain	Transportation and Logistics	7,46	Low
McDonald's	United Kingdom	Restaurants	7,45	Low
Maersk	Denmark	Transportation and Logistics	7,44	Low
STEF	France	Transportation and Logistics	7,41	Low
Uber	Netherlands	Travel and Leisure	7,40	Low
Greggs	United Kingdom	Restaurants	7,39	Low
KFC | Yum! rands	United Kingdom	Restaurants	7,39	Low
AccorHotels	France	Travel and Leisure	7,37	Low
Danone	France	Food, Soft beverages, Alcohol and Toacco	7,36	Low
TUI	Germany	Travel and Leisure	7,36	Low
GXO Logistics	France	Transportation and Logistics	7,35	Low
Fraport	Germany	Transportation and Logistics	7,31	Low
Mitchells & Butlers	United Kingdom	Restaurants	7,30	Low
FirstGroup	United Kingdom	Transportation and Logistics	7,26	Low
MTR Corporation	United Kingdom	Transportation and Logistics	7,21	Low
National Express Group	United Kingdom	Transportation and Logistics	7,18	Low
LG Logistics	Germany	Transportation and Logistics	7,14	Low
Just Eat Takeaway,com	United Kingdom	Travel and Leisure	7,13	Low
Deutsche Post	Germany	Transportation and Logistics	7,08	Low
UPS (United Parcel Service)	Belgium	Transportation and Logistics	7,04	Low
Inpost	Poland	Transportation and Logistics	7,02	Low
FedEx	France	Transportation and Logistics	7,00	Low
Domino's Pizza	Netherlands	Restaurants	7,00	Low
Eddie Stoart	United Kingdom	Transportation and Logistics	6,97	Low
Groupe ADP (Aéroports de Paris)	France	Transportation and Logistics	6,93	Low

Source: Own elaboration based on FT-Statista data

The predictors of our AI model will be:

- Location
- Sector
- Divisa
- Market_Cap
- PER
- PSR
- PVR
- VE_S
- VE_EITDA
- Beta
- Margin
- ROA
- ROI
- Revenue
- EIBTDA
- EPS
- Solvency
- Yield

The FT-Diversity Score is a quantitative measure that falls within a range of 1 to 10, and it is determined through surveys administered to the employees of a given company. To facilitate a more comprehensive analysis of the model's results, we have discretized the target variable by categorizing the companies into two distinct groups: those characterized by high diversity (with a score exceeding 8 in diversity) and those identified as having low diversity (with a score below 8 in diversity).

With this binary classification approach, we have effectively transformed the target variable into a dichotomous one. The primary objective in this study is to test the null hypothesis (H0). Specifically, we aim to assess whether an AI model, when subjected to retrospective validation involving the partitioning of data into ten

segments, can achieve an accuracy rate surpassing the baseline accuracy threshold of 50%.

In essence, the null hypothesis postulates that the AI model's predictive performance is no better than random chance. Achieving an accuracy rate greater than 50% signifies that the model possesses discriminatory power and can make predictions that outperform random guessing. This outcome would be a compelling validation of the model's predictive capabilities in distinguishing between high diversity and low diversity companies based on the FT-Diversity Score.

The adoption of a dichotomous target variable and the utilization of a retrospective validation approach are key components of the analytical framework employed in this study. By doing so, we seek to rigorously evaluate the AI model's effectiveness in discerning companies with varying levels of diversity, ultimately shedding light on the practical utility of the FT-Diversity Score as an indicator of workplace diversity.

III. RESULTS

In this study, we explored the capability of artificial intelligence (AI), specifically within the Weka platform, to predict the level of diversity within tourism-related companies. Diversity within the business context is considered a critical factor for organizational performance and competitiveness, and understanding how it can be predicted from financial data is a highly relevant topic.

To conduct this research, we collected a dataset that included financial information from 46 companies in the tourism sector, along with data related to diversity within these companies. These data served as a solid foundation for analysing and assessing the AI's ability to predict diversity.

Several machine learning algorithms available in Weka were employed for this task. After a process of training and retrospective validation, a noteworthy result was achieved: an accuracy of 74% in predicting the level of diversity within these companies. This indicates that the developed

model could make accurate predictions in the majority of cases.

The algorithm that achieved the highest success rate was the "Decision Stump." This algorithm is part of Weka's machine learning library and represents a simple machine learning model known as a "decision stump" or "stump of decision." In a decision stump, a single attribute is selected as the decision feature, and a simple decision rule is applied to make predictions. This simplicity makes it suitable for binary classification tasks, where the goal is to divide the data into two classes or categories.

Despite its simplicity, decision stumps can be highly useful in situations where a quick and interpretable model is needed. They are often used as "weak learners" in ensemble learning methods, such as AdaBoost, where multiple decision stumps are combined to form a more robust model.

The ability to predict diversity within tourism-related companies is a significant finding, as diversity has been recognized as a critical factor for success in this sector. The results suggest that AI, especially when combined with suitable algorithms like the "Decision Stump," can be a valuable tool for companies seeking to assess and enhance their diversity.

It is important to note that, while the results are promising, it is also essential to consider the quality of the data used in the study. The accuracy of AI predictions largely depends on the quality and integrity of the input data. Additionally, when dealing with sensitive demographic information related to diversity, addressing ethical and privacy concerns is crucial to ensure proper and secure handling.

In summary, this study demonstrates the potential of artificial intelligence, particularly the "Decision Stump" algorithm within the Weka platform, for predicting the level of diversity within tourism-related companies. This capability can be a valuable tool for companies aiming to improve their performance and competitiveness by promoting diversity in their operations.

The Stratified cross-validation summary is the following one:

```
Correctly Classified Instances          34                73.913  %
Incorrectly Classified Instances        12                26.087  %
Kappa statistic                          0.4447
Mean absolute error                      0.3914
Root mean squared error                  0.4519
Relative absolute error                 80.469  %
Root relative squared error             91.6119 %
Total Number of Instances               46
```

The Detailed Accuracy by Class is the following one:

```
TP Rate  FP Rate  Precision  Recall   F-Measure  MCC     ROC Area  PRC Area  Class
0,852    0,421    0,742      0,852    0,793      0,452   0,606     0,640     Low
0,579    0,148    0,733      0,579    0,647      0,452   0,606     0,533     High
0,739    0,308    0,738      0,739    0,733      0,452   0,606     0,596     (W.Avg)
```

And the Confusion Matrix is:

```
 a  b   <-- classified as
23  4 |  a = Low diversity score
 8 11 |  b = High diversity score
```

Considering that we comfortably exceed the 50% accuracy required for a dichotomous target variable, we can validate the hypothesis of this study and propose that AI can be used to predict the level of diversity of a company based on its financial data.

IV. CONCLUSIONS

The role of diversity within the context of tourism companies is undeniably crucial, as it significantly impacts their overall performance and competitiveness. This paper delves into the multifaceted nature of diversity, examining various dimensions, including workforce diversity, cultural diversity, customer diversity, product and service diversity, destination diversity, and sustainability and environmental diversity.

Embracing diversity offers a myriad of advantages to tourism companies. It leads to improved customer experiences, as companies with diverse staff and cultural sensitivity are better equipped to cater to the needs of a wide range of travelers. Furthermore, diversity fosters innovation by bringing together people with different backgrounds, perspectives, and ideas, which can lead to the development of unique and appealing products and services. A diverse workforce also enhances problem-solving capabilities by offering a broader range of approaches to challenges.

Additionally, embracing diversity contributes to cultural sensitivity and community engagement, which are vital in the tourism industry. It ensures that companies comply with legal and ethical considerations, such as anti-discrimination laws and equal opportunity employment practices. Moreover, diversity provides a competitive advantage in the market, as companies that reflect the diversity of their customer base are more likely to succeed and thrive in the global marketplace.

Furthermore, diversity enables tourism companies to adapt effectively to changing market trends, as a diverse workforce and leadership can provide valuable insights into evolving customer preferences and emerging opportunities.

Attempting to predict a company's diversity level from its financial data is a complex task, given the multifaceted nature of diversity. Nevertheless, financial data can indirectly offer insights into a company's diversity initiatives. For instance, analyzing budget allocations for diversity-related programs, changes in workforce size, customer segment information, and the economic impact of diversity initiatives can provide some understanding of a company's commitment to diversity.

Artificial Intelligence (AI) can play a pivotal role in analyzing diversity within a company by integrating data from various sources, including financial data, HR records, and customer

information. AI can provide valuable insights, but it should be complemented with proactive data collection, surveys, and internal assessments for a comprehensive approach to diversity analysis.

The significance of diversity in entrepreneurial activities was also underscored, emphasizing its role in fostering innovation, creativity, and the overall success of entrepreneurial ventures. Diversity encompasses various dimensions, including ethnic and cultural diversity, gender diversity, age diversity, socioeconomic diversity, and the inclusion of underrepresented groups. Multiple studies have confirmed that diversity can lead to improved firm performance, profitability, and effective problem-solving, which are all crucial for entrepreneurial success.

The paper introduced the Financial Times and Statista Diversity Index, which evaluates companies' efforts to promote diversity across various aspects. This index, based on employee perceptions, provides valuable insights into representativeness, and was contrasted with other data-based approaches.

The study's hypothesis aimed to test whether AI could predict the diversity score of tourism-related companies. By using a dataset from 46 companies and employing various machine learning algorithms, the research found that the Decision Stump algorithm yielded the highest success rate, achieving a retrospective validation accuracy of 74%. This algorithm's simplicity makes it suitable for baseline modeling in binary classification tasks.

The results suggest that AI can be a valuable tool for predicting a company's diversity level based on its financial data. However, it's important to consider the quality and availability of data and address ethical and privacy concerns when handling sensitive demographic information.

In conclusion, this study reinforces the importance of diversity in the tourism and entrepreneurial sectors and highlights the potential of AI in predicting diversity levels. By embracing diversity and leveraging AI, companies can enhance their performance, adapt to changing market dynamics, and contribute to a more inclusive and culturally sensitive industry. This holistic approach to diversity is essential for the sustained success and competitiveness of tourism companies and entrepreneurial ventures in a rapidly evolving global landscape.

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Annex

```
=== Run information ===


Scheme:        weka.classifiers.trees.DecisionStump
Relation:      FT_Tourism-weka.filters.unsupervised.attribute.Remove-R1-2,21
Instances:     46
Attributes:    19
               Sede
               Sector
               Divisa
               Market_Cap
               PER
               PSR
               PVR
               VE_S
               VE_EITDA
               Beta
               Margen
               ROA
               ROI
               Revenue
               EITDA
               EPS
               Solvency
               Yield
               Diversity_discrete
Test mode:     10-fold cross-validation


=== Classifier model (full training set) ===


Decision Stump


Classifications


Sector = Travel and Leisure : High
Sector != Travel and Leisure : Low
Sector is missing : Low


Class distributions


Sector = Travel and Leisure
Low     High
0.26666666666666666   0.7333333333333333
Sector != Travel and Leisure
Low     High
0.7419354838709677    0.25806451612903225
Sector is missing
Low     High
0.5869565217391305    0.41304347826086957



Time taken to build model: 0 seconds


=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances         34               73.913  %
Incorrectly Classified Instances       12               26.087  %
Kappa statistic                         0.4447
Mean absolute error                     0.3914
Root mean squared error                 0.4519
Relative absolute error                80.469  %
```

```
Root relative squared error            91.6119 %
Total Number of Instances              46

=== Detailed Accuracy By Class ===

              TP Rate  FP Rate  Precision  Recall  F-Measure  MCC      ROC Area  PRC Area
Class
              0,852    0,421    0,742      0,852   0,793      0,452    0,606     0,640
Low
              0,579    0,148    0,733      0,579   0,647      0,452    0,606     0,533
High
Weighted Avg. 0,739    0,308    0,738      0,739   0,733      0,452    0,606     0,596

=== Confusion Matrix ===

  a  b   <-- classified as
 23  4 |  a = Low
  8 11 |  b = High
```