Anexo I. Registro del Título del Trabajo Fin de Grado (TFG-BA)

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PROGRAMA: E6 Analytics GRUPO: A FECHA: 23/10/2024

Director Asignado: Balizón Cebada (Apellidos), María Jesús (Nombre)

Título provisional del TFG-BA:

The impact of data analytics on continuous improvement in business processes and talent management: an analysis in the European business context

Object of the Study:

This study aims to perform a predictive analysis to evaluate how the use of data analytics contributes to continuous improvement in both business processes and human resources management. Using the *European Company Survey 2019* database, predictive models will be built to anticipate how companies that adopt data analytics can improve their operational performance and talent optimization.

Research Questions:

In this context, three key research questions will guide the study:

1. What is the scope of the data in the European Company Survey 2019?
2. To what extent does the use of data analytics in business processes improve operational efficiency and business growth?
3. To what extent does the use of data analytics in human resources contribute to talent optimization and strategic decision-making in personnel management?

Methodology:

Data Collection:

The data used for this study will come from the *European Company Survey 2019*, which includes online questionnaires completed by employee representatives from various European companies. This survey provides data on the use of digital tools, organizational structure, and decision-making practices, including relevant information about the use of data analytics.

Predictive Analysis:

Machine learning techniques will be applied to predict the impact of data analytics on continuous improvement. The predictive models used will include:

- **Predictive regression**: To forecast the likelihood that companies using data analytics will experience improvements in their operational and talent management performance.
- **Decision tree models** such as Random Forest or K-Nearest Neighbors (KNN): To identify patterns in the data that reveal how different variables (innovation, collaboration, talent, etc.) are related to success in continuous improvement.
- **Cross-validation**: To ensure the robustness of the models and avoid overfitting, the dataset will be split into training and test sets, applying evaluation metrics such as Mean Absolute Error (MAE) or model accuracy.
- **Key Variables:**
    - **Dependent variable**: Use of data analytics to improve production or service delivery processes (*itprodimp* variable).
    - **Independent variables**: Aspects such as innovation (*innoprod, innoproc, innomark*),

teamwork (*teamex, teasin*), employee motivation and training (*motimon, training*), and business growth (*profit, prodvol*) will be considered.

- **Predictive Models:**
  - **Logistic predictive regression**: To measure the probability of significant improvements in the performance of companies using data analytics.
  - **Decision trees**: To identify the key factors influencing continuous improvement, both in business processes and in human resources management.
  - **K-Nearest Neighbors (KNN)** or **Random Forest**: To predict the specific impacts of data analytics on continuous improvement, based on patterns observed in the data.

Database:

The database comes from the *European Company Survey 2019,* collected through online questionnaires directed at employee representatives across companies in the European Union. The survey covers aspects related to innovation, organizational structure, the use of technological tools (including analytics), and employee representation. This data will enable the development of predictive models to assess the role of data analytics in improving business processes and human resources.

Preliminary Index:

1. Introduction
2. Literature review on the use of data analytics in continuous improvement
   2.1. Continuous improvement
   2.2. Use of data analytics in continuous improvement
   2.3. The impact of the uso of data analytics in business processes and talent management
3. Methodology
   3.1. Description of the Database: European Company Survey 2019
   3.2. Business variables
   3.3. Human resources variables
   3.4. Predictive models (Regression, Decision Trees, KNN)
4. Results of the predictive analysis
   4.1. Impact of data analytics on business process improvement
   4.2. Impact of data analytics on talent and human resources management
5. Conclusions and recommendations

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Work schedule:

	Week 21st October	Week 28th October	Week 4th November	Week 11th November	Week 18th November	Week 15th November	Week 2nd December
Review of the literature							
Methodology							
Results							
Conclusions							
General revision of the TFG							

Firma del estudiante:

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Fecha: 23/10/2024