DETERMINE IF HOSTING THE OLYMPIC GAMES IS BENEFICIAL TO THE ECONOMY OF A COUNTRY

Document Information

Document Title	*Determine Hosting Benefit – Determine if hosting the Olympic Games is beneficial to a country's economy – and if so, use this information to predict how beneficial it would be to a hosting country*
Document Owner	Axel Ind
Version	~~0.2~~1.0
Status	~~Unfinished~~Written, but not implemented.
Date	18/08/2020

VALUE: ***DIFFICULTY:*** ***TIME ESTIMATE: 1 Day*** ***DATA AVAILABILITY: All***

1. BRIEF DESCRIPTION

~~*Insert a 1-2 sentence description of this use case. Be sure to include a starts when / ends when statement to clarify the beginning and ending points of the scope of this process or piece of functionality.*~~

This use case serves to answer the question: "Has hosting the Olympic games (Summer or Winter) generally been a financially beneficial decision ~~to~~for the hosting country?" The use case starts when a data scientist asks this question and ends when an answer (a correlation value) has been derived. If This value is above 60%, the answer is "yes", otherwise it is "no".

Commented [JI1]: Is this a prediction or just yes no answer i.e. is it beneficial? Yes/ No. If so, how beneficial? Can we predict the benefit i.e. the impact on the economy e.g. the GDP is predicted to increase by x% in the first year, then…..

2. ACTORS

~~*List any roles or systems involved with this process or use case. A person or system fulfilling a role will be the actor in one of the steps.*~~

- User (Data Scientist)
- Predictive System (ML or traditional statistical)

3. Pre-Conditions

Clean prepared Financial data about GDP trends.
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- Clean prepared historical athletic data about Olympic host nations
- Any additional data tables required including cross-references have been built
- An implemented Predictive System.

• Measures of Success

For Classical Statistics:
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  - An adjusted correlation coefficient of 60% of more with hosting the games and GDP increasing.
- For an ML system:
  - A predictive test accuracy of at least 80% after training the model.
  - Over 60% of all nations predicted to have a GDP increase if passed as the next host nation to the model.

4. Basic Flow

Start:
3.- User initiates the task and parameterizes the Predictive System.
2. **Generate National Olympic-GDP Data**:
4.- Summarize the relevant data into information about average GDP change and Olympic outcomes into a format suitable for the chosen Predictive System.
3. **Pass Data**:
5.- Pass the Generated Data to the Predictive System.
4. **Predict**:
- Predictive System determines an appropriate score mentioned in Measures of Success.

Alternate/Exception Flows

2.1. **Handle Data Generation Failure**:

- When Main Flow Step **Generate National Olympic-GDP Data** fails to parse or transform the given data for use in the model, inform User of data error and allow selection of new data sets.

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2.2. **Reattempt or Terminate**:

- When **Handle Data Generation Failure** occurs, either moves to main flow step **Generate National Olympic-GDP Data**, or terminates.

4.1. **Prediction Failure:**

- When **Predict** fails to meet the criteria in described in Measures of Success, either move to **Start** step and re-parameterize system, or terminate.

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9.6. Post Conditions

Post-conditions indicate what must be true of the state of the system after the steps of the use case are complete. These should be true for the basic flow and all alternate flows. Exception flows may have different post-conditions or none at all.

- A Measure of Success score is obtained.
- If Predictive System is a trainable model: then a trained model is obtained.
- Data sufficient to graphically illustrate results is obtained.

10.7. Visual Model

Many use cases are enhanced by a visual model. A simple work-flow diagram can be used to visually show the sequence of steps and alternate and exception flows. A user interface mock-up can be used to show a possible representation of these user requirements in an interface (or a desired representation). In some organizations, a more formal UML diagram may be appropriate.

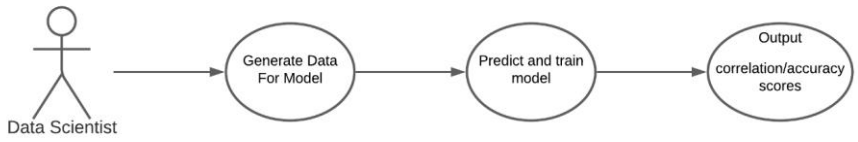

Figure 1 - Diagramatic Representation of Use Case

Revision History

V.	Date	Author	Description	Status

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0.1	16/08/2020	Axel Ind	Began Writing Use Case	Complete
0.2	17/08/2020	Axel Ind	Added Visual Model	Complete
1.0	19/08/2020	Axel Ind	Finished Use Case, added post-conditions.	Complete