**2. RESULTS**

All models give excellent results describing the full process for different objects (see Appendix B). For most objects, models describe more than 99% of data variation excepting Canada (0.97-0.96), France (0.98), Germany (0.98-0.97), Argentina (0.99-0.88), and Sweden (0.97) where the values are slightly lower. The “worst” p-value is 2.437E-12, which denies any chance to exclude some model from the analysis on this step (See picture 7). In most cases, the choice between models based on its fitness is equivalent, while the prognosis given by those models could be significantly different. For example, the world trend in positive and negative models by 2050 would be 7392 and 2406 TWh respectively (1591 TWh by the end of 2020).

**Picture 6. The best and the worst models training result.**

The results of success analysis for those models (See Appendix C) is represented in Table 1.

**Table 1. The models consistency check brief results.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ***Logistic Model*** | | | ***Bass Model*** | | | ***Gompertz Model*** | | |
| ***Basic equation*** | ***Variable upper limit*** | ***Variable upper limit, variable costs*** | ***Basic equation*** | ***Variable upper limit*** | ***Variable upper limit, variable costs*** | ***Basic equation*** | ***Variable upper limit*** | ***Variable upper limit, variable costs*** |
| **WORLD** | ***SU*** | ***U*** | ***U*** | ***U*** | ***U*** | ***G\**** | ***G*** | ***G*** | ***G*** |
| **EUROPE** | ***U*** | ***G*** | ***G*** | ***G*** | ***G\**** | ***G*** | ***G*** | ***G*** | ***G*** |
| **NORTH AMERICA** | ***SU*** | ***SU*** | ***SU*** | ***G*** | ***G\**** | ***O*** | ***U*** | ***U*** | ***U*** |
| **SOUTH AND C. AMERICA** | ***SO*** | ***SO*** | ***SO*** | ***O\**** | ***SO*** | ***O*** | ***SO*** | ***SO*** | ***SO*** |
| **ASIA PACIFIC** | ***SU*** | ***SU*** | ***SU*** | ***G*** | ***U*** | ***G\**** | ***SU*** | ***SU*** | ***SU*** |
| **CANADA** | ***SO*** | ***SO*** | ***SO*** | ***SO*** | ***SO*** | ***O*** | ***U\**** | ***O*** | ***U*** |
| **USA** | ***SU*** | ***SU*** | ***SU*** | ***G*** | ***G*** | ***G\**** | ***U*** | ***U*** | ***U*** |
| **ARGENTINA** | ***SU*** | ***SU*** | ***SU*** | ***SU*** | ***SU*** | ***SU\**** | ***SU*** | ***SU*** | ***SU*** |
| **BRASIL** | ***SO*** | ***SO*** | ***SO*** | ***G\**** | ***G*** | ***G*** | ***SO*** | ***SO*** | ***G*** |
| **UK** | ***G*** | ***O*** | ***O*** | ***O*** | ***SO*** | ***O*** | ***O*** | ***O*** | ***G\**** |
| **GERMANY** | ***SU*** | ***SU*** | ***U\**** | ***SU*** | ***U*** | ***U*** | ***SU*** | ***SU*** | ***SU*** |
| **FRANCE** | ***SU*** | ***SU*** | ***SU*** | ***O*** | ***SU*** | ***SU*** | ***U*** | ***SU*** | ***G\**** |
| **SWEDEN** | ***SO*** | ***SO*** | ***SO*** | ***G*** | ***SO*** | ***SO*** | ***G\**** | ***SO*** | ***U*** |
| **CHINA** | ***SU*** | ***SU*** | ***SU*** | ***SU*** | ***SU*** | ***SU*** | ***G\**** | ***SU*** | ***G*** |
| **AUSTRALIA** | ***SU*** | ***U*** | ***U*** | ***SU*** | ***SU*** | ***U*** | ***U*** | ***U*** | ***G\**** |

\* – The best model;

SU – Substantial Underestimation (Absolute error and Relational error more than 25%);

U – Underestimation (Absolute error or Relational error between 5% and 25%);

G – Good (Absolute error or Relational error within 5% divergence);

O – Overestimation (Absolute error or Relational error between -5% and -25%);

SO – Substantial Overestimation (Absolute error and Relational error below -25%).