Tomas Bata University in Zlín
Faculty of Management and Economics

MASTER'S THESIS REVIEWER'S REPORT

Student's name: Bc. Anhelina Menchenko

Master's Thesis Reviewer (MT): Ing. Lubor Homolka, Ph.D.

MT topic: How Can Artificial Intelligence Enhance Economic Effectiveness: A Comparative Study between the Czech Republic and Ukraine

Acad. year: 2023/2024

Notes on completing the report:
1. *A - fulfilled very well with no remarks, B - fulfilled very well with minor remarks, C - fulfilled at an average level, D - fulfilled with deficiencies, E - fulfilled but with significant deficiencies, F - not fulfilled.*
2. *If any criterion is graded F, the thesis must be evaluated as unsatisfactory overall, not meeting the criteria for the MT defence, and such a thesis cannot be recommended for the defence.*
3. *MT Reviewer must comment verbally on each evaluation criterion!*

Assessment criteria: **Assessment**

1. Thesis Objectives and Methods	D

The commentary focuses on: clarity of the formulation of the thesis objectives and the methods used in the thesis elaboration; evaluation of the objectives of the thesis following the thesis theme; the methods and procedures chosen to fulfil the thesis objectives.

The thesis objective is clearly outlined in the guidelines and in the Introduction. Unfortunately, assessing whether some of the guidance points and objectives were fulfilled is difficult. For example, research objective 2 should investigate the effect of AI adoption on productivity, efficiency and competitiveness indicators. There are several paragraphs in the text that mention all said indicators. However, no conclusion is dedicated to each objective, and the reader is left to read between the lines to make a conclusion by themselves. The same applies to hypotheses.

Hypotheses are phrased as general theses or research premises, but the author's intent is clear. Unfortunately, the evaluation of the hypothesis is not explicitly presented in the thesis.

Section 10 is devoted to the "role of AI as a predictor of GDP". Neither the theses guidelines nor the research objectives ask for a predictive model. On the other hand, the thesis should focus on impact evaluation (prediction is not an impact/effect analysis).

The abstract states, "In addition, the research develops an AI model capable of predicting the impact of the variables that most affect GDP, including AI." Unfortunately, I was not able to find such a model in the thesis (I assume that the simple linear regression model is not considered as an AI model). Moreover, on page 59, the author states: "Given the limitations in data availability and the difficulty of forecasting the impact of AI on GDP, it was decided to exclude AI as a factor in the forecast model."

Methods are not presented after the introduction or in the theoretical part. It is unclear, for example, why the training/testing set was used. The design of the survey is left to the practical part.

2. Theoretical Background	B

The commentary focuses on: the content of the critical literature research; the appropriateness of the chosen domestic and foreign literature sources; the method of citing sources in an adequate manner.

The theoretical background is written on 15 pages and provides all necessary information about the selected indicators (efficiency, innovativeness, job creation, ...). Topics on regulation are detailed in the practical part. The theoretical part does not describe the methods used as mentioned before.

3. Practical Application – Analysis	B

The commentary focuses on: the use of knowledge from theory, its appropriateness of application; sufficient description of the process of application of the methods of work; overall assessment of the current state; sufficient substantiation of the conclusions of the analyses; the difficulty of data collection and processing.

The practical part is a cornerstone of the thesis as it details governmental & regulatory environments in selected countries. I appreciate an overview of key use cases as well as the distinction between the risk of taking/not taking an opportunity for an AI application. Section 10.1. to 10.6 are better suited for a theoretical part, though. Some parts of the text are unclear. For example: "Essentially, the approach consisted of setting up and conditioning a Linear Regression model, using the training dataset to familiarize the machine with the nuances of Ukraine's economic trends." What are these conditions and nuances? The description of the data is also missing. The author writes, "The table below shows the data used for the purpose of model development for Ukraine." on page 60, but no table is presented. Was the analysis performed on the cross-sectional or (possibly aggregated) time-series data? Again, the reader is left to guess.

4. Practical Application – Project/ Research	D

The commentary focuses on: the connection of the solving part of the thesis to the theory and to the analyses results; supporting the proposals with appropriate arguments; meeting the objectives set. For research-oriented MTs, the focus should be on discussion of the results and their evaluation.

Some of the results from the regression analysis might be misleading. Regression coefficients are scale-dependent and, as such, are not directly comparable unless the features (independent variables) are identical. On the other hand, inferential tests (t-test) are not computed. Unfortunately, the regression models do not consider AI adoption. This means that one of the thesis aims (impact evaluation) cannot be assessed by the model. Moreover, due to the imprecise definition of variables, the analysis seems to describe instantaneous effects, although economic systems are dynamic. But that's a minor remark, as the creation of a model was not the main goal of the thesis.
The thesis concludes with a survey that seems to be appended to the thesis. There is no mention of the survey in the methodology section at the beginning of the work. In fact, it only appears in the Abstract and then in the Practical part without further elaboration to which research objective it connects.

5. Formal Layout	C

The commentary focuses on: logical coherence of the text of the thesis; use of correct terminology; use of the prescribed standard of citation of sources; appropriate linguistic and graphic level.

The language quality of the work is at a high level. The correct terminology is used throughout the text. The structure of the work seems to be the biggest issue. Some parts of the practical part should be in the theoretical part. The citation norm is used appropriately. Books Agrawal & Goldfarb (2019) and Makarenko, Vovchenko & Tishchenko (2023) in the thesis guidelines were not used in the thesis; Johannessen (2022) is written as Johannessen (2020) in the Bibliography and the last book from the thesis guidelines by Munoz, Naqvi (2018) is used in the text but missed in the Bibliography.
There are a few formal mistakes in the work, such as "In the table below I have depicted" while referring to Figure (appears in other places in the work) or "the photo below is a summary that shows" on page 60. Also, the figure caption should be above the figure.

Overall thesis assessment*	C

I have mixed feelings after reading the thesis. The depth of the work is astonishing in several passages. It was a pleasure to read it paragraph by paragraph. I appreciate own author's opinion and commentaries. Unfortunately, the structure and sticking to the original plan (expressed in the thesis guidelines) are not the strongest attributes of the thesis and make it difficult to evaluate and understand in depth.

* The final grade is not an arithmetic average of the individual criteria for assessing the thesis.

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Questions for the defence:

1. Please rewrite an abstract to correctly describe the thesis content.

2. Explain the use of training and testing data and whether there is any AI model in the thesis.

The thesis **fulfils** the criteria for the defence of the MT. The thesis **is recommended** for the defence.

Date 16.05.2024

Signature of MT Reviewer