MUN I

Annex No. 10 to the MU Directive on Habilitation Procedures and Professor Appointment Procedures

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University	
Applicant	Ahad Zareravasan
Habilitation thesis	The Business Value of Business Intelligence & Analytics (BI&A)
Reviewer	Prof. dr. Jurij Jaklič
Reviewer's home unit, institution	University of Ljubljana, School of Economics and Business

General - About the thesis

This thesis addresses the issue of delivering business value from Business Intelligence & Analytics (BI&A), providing insights and adding to the body of knowledge about the different elements of the value chain. While the questions of how BI&A delivers business value and what are the necessary and sufficient conditions for the realization of high value are not new and the literature in this area has been significantly growing in recent years, the issues are relatively complex and there are still many open questions. Some of these are addressed by the applicant in the thesis.

The thesis is based on eight papers that the applicant and his co-authors have published, most of them in important and respected journals in the field of Business Management or, more narrowly, Information System Management, which is already a pretty good indicator of the relevance and quality of the research work or contribution in the field.

Although the individual articles address relatively specific questions of the individual phases of the BI&A value chain, the thesis appropriately combine them into a whole, using the well-known BI&A Business Value Framework (Trieu, 2017) as a link between the research questions of the articles. This shows the clear focus and coherence of the applicant's research work in this field.

Topicality and originality of the research topic, its importance to the field, and main results

The field of BI&A is of great importance due to the widely recognized high potential and strategic importance of BI&A, but at the same time the potential business value is not always realized and many projects in this area are failing, as both professional and research literature has noted. BI&A also has certain specificities in terms of delivering value, when viewed through the perspective of information systems, but also when observed through the lens of managerial initiatives and processes. As the value process or the BI&A value chain is complex, there are also many different drivers of value. Therefore, there are also numerous issues that are relevant to explore. Some of these are addressed in the thesis presented here. I consider the following to be particularly relevant:

- Issues regarding the provision of assets, i.e. the BI&A conversion process, which is tackled in the articles "A Practical Framework for Assessing Business Intelligence Competencies of Enterprise Systems Using Fuzzy ANP Approach" and "Multi-objective Model for Intelligence Evaluation and Selection of Enterprise Systems", as it is a part of the value chain that is under-researched.
- The study on the adoption of BI&A "Business Intelligence Systems Adoption Model: An Empirical Investigation". Although some other studies on this issue (e.g. in the context of SME) can already be found, this paper is about the validation and application of some of the more general theoretical frameworks (adoption theory and TOE framework) in the field of BI&A.
- Contribution to the understanding of the BI&A competitive process in "The role of business analytics capabilities in bolstering firms' agility and performance", which provides a more detailed insight into the link between the use of BI&A and firm performance.

Structure of the thesis

The thesis is structured as a collection of eight articles, which the applicant positions in the into a comprehensive BI&A business value framework, which can also be seen as a BI&A value chain, while pointing out also research gaps that indicate the relevance of individual articles and their contribution to the body of knowledge in the field. The articles are positioned in the thesis according to the sequence that corresponds to the value chain.

One could question how certain articles are positioned at a particular point in the framework, e.g. whether the analysis of the critical success factors of BI&A really belongs only in the phase of (in)effective use of BI&A assets. But the reason for such doubts is that some of the BI&A value challenges and mechanisms go beyond the boundaries of the individual phases of the process, and the boundaries are also a bit blurred sometimes.

Overall, the structure of the thesis is therefore appropriate, but the presentation could be slightly improved in some places. In the first part, despite the importance of the issue, there is a bit too much emphasis on the definition of BI&A, at the expense of a more in-depth discussion of the business value of BI&A, which is the focus of the papers and the thesis as a whole. It would also have been useful to present the specificities of delivering BI&A business value compared to other types of information systems, managerial approaches, and/or processes in order to substantiate the relevance of the research. The summaries of the articles do not give enough emphasis to the findings and they very much highlight the limitations of the research. At the end of the thesis, I would have expected a synthesis of the findings - a link between the findings of the individual studies, as is nicely done at the beginning to position the research questions. However, all this does not diminish the importance of the individual studies or the contribution of the entire research opus to the body of knowledge.

Used research methods and procedures

Given the nature of the thesis as a coherent collection of several articles, it is understandable and reasonable that different research methods are used in the individual papers. I believe that the research methods chosen in the individual papers are appropriate given the nature of the research questions. Most of the papers are based on primary data from surveys, and one is based on a case study. The authors analyze the data obtained using Exploratory Factor Analysis or Structural Equation Modelling (PLS in particular).

The applicant is clearly aware of the limitations of the research and take into account the context in which each study was carried out when drawing conclusions and making

suggestions. He understands the extent to which results can be generalized, and when the application of findings needs to be adapted to a different context of use.

However, there are some elements of the research that could be debated or argued against.

For example, the applicant mentions several times in the introduction that in the BI&A value chain (framework), certain levels of the previous stages are a necessary condition for reaching a certain level of the following stages. However, Structural Equations Modeling, that is mainly used in the papers, can essentially be used to show sufficiency (Dul, 2016). If one wanted to answer the question about the necessary levels of each phase for the next phase, the appropriate analytical approach would be Necessary Condition Analysis (Dul, 2016).

Furthermore, in the article "An Investigation of BI Implementation Critical Success Factors in Iranian Context", the author should clearly and very explicitly define success of BI&A implementation project. The understanding of the BI&A success can be very diverse, which can also affect the understanding and importance of the success factors, and in the case of a survey, also the answers of the respondents.

In the paper "The role of business analytics capabilities in bolstering firms' agility and performance", the conceptual research model could be challenged in the part concerning the direct impact of BA capabilities on Innovative (Innovation?) Capabilities. This impact is probably mediated by Information Quality, as indicated by the rationale of hypothesis 1b, which makes it clear that Innovation Capabilities are a consequence of the Quality of Information that can be provided by BI&A capabilities: "Past studies showed that the importance of firms' capability to extract environmental information to reveal new business opportunities and evolve/innovate consistently".

Contribution to practice and to the body of knowledge

The applicant's research results represent an important contribution to business practice, as well as an important contribution to science.

Organizations can directly use the model to select the appropriate tools and technologies, as far as the criteria are concerned. Similarly, knowledge of critical success factors can make a significant contribution to the success of BI&A deployment and use, and in turn to business performance. Similarly, for many organizations (including public organizations), an understanding of the mechanisms of the BI&A competitive process can be important and useful.

In terms of their contribution to science, the individual articles are pieces in the puzzle that contribute to the body of knowledge of understanding the BI&A value chain. They cover gaps that have been less explored or address specific aspects of the topic. The work also contributes to the application of the theory of adoption and the TOE framework to the specific field of BI&A.

Reviewer's questions for the habilitation thesis defence:

- Research results show that national culture (country factors) not only influences the BI&A competitive process, but also the BI&A use process (the way BI&A systems are used, acceptance), and consequently can also be important in BI&A investment decisions. Can you elaborate on how your research could be upgraded to take this into account?
- What is your understanding of the success of BI&A implementation? Considering the possible definitions, how do you think the ratio between the importance of organizational and technological success factors is changing.

- To what extent are the promises of lower costs of deploying BI&A based on the use of modern self-service data analytics tools actually being realized, and whether/how this would affect the results of your research?
- Given that the article (Trieu, 2017) was published in 2017, where do you think the key research gaps in understanding BI&A business value remain to date? Based on the results of the research, could the framework be further developed? If yes, in what direction?

Conclusion

Despite some room for improvement, Ahad Zareravasan's work in the field of BI&A is undoubtedly of high quality, appropriately focused, addresses relevant research problems and represents an important contribution to the body of knowledge. There has also been noticed an improvement in the maturity of the work over time, which is promising for his future work in the field. The subject matter falls within the narrower field of IS Management, and more broadly within the field of Business Management.

The habilitation thesis entitled *The Business Value of Business Intelligence & Analytics (BI&A)* by Ahad Zareravasan **fulfils** requirements expected of a habilitation thesis in the field of Business Management.

Date: December 29, 2022   Signature: