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**Review of the doctoral dissertation of Mrs. Magdalena Żabicka-Włodarczyk, titled „Big data and advanced business analytics in customer relationship management in the retail settings”, written under scientific supervision of prof. dr. hab. Ewa Stańczyk-Hugiet**

**and dr. inż. Krzysztof Michalak (co-supervisor)**

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The basis for the review was a letter from prof. Estera Piwoni-Krzeszowska, the Dean of the Faculty of Management, was dated October 25<sup>th</sup>, 2022. A necessary documentation concerning the preparation of the review of the doctoral dissertation of Mrs. Magdalena Żabicka-Włodarczyk titled *„Big data and advanced business analytics in customer relationship management in the retail settings”* was attached to this letter. The doctoral dissertation was written in English.

The assessment of the doctoral dissertation was prepared in accordance with the Act of March 14, 2003 on academic degrees and academic title (Dz.U., 2017, item 1789).

The review of this doctoral dissertation was prepared based on criteria that allow determining compliance with the requirements in the context of the original solution of a scientific problem, the general theoretical knowledge of the PhD student in the discipline of management studies, as well as her ability to conduct independently scientific work.

In my review, I focused on assessing especially the way of formulating the research problem and the topic of the dissertation, research objectives, research methodology, the layout of the content presented, as well as the substantive content and formal structure of the dissertation. The above elements became the basis for the formulation of final opinion. The attached

documentation indicates that this PhD thesis is positioned in the discipline of management studies.

In general, in my opinion the dissertation by Mrs. M. Żabicka-Włodarczyk meets the current legislation criteria and may be the basis for both public defense and, if it is positive, for awarding her a doctoral degree in the discipline of management studies.

#### **I. Topic, statement of the research problem and presentation of the aims and objectives**

The paradigm of creating long-term and valuable relations with customers has been the basic assumption of contemporary marketing approach for the last few decades. To manage these relations effectively businesses need to acquire and manage current, valuable information regarding customers behaviors and experiences to make proper decisions. At the same time businesses face drastic increase in the amount of data and information available for them. Big data is a huge leap into the digital era where businesses generate a huge data in any sectors of the economy. They are collected from a variety of sources including transactions with customers or their activities in social media. That type of data helps businesses understand the patterns of customers' behavior, help them to portray type of buyer persona, acquire customers' insights to plan effective strategies for creating long-term and profitable relations. The data are too large however to be dealt with by traditional data-processing application software. Therefore, the CRM system requires accurate data analytics to manage the relations. It is thus pivotal to examine the role of Big Data within CRM strategies. Taking this into consideration the issues covered in the reviewed dissertation are important, interesting, and extremely topical at the same time. The originality of the dissertation is manifested in a comprehensive discussion of the possibilities of using Big Data in the process of managing customer relations in specific context of non-contractual relations taking place in fashion retailing industry.

In her doctoral dissertation, Mrs. Żabicka-Włodarczyk discussed the issues of relation between Big Data and customer relationship management, potential barriers hindering gaining value from Big Data in a specific context of clothing retailing industry. The selection of that specific industry seems to be a very good choice as it is developing dynamically and customers' experiences and the strength of the relations results more from emotions they have during purchasing process than rational premises. To create these unique, memorable experience

data on their motives and behaviors is needed. In the introduction, the Author also indicated the research gaps in the existing literature giving a strong rationale for conducting the research in the selected area.

After she had identified research gaps, she formulated the aims of the research. The Candidate aims at reviewing the concept of Big Data analytics and exploring various aspects of CRM from the perspective of the potential value steaming from Big Data analytics as well as to identify possible obstacles for Big Data analytics deployment in a retail clothing to improve relations with customers. The theoretical background supporting the choice of the research problem and aims of the research was properly presented in the Introduction part. The PhD Candidate identified the research gap correctly and the aims are also correctly formulated.

The structure and content of the dissertation refer strictly to the aims of the research and accepted theoretical assumptions. The reviewed doctoral dissertation comprises 255 pages and includes a theoretical and empirical study. The thesis comprises five chapters, introduction and concluding remarks coming from the research. It also includes bibliography, lists of figures, list of tables and appendices. The Introduction provides information regarding the objectives, research motivations, previously conducted research in the area of CRM and Big Data as well as research gaps. It also outlines the structure of the dissertation.

The dissertation is based on a broad analysis of the worldwide and current literature on the subject. The selection of literature certainly constitutes the basis for the statement of the author's deep theoretical knowledge and knowledge of the current world trends in the field of CRM and Big Data.

Concluding my general remarks, I would like to state that the whole concept of the dissertation is consistent, logically connected, and complete. Analyzing the aims of the dissertation and structure, as well as its content, I conclude that the dissertation is a scientific one, and meets the requirements of the applicable law. As such it deserves in general a positive assessment.

## **II. The assessment of the scientific content of the dissertation**

According to the law a PhD dissertation should confirm the candidate's general theoretical knowledge in a specific scientific discipline, and the ability to conduct scientific work on her

own. The analysis of the content of the dissertation allows me stating that the author has shown good knowledge of the discussed issues.

**The first chapter of the dissertation entitled “Big Data and advanced analytics”** is a review of the theoretical background of the concept of Big Data and Big Data analytical methods. The PhD Candidate started from the conceptualization of this concept and its description with the use of extended approach to “Vs” model, including volume, velocity, variety, value, veracity, variability, and visualization. Next, she focused on analyzing internal and external requirements needed to make Big Data a valuable resource for the organization as well as firm’s capabilities required to extract identified by her informational, transactional, transformational, strategic, and infrastructural value. The proposed idea of Big Data conceptualization had been presented in Figure 1. I find it very clear, and consistent visualization of accepted approach for theoretical discussion. The way she presented and discussed methods used to analyze Big Data should also be appreciated. An important part of this chapter is a presentation of different Big Data maturity models, which the author perceives as an important factor determining the possibilities of implementing the concept in the firm. Although the information presented is interesting and correct it was quite difficult to follow the chosen for discussion models. To make it clearer it would be useful to enumerate them in the first place and then discuss one at a time. Also, if the author indicates on page 28 “The first model ...” then I would expect to indicate the second, third, etc. It would also make the considerations clearer. My third remark refers to the fact that the Candidate for a PhD degree should not only present the identified models but also comment on them and compare which I missed in the reviewed dissertation. However, in general, the discussion conducted in this chapter is a result of well prepared, critical analysis of literature and its value results from systematizing the existing knowledge in this area.

The second chapter titled **“Towards data-driven customer relationship management”** includes the review of the CRM concept. I appreciate the author stressed different approaches to CRM conceptualization, concentrating on both narrow, tactical approach related to technology solution; and wide, strategic approach associating CRM with a holistic company strategy. After presenting a brief history of marketing concept from instrumental perspective, she focused on relational approach referring to Nordic School of Service Marketing. As she noted correctly, the relations should result in creating unique value for both parties, e.g. the customer as well as the company. Basing on the Vargo and Lusch theory of service-logic domain

she stressed that value should involve an interactive collaboration and thus should be co-created by the customer. After providing theoretical background on CRM Mrs. Żabicka-Włodarczyk concentrated on indicating the role of Big Data and advanced analytics in the process of managing relations with customers. She stressed that information technologies support that process enabling collecting and processing large amount of data about customers' behavior organizations have access to into knowledge.

There are some minor remarks regarding this part of the dissertation I would like to mention. Firstly, Mrs. Żabicka-Włodarczyk is right stating that along time creating relations referred not only to customers but other market entities. However, I believe that on pages 38, 43 she mistakenly indicated shareholders, as a group of these entities, associating them with e.g. suppliers and employees. I think she meant stakeholders there – the group including both shareholders and suppliers/employees. Secondly, when discussing drivers of CLV it is important to indicate not only cross-selling but also up-selling as key factor determining CLV. The stronger are relations with the customer the more willing s/he is to purchase more expensive products from company's offer that satisfy customers' needs in a better way.

The next, third chapter, titled "**Business strategy in the fashion retailing**" introduces to the specificity of the sector chosen by the author for further analysis. She first characterized the sector focusing on the necessity of flexible, systematic, and dynamic approach to clothing retail strategy formulation. The development of omni-channel concept as well as digitalization and technological innovations were stressed as key determiners of the sector growth. Further, the Candidate has concentrated on strategies retailers adopted during pandemic crisis and characteristic and prospects of the Polish fashion retailing had been discussed.

For the future scientific work, I encourage the author to first use the whole name of the organization or indicator she refers to and put the abbreviation in brackets before using just abbreviation. It makes the information presented clearer. Also, the author should cite the sources more precisely. I refer here to figure 3 (p. 79) and table 5, 6 and next (p. 80-82). I would consider referring to the website address where the data were presented.

Summarizing this part of my review, I would like to emphasize that the theoretical part of the dissertation is well prepared. It was prepared based on appropriate literature review. I positively assess the selection of sources and their use. The author interpreted the literature in a reliable and cross-sectional manner, which allows for a comprehensive approach to the

discussed issues. By citing the definitions and opinions of other Authors and referring to the results of other researchers, the PhD Student conducted the critical analysis and was able to formulate her own opinions. She proved a logic and clarity of reasoning.

The next chapter, titled “**Empirical research – case description and data analysis**”, is a methodological and empirical one. At first, she focused on methodological and philosophical (ontological and epistemological) assumption of the conducted research. She clearly presented a rationale for choosing a specific methodology and methods to collect and analyze the empirical data. In the reviewed dissertation qualitative research had been used in a form of case study method. It was conducted with the use of interviews triangulated with participative observation and analysis of internal documents. The author also used a series of experiments on transaction data provided by the selected fashion retailer. The methodology was presented in a comprehensive way, step by step indicating actions taken by the researcher and tools used. This was followed by the description of the case retailer. Using a set of criteria, she identified a level of omni-channel maturity of the selected retailer. I appreciate her approach to the way she formulated conclusions. She was very careful and critical at the same time in this process showing that they should not be taken too quickly. When analyzing omni-channel maturity of the case retailer she proofed that the studied retailer had in place most of the options, functions, and channels, which could suggest that the company reached the maturity on a satisfactory for the customer level. However, she noticed that one should not decide on the level of maturity basing only on the fact that something was present but other aspects should be considered also, including how the present aspect works. That type of Candidate’s approach showed her maturity as a researcher. A very important part of this chapter is the presentation of the research results both in descriptive and graphic form. The author adopted specific tools used to analyze qualitative data, which enriched the analysis. The analysis of research results has scientific character, and the presented interpretations are correct. The results were presented clearly, precisely and in a transparent and comprehensible way and Author’s comments were adequate. The results of these analyses were very interesting and cognitively valuable. It should be emphasized that the author formulated conclusions referring to other authors, which proved a high level of scientific awareness.

The last chapter “**Concluding discussion**” was dedicated to the discussion of the key findings from the empirical research. First, she discussed the use of Big Data and analytics,

mainly of descriptive nature, used by the case retailer. She also identified barriers the retailer faced, which hindered an effective data analysis preventing the enrichment of knowledge about customers. She diagnosed the situation of the retailer in terms of its customer centricity strategy implementation and the gaps arising in this process. In the chapter the PhD Candidate also discussed firm's capabilities in the process of developing the resilience to the crisis market situation.

In the last part entitled **"Concluding remarks"**, the author referred to the objective, and research questions formulated in the dissertation. The issues concerning Big Data analytics are quite new, complex, and multidimensional. The research conducted, analyzed, and presented in the dissertation allowed Mrs. Żabicka-Włodarczyk aligning Big Data and managing relations with customers as well as analyze challenges to exploit value from Big Data analytics, which may be considered as a valuable contribution to the knowledge in this area. After an in-depth analysis of the dissertation, it should be stated that as a result of literature studies and own empirical research, the Author achieved the objective of the doctoral dissertation and formulated several interesting cognitive conclusions. I state that the conducted literature studies and own empirical research allowed her exploring Big Data analytics in connection with managing relations with customers in retail fashion, non-contractual settings.

The polemical remarks included in the review were formulated to inspire the PhD student to further improve her scientific work. In my opinion, this dissertation is of high quality, and the PhD student demonstrated the ability to collect data, and to analyze them using a qualitative method exceeding the requirements for doctoral dissertations. She has also proved her skills to formulate conclusions. It is also worth mentioning that the author successfully identified research gaps, indicated areas of future research, study limitations, and formulated valuable recommendations for managers. Moreover, I would also like to stress that the dissertation shows the Candidate's passion for conducting research, commenting on the results, and not only critical but also emotional engagement in what she stated and concluded. She did not accept others' authors views uncritically, without a self-reflection, but contrary she showed her point of view. All the above make her a mature, recognized, and passionate researcher.

I would like to ask the Author questions of a polemical nature that could constitute a starting point for the discussion:

1. What may be the justification for terminating the relation with a customer and what kind of information do you find necessary to acquire from Big Data analytics that would support that decision?
2. In times of an unlimited access to numeric, text, voice, and image data by the company from internal sources do you find primary data still valuable in gathering information?

### III. Formal and linguistic assessment of a doctoral dissertation

The layout of the dissertation and its structure, coherence of consecutive contents and formal aspect are correct. It is written carefully, with the use of comprehensible language and in a good style. The author is fluent in discipline-specific terminology. The dissertation complies with the commonly accepted standards for the preparation of the source references footnotes and a list of references, a list of figures and tables.

### IV. Final conclusion

After evaluating the overall content of the doctoral dissertation of Magdalena Żabicka-Włodarczyk titled *„Big data and advanced business analytics in customer relationship management in the retail settings”* submitted for review, and considering:

- a) the significance of the presented issues,
- b) the research assumptions,
- c) formulated objectives and their implementation,
- d) properly designed and self-conducted qualitative research,
- e) final conclusions and recommendations,

I state with full conviction that this dissertation meets the requirements set for doctoral dissertations indicated by the Act on Academic Degrees and the Title of March 14, 2003.

I therefore request Scientific Committee of the Management and Quality Discipline of Wrocław University of Economics and Business to admit the doctoral dissertation authored by Mrs. Magdalena Żabicka-Włodarczyk, under the supervision of prof. dr. hab. Ewa Stańczyk-Hugiet and dr. inż. Krzysztof Michalak to public defense.