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Review of the doctoral dissertation of Shuvam Chatterjee

entitled „Cross-cultural differences in shopper attitudes

to olfactory marketing: Poland vs. India”

prepared under scientific supervision of prof. dr hab. Paweł Bryła

1. Basis for the review and the general characteristics of the doctoral dissertation

This review focuses on Shuvam Chatterjee's doctoral dissertation, entitled „Cross-cultural differences in shopper attitudes to olfactory marketing: Poland vs. India”. This doctoral dissertation was prepared at the Faculty of Management at the University of Lodz. The supervisor of the dissertation is prof. dr hab. Paweł Bryła.

The formal basis for the review is a letter dated 30 June 2025 from prof. dr hab. Ewa Walińska, Chair of the University of Lodz's Committee for Academic Degrees in Management and Quality Sciences. The letter informs me that the committee has appointed me to review the aforementioned dissertation. The review was prepared as part of the process of awarding Shuvam Chatterjee a doctoral degree in the field of social sciences, in the discipline of management and quality sciences, in accordance with the requirements of the Act of 20 July 2018 - Law on Higher Education and Science.

The reviewed doctoral dissertation comprises a series of five thematically linked scientific articles. The following elements were placed before the articles in the dissertation: an introduction; key concepts and theoretical background; a research gap; the main goal and objective of the thesis; research hypotheses; research methodology; and the structure. The articles are followed by conclusion, theoretical and managerial implications, limitations and future research directions, five appendices (survey questionnaires and supporting materials), references, a list of tables, and a list of figures. The doctoral dissertation comprises 146 pages in total (including 92 pages of five articles and 54 pages of additional elements of the dissertation).

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Four articles have been published, and one (article 4) is in press (the journal's website contains information that this article has been accepted for publication). Articles have been published in journals from the list of scientific journals of the Ministry of Education and Science or the Ministry of Science and Higher Education. The journals in which the articles were published are assigned the discipline of management and quality sciences in the lists of scientific journals. The articles are thematically related, i.e. they all deal with the same issue. The first article provides an overview of scientific literature, while each subsequent article describes a different study.

Each article was written by two authors, except for the third, which was written by three. In each case, Shuvam Chatterjee was the first author and contributed 90%, as confirmed by both the Doctoral Student and their supervisor.

2. General theoretical knowledge in the discipline of management and quality sciences demonstrated by the Doctoral Student in their doctoral dissertation

In his dissertation, the Doctoral Student mainly referred to issues from areas such as: consumer behaviour (e.g. cognitive responses of consumers, intentions to purchase and recommend products, consumer loyalty to a brand), sensory marketing (e.g. the use of scent, colour, light and music in shaping the atmosphere of a store and influencing consumers in retail stores, including in particular olfactory marketing in retail stores), companionship as a factor influencing consumer behaviour in retail stores, cross-cultural research, research methods and techniques (including the Zaltman Metaphor Elicitation Technique, i.e. ZMET). The Doctoral Student studied the relationship between in-store fragrance and consumer behaviour, including consumer purchasing decisions. The Doctoral Student based his dissertation on a solid theoretical foundation. In his research on cross-cultural olfactory marketing, he used, among others, the theory of cultural values, the theory of planned behaviour and the stimulus-organism-response model.

The sources used by the Doctoral Student have been well selected. The sources used are up to date and well reflect current knowledge in the area studied by the Doctoral Student.

When writing his first article, which was a review of the literature on olfactory marketing, the Doctoral Student used the PRISMA technique to collect sources. The use of this technique led him to select 81 items from 1,946 identified sources, which were then analysed. This indicates a structured approach to reviewing scientific literature.

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The Doctoral Student cited more than 100 sources in the bibliography of his dissertation, including scientific articles and books. This bibliography refers to those parts of the dissertation that were included before and after the Doctoral Student's articles. In addition to these sources, the Doctoral Student also used many scientific sources, which are listed in the bibliographies of five articles. Each of the Doctoral Student's articles uses many sources.

In my opinion, the Doctoral Student has demonstrated general theoretical knowledge in the discipline of management and quality sciences, particularly in the field of olfactory marketing. He is aware of the state of scientific research in this area. The Doctoral Student has demonstrated knowledge of scientific literature on the issues he deals.

3. Ability to independently conduct scientific work demonstrated by the Doctoral Student in their doctoral dissertation

The Doctoral Student's ability to independently conduct scientific work is demonstrated by the planning and implementation of the research and analytical process. The Doctoral Student correctly identified the research gap and formulated an interesting main goal. The Doctoral Student addressed the important marketing topic of shaping consumer experiences, including the issue of shaping scent experiences at points of sale, and placed it in a cross-cultural context. The topic of the dissertation was correctly formulated and reflects the content of the articles that comprise it.

The Doctoral Student formulated three primary objectives and three secondary objectives, as well as four research questions. I consider they are formulated correctly. Based on the aforementioned objectives of the dissertation, four research hypotheses were formulated. The research hypotheses were verified in the Doctoral Student's articles, and the results of their verification were discussed in the conclusions of the dissertation. The objectives of the dissertation and the research questions are also reflected in the Doctoral Student's articles, but in my opinion, it would be useful to indicate more clearly in the conclusions of the dissertation how the specific objectives were achieved and what answers were obtained to the specific research questions.

The Doctoral Student demonstrated the ability to use various research methods and techniques. In his research, he mainly used the Zaltman Metaphor Elicitation Technique, i.e. ZMET (including interviews), as well as survey research. The order in which the research was conducted was justified. After analysing the literature on the subject, the Doctoral Student applied qualitative research, which allowed for a better understanding of the issues under study,

followed by quantitative research, which provided data for research hypothesis verification. The data obtained as a result of quantitative research was analysed statistically, using, for example, regression analysis, chi-square tests, factor analysis and Pearson's correlation coefficient. Cronbach's alpha coefficient was also used to examine the reliability of the scales used.

I consider the structure of the dissertation to be correct. It contains all the necessary elements, and the articles that make up the dissertation form a logical whole.

From a formal point of view, the dissertation is written to a good standard. There are minor inaccuracies, for example in the bibliography, where two source is listed twice, but overall the dissertation is well-crafted from a formal point of view.

When discussing the results of his research, the Doctoral Student skilfully referred to the findings of other authors, pointing out the areas in which they were consistent with each other. This shows that the Doctoral Student not only knows scientific literature, but also knows how to conduct scientific research taking into account existing scientific achievements. The Doctoral Student pointed out the theoretical implications of his research, referring to several scientific theories. He also pointed out the managerial implications of his research.

Both in the articles and in the doctoral dissertation as a whole, the limitations of the research conducted and directions for further research were also indicated. The Doctoral Student's awareness of the limitations of his research is a good indication of his scientific maturity.

In my opinion, the above arguments indicate that the Doctoral Student has demonstrated the ability to independently conduct scientific work. He was able not only to plan and conduct research for his doctoral dissertation, but also to apply a various research methods and techniques. In addition, he conducted his research in two countries.

4. Original solution to a scientific problem demonstrated by the Doctoral Student in their doctoral dissertation

The Doctoral Student identified a research gap consisting of a small number of empirical studies that analyse the importance of scent in retail using tools to measure consumer behaviour and attitudes in a cross-cultural context. The main scientific problem in the dissertation was “to understand the impact of fragrance on retail consumers’ shopping outcomes, considering their purchase behavior across two distinct cultures (India and Poland) having an individualistic versus collective approach through the impact of companionship” (page 10 of the doctoral

dissertation). This is a research problem involving many elements, which were reflected in the primary and secondary objectives, research questions and research hypotheses.

Article 1 provides an overview of the literature on the subject. It analyses the scientific literature on ambient fragrance, consumer responses (including cognitive responses, purchase intentions, purchase behaviour reflecting time and money spent), the use of fragrance in building store recall, as well as the scientific literature on ZMET. Based on this, an integrative framework for modelling consumer responses to olfactory marketing was developed.

Article 2 explored the mapping of consumers' semi-conscious decisions in retail stores using ZMET. Using this technique, 15 individuals were interviewed in Lodz, Poland. The aim of the study was to understand which retail store attributes play a significant role in consumer purchasing decisions. Four main themes emerged: convenience during retail shopping, sensory cues, mood and feelings, and memory revisit. This qualitative study contributed to our understanding of the factors influencing consumer purchasing behaviour in retail stores. In this context, it was important for further research carried out as part of this doctoral dissertation to examine the role of scent in influencing consumers' thoughts and feelings.

Article 3 presents the results of comparative research between Poland and India, which allows for drawing conclusions regarding the relationship between companionship and consumer behaviour in a scented retail environment. The research presented in this article addressed issues such as:

- the relationships between companionship and behaviours of Indian and Polish consumers, considering the amount of time spent, the amount of money spent and impulse purchases in a scented retail environment,
- the relationships between companionship and cognitive, behavioural and attitudinal responses of Indian and Polish consumers in a scented retail environment,
- the relationships between consumer rating of environmental scent quality in a retail store and the amount of money spent in India and Poland.

The analyses presented in Article 3 were used to verify the hypotheses related to the above issues. Data were collected in sizable malls in India and Poland. Analysis included 300 questionnaires completed in India and 279 completed in Poland. Chi-square tests and regression analysis were used to verify the hypotheses. Although not all hypotheses were supported, the analyses indicate differences between the results obtained in India and those obtained in Poland. The results of this research are crucial for the cross-cultural analyses conducted as part of the doctoral dissertation.

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Article 4 examined the relationships between in-store fragrance and consumer cognitive, behavioural, and attitudinal loyalty. Data were collected in Kolkata. 250 completed questionnaires were analysed. Correlative analyses revealed a relationship between in-store fragrance and consumer behavioural, attitudinal, and cognitive loyalty.

Article 5 presents the results of a study examining mainly the relationships between in-store fragrance and consumers' decision-making considering the money spent and time spent inside a retail outlet. Data were collected in a shopping mall in Kolkata. 190 completed questionnaires were used for analysis. Regression analyses indicated the relationships between in-store fragrance and consumers' decision-making considering the money spent and time spent.

The research described in article 4 and article 5 complements the analyses contained in article 3. The analyses described in these articles clearly demonstrate the importance of scent selection in influencing consumer behaviour.

Hypothesis 1 of the doctoral dissertation was supported, indicating that companionship has a more positive effect on Indian consumers than on Polish consumers in terms of the amount of time spent, the amount of money spent, and impulse buying in a scented retail environment.

Hypothesis 2 of the doctoral dissertation, which states that the companionship impact Indian consumers' cognitive, behavioural and attitudinal responses more positively than those of Polish consumers, was only partially supported.

Verification of hypothesis 3 of the doctoral dissertation showed that the consumer ratings of environment scent quality was positively related to the amount of money spent in the case of Indian consumers, but not in the case of Polish consumers.

Hypothesis 4 of the doctoral dissertation was supported, indicating that fragrance in a retail environment helps foster cognitive, behavioural and attitudinal loyalty.

The research findings indicate that the impact of in-store fragrance on consumers varies across cultures. However, they also demonstrate complex relationships between culture and consumer behaviour in a scented retail environment.

The research conducted by the Doctoral Student is not free from limitations, which he described at the end of the dissertation and in specific articles. This applies, for example, to the relatively narrow geographical scope of the research (Lodz in Poland and Kolkata in India), as well as the focus in the quantitative study mainly on the group of respondents aged 20 to 40. Moreover, as the Doctoral Student noted, the research results should not be generalized to shopping areas other than malls. Despite these limitations, I am convinced that this dissertation makes a valuable contribution to science. The research findings are important for the

development of marketing, particularly sensory marketing. They allow for a better understanding of the relationship between in-store fragrance and consumer behaviour, as well as the relationship between companionship and consumer behaviour.

The results of the conducted research can be applied in business practice, shaping marketing activities related to creating a store atmosphere through the use of scent. The cross-cultural aspect of the research allows us to recognize that such activities should be adapted to cultural specificities and provides knowledge that can be useful in practice.

In my opinion, the Doctoral Student presented an original solution to a scientific problem in his doctoral dissertation. He contributed to knowledge about the relationships between companionship and consumer purchasing behaviour in a scented retail environment in both collectivist and individualist cultures.

5. Final assessment of the doctoral dissertation

The articles constituting the doctoral dissertation are thematically related and complementary. These articles form a logical structure, first reviewing the literature and establishing a conceptual framework for researching consumer responses to olfactory marketing (article 1); then describing the qualitative research findings on retail store attributes that influence consumer thoughts and feelings (article 2); and finally, presenting the quantitative research findings that allow for the verification of the hypotheses (articles 3, 4, and 5). In my opinion, article 3 is particularly important for the dissertation, as it describes the results of a study conducted in Poland and India, which allows for a cross-cultural comparison. Articles 4 and 5 are based on the research conducted in India and complement the findings of the study described in article 3.

In my opinion, even if we did not take into account article 4, which is currently in the process of publication (it has been accepted for publication), Shuvam Chatterjee's doctoral dissertation is valuable and demonstrates the Doctoral Student's general theoretical knowledge in the discipline of management and quality sciences, his ability to independently conduct scientific work, and also provides an original solution to a scientific problem.

The fact that the dissertation presents the Doctoral Student's general theoretical knowledge in the discipline of management and quality sciences is demonstrated mainly by the good literature review and the research based on existing knowledge.

The Doctoral Student's ability to independently conduct research is demonstrated mainly by the good planning and execution of the research, including identifying a research

gap, formulating the research problem and the dissertation topic, formulating the dissertation objectives, research questions and hypotheses, conducting the research, as well as analysing the obtained data and drawing conclusions.

The Doctoral Student's original solution to the scientific problem is demonstrated mainly by the results of his research on the relationships between companionship and consumer purchasing behaviour in a scented retail environment in both collectivist and individualist cultures. The Doctoral Student's contribution to science consists mainly of demonstrating the differences between the behaviour of Indian and Polish consumers representing different cultures in a scented retail environment.

In summary, I am sure that Shuvam Chatterjee's doctoral dissertation meets the requirements for doctoral dissertations and I evaluate it positively.

6. Final conclusion

In my opinion, Shuvam Chatterjee's doctoral dissertation meets the requirements specified in the Act of 20 July 2018 – Law on Higher Education and Science. I evaluate this doctoral dissertation positively. I request that this doctoral dissertation be accepted and that Shuvam Chatterjee be admitted to the further stages of the procedure for awarding him the doctoral degree.

