University of the West of Scotland

School of Computing, Engineering and Physical Sciences

MSc Masters Project Specification

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Project being undertaken on ~~part-time~~ or full-time basis:

MSc Programme (specify the specialist pathway, if any): No Pathway

MSc Programme Leader: Graeme McRobbie

Project Title:

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| Analysis and comparison of data visualisation software using Tableau and PowerBI for company marketing performance |

Research Question to be answered:

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| What impact do the reporting and presentation features of Tableau and PowerBI have on the effectiveness of marketing performance dashboards? |

Outline (overview) and overall aim of project:

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| **Project Overview**: The aim of this research is to evaluate and compare the functionalities of Tableau and PowerBI as tools for visualizing data, specifically examining their impact on the effectiveness of marketing performance dashboards. The objective is to evaluate the strengths and weaknesses of each software in order to enable marketing teams to make well-informed decisions based on insights derived. This will be achieved through an in-depth analysis and testing of features and functionalities using specific marketing case studies.  The project's scope will involve a comparative analysis of Tableau and PowerBI, with a specific emphasis on their reporting and presentation functionalities. The evaluation will focus on key aspects such as dashboard generation, data integration, interaction, and collaboration features. In addition, the project will include performance testing to evaluate the speed and capacity of data processing, particularly when dealing with large marketing datasets. A cost analysis will assess the expenditures related to licensing, implementation, and maintenance for both platforms.  In addition, the study will evaluate the system design and architecture of both software platforms to provide insights into their capabilities. The project will also entail creating prototype dashboards using both Tableau and PowerBI to showcase their applications. The prototypes will also undergo testing and evaluation.  The research approach comprises various essential steps. First, a thorough literature review will be done to understand current knowledge on data visualization technologies and best practices for marketing performance analysis. Subsequently, a comprehensive analysis of the features and functionalities of Tableau and PowerBI will be conducted. The practical testing phase will entail the development of prototype dashboards and their implementation in real-life case studies. Surveys will be conducted, involving marketing professionals and Analysts who have expertise in using both platforms.  At the end, stakeholders will have a clear understanding of the capabilities and limitations of these softwares, enabling them to make informed decisions about which tool to adopt for their marketing performance analysis needs. |

Objectives :

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| **Gather Requirements:** Develop a list of criteria for evaluating visualization software, including data integration, customization options, interactivity, real-time updates, and user collaboration features.  **Conduct Literature review**: Review existing literature on data visualization tools and best practices for marketing performance analysis.  **Feature Comparison:** Analyze major features and functions of Tableau and PowerBI for marketing performance analysis.  **Research Design / Implementation:** Develop a research design or methodology, drawing motivation from previous literatures reviewed and also highlighting the implementation plan. This section would also cover any ‘testing’ or evaluation of the prototype.  **Practical Testing**: Use specific case studies to test the functionality and performance of both tools in creating marketing performance dashboards.  **Survey and Data collection**: Collecting feedback from marketing professionals who have experience using Tableau and PowerBI.  **Evaluation:** Identify the strengths and weaknesses of each platform in supporting marketing performance analysis, emphasizing the areas where one platform outperforms the other.  **Discussion of findings and recommendations:**Discuss the findings from the comparative analysis report, providing recommendations for organizations or stakeholders seeking to optimize reporting on their marketing KPIs through data visualization. |

Relationship of proposed project to MSc programme/stream:

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| The proposed project, which focuses on the analysis and comparison of data visualization software using Tableau and PowerBI for company marketing performance, is relevant to this MSc programme because it involves analyzing and comparing technologies to improve users' options, as well as evaluating and analyzing system design. The research assesses the extent to which a computing system/application can help enhance efficiency and operations in a marketing organization. This topic relates specifically to the module Information System Design and Analysis as it involves evaluating and analyzing the design of computing systems, particularly in the context of marketing operations. |

Indicative reading list

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| **Indicative Reading Lists:**  Addepalli, L., Sindhuja, S., Gaurav, L., & Ali, W. (2023). A Comprehensive Review of Data Visualization Tools: Features, Strengths, and Weaknesses. International Journal of Computer Engineering In Research Trends, 10(1), pp. 10–20. doi:10.22362/ijcert/2023/v10/i01/v10i0102  Akhtar, N., Tabassum, N., Perwej, A. & Perwej, Y., 2020. Data analytics and visualization using Tableau utilitarian for COVID-19 (Coronavirus). Global Journal of Engineering and Technology Advances, 3(2), pp.28-50. doi:10.30574/gjeta.2020.3.2.0029. Available at: <http://www.gjeta.com>  Haritash, S., (2021). Power BI v/s Tableau v/s Cognos: A Data Analytics Research. International Journal of Science and Research (IJSR), 10(11). doi:10.21275/SR211121185807.  Ko, I. & Chang, H., 2017. Interactive visualization of healthcare data using Tableau. Healthcare Informatics Research, 23(4), pp.349-354. doi:10.4258/hir.2017.23.4.349. Available at: <https://doi.org/10.4258/hir.2017.23.4.349>  Matthias, D. & Managwu, C., (2021). Data analytics and visualization using Power BI and MS Excel for COVID-19 (Coronavirus). [online] Available at: <http://dx.doi.org/10.13140/RG.2.2.25204.48001.>  Parthe, R., (2023). Comparative analysis of data visualization tools: Power BI and Tableau. International Journal of Scientific Research in Engineering and Management, 7, pp.1-11. doi:10.55041/IJSREM26272.  Skender, F. & Manevska, V. (2022). Data visualization tools - preview and comparison. Journal Name, 2, pp.30-35.  **Software:**   1. Microsoft PowerBI: app.powerbi.com 2. Tableau: [www.tableau.com](http://www.tableau.com)   **Hardware**  Device Name: Hp Elitebook  Installed Ram: 16.0 GB (15.4 GB usable)  Processor: Intel(R) Core(TM) i5-6300U CPU @ 2.40GHz 2.50 GHz  System Type: 64-bit operating system, x64-based processor |
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Marking scheme:

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| **Introduction** – 5%  **Context** - literature review – 20%  **Research Design** – 20%  **Implementation (practical work)** – 20%  **Evaluation** – 10%  **Presentation of results** – 5%  **Conclusions and recommendations** – 10%  **Critical self-evaluation** – 10% |

Supervisor:

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| Dr Rebecca Redden |

Moderator:

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| Dr. Joanna Olszewska |

Programme Leader:

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| Graeme McRobbie |

Date specification submitted:

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| 24th May 2024 |

Please complete the ‘ethics’ & pathway confirmation form below for all projects.

**School of Computing, Engineering and Physical Sciences**

**MSc Masters PROJECT – REQUIREMENT FOR ETHICAL APPROVAL & PATHWAY CONFIRMATION**

**SECTION 1: TO BE COMPLETED BY THE STUDENT**

Does your proposed research involve: research with human subjects (including requirements gathering and product/software testing), access to company documents/records, questionnaires, surveys, focus groups and/or other interview techniques? Does your research entail any process which requires ethical approval? (please enter √ in the appropriate box)

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| --- | --- | --- |
| YES | 🗸 | **You must submit an application for approval to the Ethics Review Manager** |
| NO |  | You do not need to submit an application to the Ethics Review Manager |

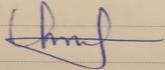
I confirm that the above project specification aligns with my MSc programme specialist pathway. (please enter √ in the box)

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**Name of Student (Print name):**

**Irikannu ifeoma Blessing**

**Signature:**



**Date:** 20th May 2024

**SECTION 2: TO BE COMPLETED BY THE PROJECT SUPERVISOR**

I understand that the above project requires/does not require\* ethical approval (\*please delete as appropriate).

I confirm that the above project aligns with the MSc programme specialist pathway the

√

student is enrolled in. (please enter √ in the box)

**Supervisor (print name):** Rebecca Redden

**Signature**: A signature on a white background

Description automatically generated

**Date:** 24/05/2024

**IMPORTANT: please note that by signing this form all signatories are confirming that any potential ethical issues have been considered and, where necessary, an application for ethical approval has been/will be made via the Ethical Review Manager software.**

**Any project requiring ethical approval but which has not been given approval will not be accepted for marking.**

**Ethical approval cannot be sought in retrospect.**