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: Full-time

MSc Programme (specify the specialist pathway, if any): Information Technology

MSc Programme Leader: Graeme McRobbie

Project Title:

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| Agile Methodology and Its Impact on IT Project Success: A Case Study of Unilever |

Research Question to be answered:

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| Can Agile methodology improve IT project success compared to non-Agile methodologies in Unilever? |

Overview, Justification and overall aim of project

*(Project background and history of problem with key sources, rationale for the research showing gaps in the current knowledge and general statements on intent and direction of the project)*

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| The aim of this project is to evaluate the impact of Agile methodology on IT project success compared to non-Agile methodologies within IT organizations. To determine project success, key performance indicators (KPIs) such as project timelines, budget adherence, risk management, and customer satisfaction will be analyzed. Success is often defined by the degree to which a project meets its objectives within the constraints of time, cost, and scope. The study will perform an in-depth comparative analysis of these KPIs to assess the effectiveness of Agile methodologies in relation to non-Agile approaches.  Agile methodologies, with their focus on iterative development and stakeholder collaboration, are often cited as improving flexibility and efficiency. In contrast, non-Agile methodologies are still widely used for projects with different requirements. This research will analyze data from real-world IT projects to identify patterns, strengths, weaknesses, and the overall effectiveness of Agile methods. The comparative analysis will go into depth, evaluating each KPI thoroughly.  Python was chosen as the tool for data analysis and visualization based on existing literature, which suggests its robustness for handling large datasets, ease of integration with visualization libraries, and suitability for comparative analysis tasks in software project management. |

Objectives

*(List of tasks to be undertaken to achieve overall aim of the project and to answer the research question posed)*

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| To achieve the aim of the project, the following tasks will be undertaken:   1. Conduct a comprehensive literature review on Agile and non-Agile methodologies and their impact on IT project success. 2. Collect project data from Agile and non-Agile projects within IT organizations, focusing on timelines, costs, customer satisfaction, team performance, and risk management. 3. Develop criteria for a comparative analysis of Agile and non-Agile projects, focusing on the identified success metrics. 4. Use Python to analyze the data and present findings using visualizations such as charts and graphs to highlight performance differences between Agile and non-Agile projects. 5. Assess the effectiveness of Agile methodologies in managing risks and delivering successful projects compared to non-Agile methods, by analyzing trends in the dataset. 6. Provide specific recommendations on when Agile methodologies may be more effective based on the findings of the comparative analysis. |

Methodology

*(Explanation and justification of approach and methodology proposed. This section should explain the nature of the data and method of data collection. Identification and brief discussion of any analytical tools to be used; Identification of any ethical and practical issues.)*

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| This project will involve a comparative analysis of Agile and non-Agile methodologies using real-world data from Unilever. The key steps are as follows:   * **Data Collection**: Data will be collected from completed Agile and non-Agile IT projects within Unilever, focusing on performance metrics such as timelines, costs, customer satisfaction, team performance, and risk management. The dataset will include project reports, KPIs, and any available stakeholder feedback. * **Data Analysis**: Python will be used to process and analyze the data. The analysis will focus on the differences in success rates between Agile and non-Agile methodologies, identifying any statistically significant patterns or trends. * **Risk Handling Evaluation**: Particular attention will be paid to how each methodology handles risks during the project lifecycle. The study will compare how Agile and non-Agile approaches differ in terms of mitigating risks and ensuring project completion without major issues. * **Visualization:** Tools such as Python’s visualization libraries (Matplotlib, Seaborn) will be used to create clear and effective visualizations of the comparative analysis. These tools were chosen based on their widespread use in data science and their ability to display complex relationships within the dataset clearly.   **Ethical Considerations**: No human subjects are involved in this research. However, all data collected from Unilever will be anonymized to protect proprietary and confidential information. |

Work Plan

*(A timetable for completion of research. MSc Masters Project full-time is allowed 15 weeks and part-time is 30 weeks. You may use any appropriate method to present the well-thought-through plan of action reflecting your project activities)*

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Relationship of proposed project to MSc programme/stream

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| This project aligns directly with the Information Technology stream, particularly within the Project Management pathway. By focusing on Agile and non-Agile methodologies, the project integrates core principles from IT project management courses and software development. Python's programming capabilities will be used to analyse project data and visualize findings, further connecting this project to the programming components of the MSc curriculum. |

Indicative reading list (references to be correctly presented) and resources (hardware, software, etc.)

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| **Initial Reading List**:  Nguyen, D. S. (2016). Success factors that influence agile software development project success. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS)*, *17*(1), 171-222. <https://www.researchgate.net/profile/Dr-Dan-Nguyen-Phd/publication/344729496_Success_Factors_That_Influence_Agile_Software_Development_Project_Success/links/5f8c98fd299bf1b53e3244dd/Success-Factors-That-Influence-Agile-Software-Development-Project-Success.pdf>    Ali, H., Khan, M. Z., & ur Rehman, U. (2021). An Empirical study on adoption of Agile Project Management Methodology and its effect on Project Success with moderating role of Organizational Culture. *European Journal of Social Impact and Circular Economy*, *2*(1), 75-99. <https://ojs.unito.it/index.php/ejsice/article/view/5158/5015>  Binboga, B., & Gumussoy, C. A. (2024). Factors Affecting Agile Software Project Success. *IEEE Access*. <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10488401>  Litchmore, K. A. (2016). *A comparative study of agile methods, people factors, and process factors in relation to project success*. Capella University. <https://www.proquest.com/openview/e71e34a2988a0042202dc1a9b0f24519/1?pq-origsite=gscholar&cbl=18750>  Rajan, E. R., & Santhosh, V. A. (2021). Adoption of Agile Methodology for iMproving it project perforMAnce. *Serbian Journal of Management*, *16*(2). [https://aseestant.ceon.rs/index.php/sjm/article/view/26854/19068](%20https://aseestant.ceon.rs/index.php/sjm/article/view/26854/19068)  Palopak, Y., & Huang, S. J. (2024). Perceived Impact of Agile Principles: Insights from a Survey-Based Study on Agile Software Development Project Success. *Information and Software Technology*, 107552. <https://www.sciencedirect.com/science/article/abs/pii/S0950584924001575>  Chiyangwa, T. B., & Mnkandla, E. (2018). Agile methodology perceived success and its use: The moderating effect of perceived compatibility. *South African Computer Journal*, *30*(2), 1-16. <https://journals.co.za/doi/abs/10.18489/sacj.v30i2.554>  Lindsjørn, Y., Sjøberg, D. I., Dingsøyr, T., Bergersen, G. R., & Dybå, T. (2016). Teamwork quality and project success in software development: A survey of agile development teams. *Journal of Systems and Software*, *122*, 274-286. <https://www.sciencedirect.com/science/article/pii/S016412121630187X>  Radhakrishnan, A., Zaveri, J., David, D., & Davis, J. S. (2022). The impact of project team characteristics and client collaboration on project agility and project success: An empirical study. *European Management Journal*, *40*(5), 758-777. <https://www.sciencedirect.com/science/article/abs/pii/S0263237321001274>  Serrador, P., & Pinto, J. K. (2015). Does Agile work? —A quantitative analysis of agile project success. *International journal of project management*, *33*(5), 1040-1051. <https://www.sciencedirect.com/science/article/abs/pii/S0263786315000071>  Wafa, R., Khan, M. Q., Malik, F., Abdusalomov, A. B., Cho, Y. I., & Odarchenko, R. (2022). The impact of agile methodology on project success, with a moderating role of Person’s job fit in the IT industry of Pakistan. *Applied Sciences*, *12*(21), 10698. <https://www.mdpi.com/2076-3417/12/21/10698>  Salman, A., Jaafar, M., Malik, S., Mohammad, D., & Muhammad, S. A. (2021). An empirical investigation of the impact of the communication and employee motivation on the project success using agile framework and its effect on the software development business. *Business Perspectives and Research*, *9*(1), 46-61. <https://journals.sagepub.com/doi/abs/10.1177/2278533720902915>  Tam, C., da Costa Moura, E. J., Oliveira, T., & Varajão, J. (2020). The factors influencing the success of on-going agile software development projects. *International Journal of Project Management*, *38*(3), 165-176. <https://www.sciencedirect.com/science/article/abs/pii/S0263786320300089>  Ciric, D., Delic, M., Lalic, B., Gracanin, D., & Lolic, T. (2021). Exploring the link between project management approach and project success dimensions: A structural model approach. *Advances in Production Engineering & Management*, *16*(1). <https://apem-journal.org/Archives/2021/APEM16-1099-111.pdf>  Ansari, M. S. A., Abouraia, M., El Morsy, R., & Thumiki, V. R. R. (2024). Influence of transformational and transactional leadership on agile project success. *Project Leadership and Society*, *5*, 100136. <https://www.sciencedirect.com/science/article/pii/S2666721524000218>  Coram, M., & Bohner, S. (2005, April). The impact of agile methods on software project management. In *12th IEEE International Conference and Workshops on the Engineering of Computer-Based Systems (ECBS'05)* (pp. 363-370). IEEE. <https://ieeexplore.ieee.org/abstract/document/1409937>  Altameem, E. A. (2015). Impact of agile methodology on software development. *Computer and Information Science*, *8*(2), 9. <https://pdfs.semanticscholar.org/7a91/0cdcb498461fd533ac7f125546c1d3ec0f28.pdf>  Lukusa, L., Geeling, S., Lusinga, S., & Rivett, U. (2020, October). Teamwork and project success in agile software development methods: A case study in higher education. In *Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality* (pp. 885-891). <https://dl.acm.org/doi/abs/10.1145/3434780.3436648>  Pace, M. (2019). A correlational study on project management methodology and project success. *Journal of engineering, project, and production management*, *9*(2), 56. <https://www.proquest.com/openview/048c1513e5a2c7347af2859ff4ff554b/1?pq-origsite=gscholar&cbl=706377>  Kandengwa, E., & Khoza, L. T. (2021). Measuring Agile software project success beyond the triple constraint. *South African journal of information management*, *23*(1), 1-8. <https://www.scielo.org.za/scielo.php?pid=S1560-683X2021000100019&script=sci_arttext>  Serrador, P. (2013). The impact of planning on project success-a literature review. *The Journal of Modern Project Management*, *1*(2).  Ghimire, D., & Charters, S. (2022). The impact of Agile development practices on project outcomes. *Software*, *1*(3), 265-275. <https://www.mdpi.com/2674-113X/1/3/12>  **Kaggle datasets:** Software Development Methods.  **Dataset Link:** <https://www.kaggle.com/datasets/mostafizmim/software-development-methods>  **Tools/Software:**   * Python (Anaconda, Pandas, NumPy, Scikit-learn) * Jupyter Notebook * Microsoft Word Tables (for Gantt chart) |

Marking scheme

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| * **Introduction**: 5% * **Literature review**: 25%   A thorough and clear literature review, critically comparing Agile and non-Agile methodologies, will be essential for establishing a strong theoretical foundation.   * **Methodology**: 25%   The comparative analysis design which will clearly articulate how the project will analyze the data.   * **Data analysis and evaluation**: 20%   This section will include detailed statistical analysis and interpretation of the findings.   * **Discussion and recommendations**: 10%   Specific and actionable recommendations will be provided based on the comparative  analysis.   * **Conclusions**: 5% * **Critical self-evaluation**: 10%   This section will reflect on the research process, discussing limitations, challenges faced, and potential improvements |

Supervisor

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| Rebecca Redden |

Moderator

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| Henry Hunter |

Programme Leader

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| Graeme McRobbie |

Date specification submitted

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| 01/10/2024 |

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)

**√**

**Name of Student (Print name): ETA BESONG EMMANUEL**

**Signature: ETA BESONG EMMANUEL**

**Date: 23/09/2024**

**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:**

**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.**