Reflection on My Learning Experience in the Research Methods Module

WHAT (Description)

Throughout the Research Methods module, I engaged with various practical exercises, particularly focused on applying statistical methods using Excel. These exercises were instrumental in developing my understanding of data analysis and hypothesis testing, as well as their role in drawing meaningful conclusions from datasets. By working with different types of data—such as comparing the effectiveness of two diets or analyzing income disparities between genders—I learned how to apply statistical tools like mean, standard deviation, and t-tests to evaluate real-world problems.

One of the key takeaways from these exercises was understanding the importance of variability and central tendency in interpreting data. For example, when comparing the outcomes of different interventions or conditions, it became clear that the spread of data and how consistent the results are can be just as crucial as the average outcome. This learning extended to understanding how hypothesis testing can be used to determine whether observed differences in data are statistically significant or simply due to chance. The calculations reinforced my ability to make data-driven decisions, which will be essential in future research and professional work, especially when evaluating the effectiveness of financial models or AI systems.

In parallel, the PowerBI project provided me with valuable insights into the importance of data visualization. By creating dashboards that visually represent complex data, I learned how to present data in a way that is not only informative but also accessible to non-experts. The ability to transform raw data into clear, actionable insights is critical in both academic research and professional practice, especially when working in fields like finance and AI, where the volume and complexity of data can be overwhelming.

Additionally, while working on my research proposal for *Large Language Models (LLMs) in Finance*, I realized that the skills I developed throughout the module can be directly applied to my final research. The statistical exercises in Excel taught me the value of a systematic approach to data analysis. This foundation is critical for evaluating the impact of LLMs in areas such as fraud detection and risk management, where precise quantitative analysis is essential. Moreover, the emphasis on ethical considerations throughout the module will guide my approach to addressing the ethical implications of

using LLMs in finance, ensuring that both data integrity and responsible AI use are prioritized in my research.

Overall, these exercises provided a foundation for critical thinking, teaching me how to approach data systematically and apply statistical techniques to validate findings. This skill set will be invaluable in future projects, particularly in AI-driven research, where large datasets and complex models require a thorough and methodical approach to analysis.

SO WHAT (Emotional Response and Analysis)

Initially, I felt overwhelmed by the complexity of some of the statistical exercises, particularly hypothesis testing and t-tests, which I had less experience with. However, they also ignited a sense of curiosity and determination to improve my statistical analysis capabilities.

I realized that my initial frustration with Excel and hypothesis testing was linked to a lack of confidence in interpreting data through statistical lenses in excel. As I progressed through the module, I found that I was not alone in this; feedback from peers who encountered similar challenges encouraged me to persist and practice. I gained a stronger command of tools like Excel and PowerBI, which are essential for handling large datasets and visualizing data trends effectively.

Moreover, reflecting on ethical issues in AI, such as those raised by the Cambridge Analytica scandal, deepened my understanding of the professional and social responsibilities of computing professionals. Reading about real-world cases where data misuse had far-reaching consequences prompted me to think critically about how AI can influence societal outcomes. This ethical reflection, combined with technical learning, encouraged me to approach my research and future projects with a more holistic mindset.

NOW WHAT (Learning and Changed Actions)

This module has significantly influenced my approach to both research and practical projects. The statistical exercises helped me develop a more structured approach to data analysis, and I now feel confident in applying these methods to future research in finance, particularly when assessing the performance of AI models. The ability to conduct hypothesis testing and use tools like Excel for detailed analysis has equipped me to handle complex datasets, a skill I plan to apply in real-world projects, especially in AI-driven financial modeling.

Additionally, the PowerBI project demonstrated the importance of data visualization in presenting findings clearly and effectively to stakeholders. I now recognize the value of these skills not only for academic research but also for professional roles that require the communication of data insights to non-expert audiences. In my future work, I plan to leverage PowerBI and similar tools to create impactful reports that translate complex data into actionable insights.

The ethical considerations I encountered throughout the module, particularly in relation to AI's impact on privacy and transparency, will also shape how I approach future projects. I am more aware of the potential risks involved in data handling and AI deployment and plan to integrate ethical guidelines into all phases of project management and research.

In conclusion, this module has fundamentally transformed my approach to research and data analysis, providing me with the tools to critically evaluate data, generate meaningful insights, and navigate the ethical implications of emerging technologies like AI. The skills I've developed, from statistical analysis to ethical reflection, are directly applicable to my upcoming research in the next module. I now feel well-prepared to tackle complex datasets, assess the effectiveness of LLMs in finance, and ensure that my research adheres to ethical standards. Moving forward, I am confident that the knowledge and techniques I've gained will not only contribute to the success of my research project but also drive my continued growth in both academic and professional contexts.