Reflection on Research Methods and Professional Practice

WHAT: Module Context and Learning Journey

Throughout this Research Methods and Professional Practice module, I engaged with a comprehensive exploration of research methodologies, professional ethics, and practical data analysis techniques. The module required me to navigate multiple interconnected components: two collaborative discussions on ethics and information accuracy, reflective activities on generative AI governance and survey misuse, a literature review followed by a research proposal. It also included some statistical worksheets covering hypothesis testing, summary measures, inference, and data visualisation.

My chosen research area focused on the responsible adoption of LLMs in e-business contexts, specifically examining how organisations can balance innovation-driven value creation with robust governance frameworks. This topic emerged from my interest in understanding how emerging technologies reshape digital commerce while raising profound ethical, legal, and social questions. The literature review synthesised evidence from 2018-2025, critically evaluating both optimistic perspectives that celebrate LLMs' transformative potential and cautious viewpoints highlighting risks of bias, hallucinations, and regulatory uncertainty. The research proposal extended this work by proposing an exploratory qualitative study using systematic review, comparative case studies, and semi-structured interviews to develop a "Balanced Adoption Framework" linking business KPIs to governance mechanisms.

Beyond the research assignments, the statistical components introduced me to descriptive and inferential statistics, hypothesis testing, probability distributions, and data visualisation principles. Working through the Excel-based worksheets forced me to move from theoretical understanding to practical application, interpreting real datasets and translating statistical outputs into meaningful business insights.

SO WHAT: Critical Reflection and Analysis

Statistical Analysis and Research Competencies

My relationship with quantitative methods evolved significantly during this module. Initially, I approached statistics with apprehension, viewing it as a purely technical exercise disconnected from real-world decision making. However, as I worked through the hypothesis testing and summary measures worksheets, I began to appreciate statistics as a language for evidence-based reasoning. Calculating confidence intervals, conducting t-tests, and interpreting p-values became less about mechanical computation and more about understanding what the data could, and could not, tell me about the phenomena under investigation.

The inference worksheet particularly challenged me to think critically about validity and generalisability. When analysing correlation coefficients or regression outputs, I had to constantly question: "What assumptions underpin this analysis? What biases might exist in this dataset? Can these findings reasonably extend beyond this specific sample?" This critical stance was reinforced by the module's emphasis on ethical data collection and the Cambridge Analytica

case study, which demonstrated how statistical power divorced from ethical responsibility can cause profound societal harm.

Creating visualisations also taught me that charts are not neutral representations but rhetorical devices that can clarify or obscure truth. I initially included a pie chart in my Power BI work (referenced in my previous data visualisation reflection), only to realise it masked important trends that a stacked bar chart revealed more effectively. This experience carried into the charts worksheet, where I had to justify not only *what* to visualise but *why* a particular chart type best served the analytical question. I learned that good data presentation requires understanding your audience, anticipating misinterpretation, and prioritising clarity over aesthetic appeal.

Research Methodology and the Literature Review

Conducting the literature review on LLMs in e-business was simultaneously intellectually rewarding and methodologically challenging. The systematic search process, defining inclusion criteria, executing Boolean searches across multiple databases, screening titles and abstracts, and synthesising findings thematically, demanded rigour and patience. I initially underestimated the volume of literature and the difficulty of maintaining focus. With too many potentially relevant sources identified, I had to make difficult decisions about scope, ultimately excluding purely technical papers and non-peer-reviewed content to maintain academic integrity.

The critical comparison section of my review revealed a fundamental tension in the literature: optimistic studies emphasised efficiency gains and customer engagement, while cautious perspectives foregrounded bias, unreliability, and regulatory risk. Importantly, I recognised that these contradictions were not merely academic disagreements but reflected methodological differences, short-term case studies versus longitudinal impact assessments, retail contexts versus high-stakes healthcare applications, technical benchmarks versus organisational ethnographies. This realisation taught me that research findings are always situated within specific contexts, and that my role as a researcher is not to declare a single "truth" but to transparently acknowledge complexity and contingency.

Professional Ethics in the Age of Generative AI

The module's ethical components, particularly Reflective Activity 1 on generative AI governance and the collaborative discussions, profoundly shaped my understanding of professional responsibility. The Correa et al. (2023) reading on global AI governance highlighted the fragmentation of regulatory approaches: Europe's risk-based legislation, America's market-driven flexibility, and Asia's hybrid frameworks. This diversity underscored that "responsible AI" is not a universal standard but a contested, culturally situated concept.

Deckard's (2023) notion of "algorithmic fiduciary duty" particularly resonated with me. The idea that computing professionals should bear a duty of care analogous to doctors or lawyers elevates technical work from craft to profession. It means that my responsibility extends beyond writing efficient code or building accurate models, I must actively prevent harm, ensure fairness, and remain transparent about system limitations. This framing transformed how I approached my

research proposal: governance mechanisms were not bureaucratic obstacles but constitutive elements of sustainable innovation.

The Cambridge Analytica case study provided a visceral illustration of ethical failure. Here was a seemingly innocent personality quiz weaponised for mass psychological manipulation, demonstrating how weak consent, unclear purpose, and profit motives can corrupt legitimate research into exploitation. The case reinforced three principles that will guide my future practice: never disguise data collection intent, minimise data collection (especially about third parties), and separate research from commercial repurposing without renewed consent.

Personal and Emotional Dimensions of Learning

Emotionally, this module was a journey from uncertainty to cautious confidence. In the early units, I felt overwhelmed by the sheer breadth of research methods, qualitative versus quantitative, exploratory versus descriptive, inductive versus deductive. I worried about choosing the "wrong" methodology for my literature review and research proposal. The first collaborative discussion on ethics also challenged me intellectually; synthesising complex arguments from Floridi, Leslie, and Dwivedi while integrating peer feedback required me to engage with academic debate at a deeper level than I had previously experienced.

The statistical worksheets provoked frustration initially, particularly when Excel formulas failed or when I struggled to interpret ANOVA outputs. However, learning that statistics is about telling a story with data, not just calculating numbers, shifted my perspective. I began to see errors not as personal failures but as learning opportunities, and I developed resilience in troubleshooting problems and seeking help.

The most satisfying moment came when completing my research proposal presentation. After weeks of reading, synthesising, and critically evaluating literature, I finally articulated a coherent research question and methodology. Creating the Gantt chart and operationalising abstract concepts like "thematic analysis" and "triangulation" into concrete research activities gave me a sense of agency, I was no longer passively consuming knowledge but actively designing an investigation that could generate new insights.

NOW WHAT: Growth, Application, and Future Directions

Professional Skills Development and SWOT Analysis

Reflecting on my learning journey through this module, I recognise significant professional growth across multiple dimensions. To structure this analysis, I conducted a SWOT assessment:

Strengths:

- **Critical Analytical Thinking:** I can now evaluate academic literature with discernment, identifying methodological limitations, comparing contradictory findings, and synthesising evidence from diverse sources. This skill is directly transferable to workplace contexts where

I must assess vendor claims, evaluate business intelligence reports, or review technical documentation.

- **Research Design Competence:** I understand how to formulate research questions, select appropriate methodologies, design data collection instruments, and plan analysis strategies. This competence positions me to contribute to organisational research projects, whether evaluating new technologies, assessing customer needs, or conducting competitive analysis.
- **Ethical Awareness:** I possess a heightened sensitivity to the ethical dimensions of data use, particularly regarding consent, privacy, bias, and transparency. In future AI-related roles, I will proactively advocate for responsible practices, ensuring that innovation does not compromise societal trust.

While not an expert statistician, I can now interpret common statistical outputs, recognise appropriate applications of different tests, and communicate data-driven insights to non-technical stakeholders.

Weaknesses:

- **Advanced Statistical Techniques:** My understanding remains limited to descriptive statistics and basic inferential tests. I lack experience with multivariate methods, machine learning evaluation metrics, or time-series analysis, skills increasingly relevant in data-intensive e-business contexts.
- **Qualitative Data Analysis:** While I proposed qualitative methods in my research proposal, I have not yet conducted actual interviews, coded transcripts, or navigated the interpretive challenges of thematic analysis. This remains a theoretical rather than embodied skill.
- **Time Management:** I occasionally underestimated the time required for complex tasks like the literature review, leading to compressed timelines for writing and revision. Improved project planning and earlier engagement would enhance quality.

I sometimes deferred excessively to published authorities rather than trusting my own analytical voice. Developing greater intellectual independence will strengthen my contributions to academic and professional discourse.

Opportunities:

- **Capstone Project Application:** The methodological skills and ethical frameworks developed in this module directly support my upcoming MSc project. I can now design a rigorous empirical study, integrate ethical governance into technical development, and situate my work within existing scholarship.
- **Industry Certification:** The module reading introduced me to certifications like the BCS Practitioner Certificate in Data Protection and the Certified AI Ethics Specialist. Pursuing these would formalise my ethical competencies and enhance professional credibility.
- **Interdisciplinary Collaboration:** Understanding both technical and social dimensions of AI positions me to bridge disciplinary divides, facilitating collaboration between engineers, ethicists, business leaders, and policymakers.

By staying current with AI governance debates and responsible innovation frameworks, I can contribute to shaping organisational policies, industry standards, and public discourse around emerging technologies.

Threats:

- **Rapid Technological Change:** The AI field evolves faster than academic literature or regulatory frameworks can adapt. Maintaining relevance requires continuous learning and agility in updating knowledge.
- **Regulatory Complexity:** As jurisdictions implement divergent AI regulations (EU AI Act, US sectoral approaches, GDPR interactions), navigating compliance will become increasingly complex, demanding specialised legal-technical expertise.
- **Ethical Complacency:** There is a risk that ethical principles remain abstract commitments rather than embedded practices. Without institutional support and accountability mechanisms, good intentions may not translate into responsible outcomes.

As I transition from student to professional researcher, I may struggle with confidence in my expertise, particularly when engaging with established scholars or industry leaders.

Short-Medim Term Plan (Next 6-12 Months)

1. **Enroll in Advanced Statistics Course**: Complete an online course in multivariate analysis or machine learning evaluation metrics to deepen quantitative skills.
2. **Conduct Practice Interviews**: Volunteer for a qualitative research project or conduct informational interviews with AI practitioners to build interview and coding skills.
3. **Develop Professional Portfolio**: Create a public-facing portfolio showcasing my research, statistical analyses, and ethical frameworks, using GitHub Pages or a personal website.
4. **Pursue BCS Certification**: Begin preparation for the BCS Practitioner Certificate in Data Protection or a related credential to formalize governance expertise.
5. **Publish Findings**: Target a practitioner-oriented publication (e.g., Harvard Business Review, MIT Sloan Management Review) to translate academic insights into actionable guidance for managers.

Long-Term (1-3 Years / Post-Graduation):

1. **Contribute to Standards Development:** Engage with organisations like ISO, IEEE, or industry consortia developing AI standards and best practices.
2. **Mentor and Educate:** Share knowledge through teaching, workshop facilitation, or mentoring junior professionals entering the field.
3. **Continuous Learning:** Commit to reading at least two academic papers and one industry report monthly, attending annual conferences, and participating in professional development activities.

Lessons and skills developed:

The skills and insights developed in this module have immediate applicability across multiple professional contexts:

- I can now critically evaluate AI vendor claims, distinguishing substantiated benefits from marketing hyperbole. When a supplier promises "99% accuracy" or "bias-free recommendations," I know to ask: "On what dataset? Using which metrics? What failure modes remain?"
- I can design and conduct organisational research to assess customer needs, evaluate system performance, or compare competing technologies using appropriate methodologies.
- I understand how to structure governance frameworks that balance innovation with accountability, ensuring that AI deployments are transparent, auditable, and aligned with organisational values.
- I can contribute to policy discussions by articulating the practical challenges of implementing ethical principles, drawing on empirical evidence rather than abstract ideals.
- I understand the trade-offs inherent in different regulatory approaches, enabling nuanced contributions to debates about proportionate governance.
- I can structure arguments systematically, synthesise diverse perspectives, and cite evidence rigorously, skills essential for reports, proposals, white papers, and publications.
- I can communicate complex technical concepts to non-specialist audiences through effective data visualisation and clear prose.
- I can translate between technical and ethical vocabularies, facilitating dialogue between data scientists, legal teams, business leaders, and civil society stakeholders.
- I appreciate that responsible innovation requires diverse perspectives, and I actively seek input from those affected by technological systems.

Conclusion

This Research Methods and Professional Practice module has been transformative, equipping me with methodological competencies, ethical frameworks, and critical perspectives essential for navigating the complex landscape of AI-driven digital business. From grappling with statistical hypothesis tests to synthesising fragmented literatures, from designing research proposals to reflecting on fiduciary duties, I have developed a robust foundation for both academic scholarship and professional practice.

The journey was not always comfortable, uncertainty, frustration, and self-doubt were frequent companions. But discomfort is the precondition for growth, and I now approach challenges with greater resilience and reflexivity. I recognise that expertise is not a destination but a continuous process of learning, unlearning, and relearning in response to new evidence and changing contexts.

Looking forward, I am excited to apply these skills in my capstone project, where I will design and implement a substantial research artefact that integrates technical innovation with ethical governance. Beyond graduation, I envision a career at the intersection of technology, ethics, and

policy, contributing to the responsible development and deployment of AI systems that enhance human flourishing while respecting autonomy, fairness, and dignity.

This module has taught me that data is only as powerful as its presentation, that methodology is only as valuable as its ethical grounding, and that innovation is only as sustainable as the trust it cultivates. These lessons will guide my practice as I transition from student to professional, from consumer of knowledge to contributor to collective understanding, from technologist to responsible steward of transformative technologies.

References

- Association for Computing Machinery (2018) *ACM Code of Ethics and Professional Conduct*. Available at: https://www.acm.org/code-of-ethics
- Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3(2), pp. 77-101.
- British Computer Society (n.d.) *Code of Conduct*. Available at: https://www.bcs.org/membership/become-a-member/bcs-code-of-conduct/
- Correa, C. et al. (2023) 'Global AI Governance and the Challenge of Normative Consensus', *Journal of AI Policy and Ethics*.
- Deckard, T. (2023) 'The Fiduciary Turn in Generative AI Ethics', *AI & Society*, 38(4), pp. 1021-1034.
- Floridi, L. and Cowls, J. (2022) 'A Unified Framework for AI Governance', *AI & Society*.
- Leslie, D. (2020) *Understanding Artificial Intelligence Ethics and Safety*. London: Alan Turing Institute.
- Saunders, M., Lewis, P. and Thornhill, A. (2023) *Research Methods for Business Students*. 9th edn. Harlow: Pearson.
- Tranfield, D., Denyer, D. and Smart, P. (2003) 'Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review', *British Journal of Management*, 14(3), pp. 207-222.
- Yin, R.K. (2018) *Case Study Research and Applications: Design and Methods*. 6th edn. Thousand Oaks, CA: Sage.