

# Research Proposal

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## List of Abbreviations

AI.....	Artificial Intelligence
ML .....	Machine Learning
SMEs .....	Small and Medium-sized Enterprises

## Research Question

Given my interest in Sales and Business Analytics, along with the rapidly growing importance of artificial intelligence (AI), the intersection between these areas is a suitable basis for my research. At first, I formulated the question, how to enhance AI forecasting in B2B sales; however, this question required more focus. A more precise version of this hypothesis posited that the improvement of B2B sales forecasts in volatile phases through the utilisation of AI was challenging to find appropriate literature on. Subsequently, with the assistance of artificial intelligence, feedback and an analytical revision were conducted, which finalised in “What organisational and strategic factors influence the feasibility of implementing AI-driven sales forecasting tools in small and medium-sized enterprises (SMEs)?”.<sup>1</sup>

## Literature Review & Literature Search

The importance of AI especially in forecasting demand and economic development for sales management, is growing rapidly (*FRIESON ET AL., 2023*). While large companies increasingly pursue digital transformation, SMEs often encounter structural, organisational and strategic barriers hindering adaptation (*OECD, 2021*). In 2019, 55% of surveyed retailer stated that investment in AI methods was not affordable for SMEs (*BMWK, 2020*), highlighting the cost constraint that limits SMEs with technological advancement.

AI describes a computer system capable of performing tasks that normally require human intelligence, such as perception, learning and decision making. Within AI, machine learning (ML) functions as the core mechanism for identifying patterns within data. (*ISO, 2022*) Collectively, these technologies enable higher forecasting precision and enhance modern business efficiency, a connection that becomes evident across the literature addressing how AI integration shapes forecasting accuracy, data utilisation, and strategic responsiveness in different organisational contexts.

The following literature provides a solid foundation for a distinct perspective on AI-driven forecasting, integration challenges and strategic implications for SMEs and partially large companies.

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<sup>1</sup> Refer to the Appendix for ABC-Concept and Checklist

<b>Author(s) &amp; Year</b>	<b>Focus</b>	<b>Key Points</b>
<b>Kolková &amp; Ključnikov (2022)</b>	<i>Comparison of AI-based statistical and hybrid forecasting models in SMEs and large firms</i>	<i>Statistical models suit SMEs due to limited resources; large firms should use precise hybrid or AI-based models</i>
<b>Stepanov (2025)</b>	<i>Predictive analytics for demand and supply control in SMEs</i>	<i>Highlights issues of poor data quality, skill shortage, and integration into business processes in SMEs</i>
<b>Gupta &amp; Agarwal (2024)</b>	<i>Integration of CRM and ERP systems with AI algorithms</i>	<i>Real-time Data integration improves sales forecasting accuracy and business responsiveness</i>
<b>Frierson et al. (2023)</b>	<i>AI-based competency forecasting in SMEs</i>	<i>Developing skills in a targeted way requires a high level of time, financial and personnel resources, the kind of resources SMEs generally do not have</i>

Although substantial research has been conducted regarding AI-supported forecasting, a gap remains in the literature regarding the influence of structural and organisational factors on the implementation of AI in SMEs. Existing studies primarily examine model accuracy, predictive performance, or technical integration, while considering the contextual factors that contribute to adoption effectiveness. The table summarising current key literature confirms this imbalance: research emphasises technical performance and data integration but rarely investigates managerial structures, workforce competencies, or organisational readiness. This lack of empirical research leaves unanswered how internal processes, leadership support, and employee capabilities affect the effective use of AI-based forecasting tools in SMEs. Consequently, there is limited understanding of the organisational conditions that enable SMEs to implement and benefit from AI effectively. Addressing this research gap represents the central objective of the present study.

The primary focus of the literature research is on the DCU Library, the ESB Library, Google Scholar, Statista and Scopus. The following keywords are to be used as exemplars for search engines: AI, sales forecasting, SMEs, and implementation. The selection criteria that will be employed are relevance, recency (publications made later than 2020), peer-review status, and finally citation frequency.<sup>2</sup>

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<sup>2</sup> Refer to the Appendix for the Search Strategy

## Research Plan

During the first semester, the main focus will be on conducting systematic and critical literature research.<sup>3</sup> The aim is to gain an understanding of the theoretical aspects and research gaps relating to AI-supported sales forecasting tools in SMEs. The research objectives are to analyse existing models and theoretical approaches to the introduction of artificial intelligence, examine organisational and strategic influencing factors and evaluate the feasibility of such technologies within an SME context. The literature review will be conducted in stages. First, a systematic search will be conducted in the databases mentioned earlier. Then, the selected sources will be critically analysed and thematically categorised. Zotero will be used to manage and structure the literature. The literature review links theoretical concepts with empirical findings to create a coherent, evidence-based argument. AI will be used exclusively in a supplementary capacity for tasks such as summarizing literature, text structuring or language revision, while upholding academic integrity and adhering to proper citation practices.

The following structure gives an idea of the necessary key areas of the literature review.

1. Introduction
2. Conceptual and Analytical Framework
3. AI and Sales Forecasting
4. Organizational Factors
5. Strategic Factors
6. Synthesis and Gap Identification

Challenges may arise from the broad scope of topics and the interdisciplinary nature of AI applications in SMEs, which require careful delimitation of focus.

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<sup>3</sup> Refer to Appendix for Research Plan Schedule

## Reference List

- BMWK (2020) ‘Stimmen Sie der Aussage zu, dass die Investitionskosten für den Einsatz von KI-Methoden für kleine und mittlere Unternehmen aktuell nicht tragbar sind?’. Statista GmbH. Zugriff: 29. Oktober 2025.’ Statista. Available at: <https://de.statista.com/statistik/daten/studie/1091520/umfrage/beurteilung-der-investitionskosten-fuer-ki-methoden-in-deutschland/> (Accessed: 29.10.2025).
- Frierson, C. *et al.* (2023) ‘Conceptualization of an AI-based Skills Forecasting Model for Small and Medium-Sized Enterprises (SMEs)’. Edited by D. Herberger, M. Hübner, and V. Stich. Available at: <https://doi.org/10.15488/13499>.
- Gupta, A. and Agarwal, P. (2024) ‘Enhancing sales forecasting accuracy through integrated enterprise resource planning and customer relationship management using artificial intelligence’, *Proceedings of the 3rd International Conference on Artificial Intelligence for Internet of Things (AIIoT)*, Vellore, India, pp. 1–6. IEEE. Available at: <https://doi.org/10.1109/AIIoT58432.2024.10574785>.
- International Organization for Standardization (ISO) (2022) *ISO/IEC 22989: Artificial intelligence — Concepts and terminology*. Geneva: ISO. Available at: <https://www.iso.org/standard/74296.html> (Accessed: 29 October 2025).
- Kolková, A. and Ključnikov, A. (2022) ‘Demand forecasting: AI-based, statistical and hybrid models vs practice-based models - the case of SMEs and large enterprises’, *Economics & Sociology*, 15(4), pp. 39–62. Available at: <https://doi.org/10.14254/2071-789X.2022/15-4/2> (Accessed: 29.10.2025).
- OECD (2021) *The Digital Transformation of SMEs*. OECD Publishing (OECD Studies on SMEs and Entrepreneurship). Available at: <https://doi.org/10.1787/bdb9256a-en>.
- Stepanov, M. (2025) ‘USING PREDICTIVE ANALYTICS FOR MANAGING SUPPLY AND DEMAND IN SMALL AND MEDIUM-SIZED ENTERPRISES’, *European Journal of Economic and Financial Research*, 9(3). Available at: <https://doi.org/10.46827/ejefr.v9i3.2006>.

## **Declaration of Authorship**

### **DCU Business School**

**Assignment Submission:** 03/11/2025

**Student Names and Student Numbers:** Tom Blume (46557)

**Programme:** Bachelor of Arts in Global Business (Germany)

**Project Title:** Research Proposal

**Module Code and Title:** BAA1010 Business Project

**Lecturer:** Professor Teresa Hogan

**Project Due Date:** 03/11/2025

### Declaration

I declare that this material, which I now submit for assessment, is entirely my own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work. I understand that plagiarism, collusion, and copying is a grave and serious offence in the university and accept the penalties that would be imposed should I engage in plagiarism, collusion, or copying. I have read and understood the Assignment Regulations set out in the module documentation. I have identified and included the source of all facts, ideas, opinions, viewpoints of others in the assignment references. Direct quotations from books, journal articles, internet sources, module text, or any other source whatsoever are acknowledged and the source cited are identified in the assignment references.

I have not copied or paraphrased an extract of any length from any source without identifying the source and using quotation marks as appropriate. Any images, audio recordings, video or other materials have likewise been originated and produced by me or are fully acknowledged and identified.

This assignment, or any part of it, has not been previously submitted by me or any other person for assessment on this or any other course of study. I have read and understood the referencing guidelines found at <https://www.dcu.ie/library/citing-referencing> and/or recommended in the assignment guidelines.

I understand that I may be required to discuss with the module lecturer/s the contents of this submission.

I/me/my incorporates we/us/our in the case of group work, which is signed by all of us.

Signed:



## Declaration of AI

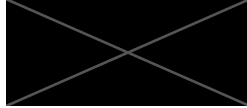
### Declaration Statement

Please tick the appropriate box relating to your use of Gen AI tools in this thesis

A.  I did not use any Gen AI tools (including for editing and proofreading) in the completion of this assignment

B.  I did use Gen AI tools in the completion of this assignment

Signature:



Date: 02.11.2025

If you tick A and evidence of Gen AI use is found in your assignment, this constitutes a breach of academic integrity, and your case will be forwarded to the Faculty Disciplinary Committee for further investigation.

If you tick B: please complete the below -

Date	Tool	Details
15.10.2025	Gemini 2.5 Flash	Research Question (RQ) scoping. Prompted for ABC-model critique of “To what extent...worthy?” Asked for focus check, structure fixes, and alternatives. Used output to remove “worthy,” define measurable outcomes, and draft three focused RQs. Verified claims against methods texts and SME AI adoption papers. Rewrote in my own words.
20.10.2025	Notebook LM	Literature table draft. Prompted to summarise key finding and focus for four cited sources related to SME feasibility. Used output as a framework only. Cross-checked against the PDFs, corrected phrasing, and added page refs. Recreated the table in my own voice; no AI-generated claims kept without verification.
29.10.2025	Gemini 2.5 Flash	Chapter 2 outline planning. Prompted for a thematic LR structure using TOE/DOI and a gap section for SMEs and AI forecasting. Used as planning notes. Removed generic content and emojis. Aligned headings to expectations. No pasted AI text.
02.11.2025	Grammarly	Checked grammar, spelling, and punctuation only. No stylistic rewriting or content changes. Confirmed all corrections manually before acceptance. Compliant with DCU AI-use guidelines (basic proofreading functions only).

## Appendix

### ABC-Concept:

“What organisational and strategic factors influence the feasibility of implementing AI-driven sales forecasting tools in small and medium-sized enterprises (SMEs)?”

### Abstract (core research focus)

### Context

### Checklist:

#### Appropriateness:

- Research question aligns with management fields
- Focus on SMEs is realistic and contextually relevant
- Dissertation Topic Choice: AI in Business

#### Capability:

- Feasible to study with accessible data (surveys, interviews, case studies)
- Variables (organisational and strategic factors) are measurable

#### Fulfilment:

- Strong alignment with career interests: business analytics, business intelligence or strategic sales
- understanding of AI integration in commercial decision-making
- evidence of expertise in linking strategy, analytics, and organisational factors

### Search Strategy:

Concept 1	Link	Concept 2	Link	Concept 3
“AI”	<b>AND</b>	*Forecast*	<b>AND</b>	SME*
<b>OR</b>		<b>OR</b>		<b>OR</b>
“Artificial intelligence”		"Sales w/5 forecast*"		Small and medium sized Enterprises
<b>OR</b>		<b>OR</b>		<b>OR</b>
"Predictive analytics"		"Sales w/5 predict*"		"Medium enterprise*"
<b>OR</b>		<b>OR</b>		<b>OR</b>
“Machine Learning”		"Demand predict*"		"Small business*"

## Research Plan Schedule

Task	Month Week	September				October				November				December
		1	2	3	4	5	6	7	8	9	10	11	12	13
1. Dissertation Topic Choice														
2. Define Research Focus and Topic Connection														
3. Finalising Research Question														
4. Complete LetsFind														
5. Read Assignment Guidelines, lecture Notes and core reading														
6. Complete Search Strategies														
7. Complete Research Proposal (4-5 Key Identified Readings)														
8. Finalize key readings														
9. Skim abstracts and identify relevance														
10. Import to Zotero and tag by theme														
11. Read and summarize key literature														
12. Extract theoretical frameworks and methodologies														
13. Write literature review draft														
14. Check consistency with research question														
15. Review and finalise writing														
16. Complete AI declaration														
17. Check Assignment Guidelines														
18. Peer review														
19. Final Edits														
20. Submission														