

AITRaIN: empowering SMEs with Artificial Intelligence skills by AITRaIN competence framework and curriculum

Aneta Poniszewska-Marańda^{1,*†}, Konstantinos Androulakis², Costantinos Andronis³, Stela Hoxha⁴, Łukasz Chomątek⁵, Rodos Androulakis⁶ and Evangelos Tsoumas⁷

¹*Institute of Information Technology, Lodz University of Technology, Lodz, Poland*

²*European Center In Training For Employment, Greece*

³*European Center In Training For Employment, Greece*

⁴*Amaris España Estrategia E Innovacion Tecnologica, Spain*

⁵*Institute of Information Technology, Lodz University of Technology, Lodz, Poland*

⁶*LDI UG, Germany*

⁷*metalaxis s.r.o., Czechia*

Abstract

The AITRaIN project addresses the urgent need to bridge the gap between the rapid development of Artificial Intelligence (AI) technologies and the current capabilities of Small and Medium-sized Enterprises (SMEs) in Europe. By developing a comprehensive AI Competence Framework, standardized curriculum, and digital training materials, AITRaIN empowers SME professionals to acquire relevant AI skills and micro-credentials. The project also establishes a robust dissemination and engagement strategy, ensuring broad impact and sustainability. This paper presents the project's objectives, methodology, partnership, and key results to date, highlighting its relevance to the digital transformation and skills agenda of the advanced information systems engineering. The project's open-access outputs and inclusive approach aim to bridge the gap between VET education and the evolving demands of the modern digital-based economy.

Keywords

Artificial Intelligence, Small and Medium-sized Enterprises (SMEs), Competence Framework, Micro-credentials, Information Systems Engineering, Digital Training

1. Introduction

The rapid evolution of Artificial Intelligence (AI) is fundamentally transforming the landscape of business, industry, and society. As AI technologies become increasingly embedded in products, services, and decision-making processes, the demand for professionals equipped with relevant AI competencies is surging across all sectors. Small and Medium-sized Enterprises (SMEs), which form the backbone of the European economy, face unique challenges in this transformation. While large organizations often have the resources to invest in AI research, development, and talent acquisition, SMEs frequently lack the expertise, infrastructure, and training pathways necessary to harness the full potential of AI [1, 3, 4].

The digital transformation of the European economy is accelerating, with Artificial Intelligence (AI) at the forefront of innovation and competitiveness. However, many Small and Medium-sized Enterprises (SMEs) face significant challenges in adopting AI technologies due to limited resources, lack of expertise, and rapidly evolving skill requirements.

Recognizing this critical skills gap, the AITRaIN (Artificial Intelligence Training and Innovation for SMEs) project was launched to empower SME professionals and trainers with the knowledge, skills and

International Conference on Advanced Information Systems Engineering (CAISE) 2026: Research Project Exhibition

*Corresponding author.

†These authors contributed equally.

✉ aneta.poniszewska-maranda@p.lodz.pl (A. Poniszewska-Marańda); costas@ecte.gr (K. Androulakis); eu-projects@ecte.gr (C. Andronis); shoxha@mantu.com (S. Hoxha); lukasz.chomatek@p.lodz.pl (Ł. Chomątek); info@ldi-berlin.de (R. Androulakis); vagelis@metalaxis.net (E. Tsoumas)

ORCID 0000-0001-7596-0813 (A. Poniszewska-Marańda); 0000-0002-7651-6877 (Ł. Chomątek)



© 2026 Copyright for this paper by its authors. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).

certifications required for effective AI integration. The project brings together a diverse consortium of partners from Poland, Greece, Spain, Germany and Czechia, including universities, training centers, technology firms and innovation consultancies, to collaboratively design, pilot and disseminate a comprehensive AI competence framework, curriculum and certification system tailored to the needs of SMEs [2, 4, 5].

The AITRaIN project was conceived to address these challenges by equipping SME professionals with the knowledge, skills, and tools necessary to harness the potential of AI for business growth and innovation. AITRaIN is grounded in the principles of advanced information systems engineering (AISE), which emphasizes the socio-technical integration of digital technologies into organizational processes. The project not only addresses technical skill development but also considers the organizational, ethical, and strategic dimensions of AI adoption. By leveraging design thinking, stakeholder engagement and iterative development, AITRaIN aims to produce scalable, transferable, and sustainable solutions that can be adopted by SMEs across Europe.

The project brings together a consortium of experienced partners from across Europe, each contributing unique expertise in AI, vocational education and training (VET), curriculum development and digital dissemination. Through a comprehensive approach that combines needs analysis, competence framework development, curriculum design, digital delivery and robust dissemination, AITRaIN aims to create a sustainable impact on the AI readiness of European SMEs [5, 6, 7].

The project brings together five partners from different European countries, each contributing expertise in education, digital innovation, sustainability, and stakeholder engagement. The consortium's collective experience ensures a robust, context-sensitive approach to curriculum development and capacity building.

The main purpose of AITRaIN is to: (1) bridge the gap between AI technology advancements and SME workforce capabilities; (2) develop a comprehensive AI Competence Framework tailored for SME professionals; (3) create a standardized curriculum and digital training materials based on the framework; (4) implement a micro-credentialing system for AI competencies; (5) foster engagement and collaboration among SMEs, educators and stakeholders.

The AITRaIN Consortium contains five partners. Their roles and duties in the framework of the project are as follows:

1. Technical University of Lodz (Poland): provides academic expertise in artificial intelligence, machine learning and digital education. The university is involved in research, curriculum development, and piloting of training materials.
2. ECTE (European Center for Training and Education, Greece): brings expertise in vocational education, training, and European project implementation; responsible for quality assurance and dissemination leadership.
3. AMARIS (Spain): brings technical expertise in AI and supports the creation of up-to-date, industry-relevant training content. It leads the development of AI Competence Framework, particularly conducting a systematic review of existing innovative generative AI models.
4. LDI (Germany): ensures that project outcomes are effectively measured and that continuous improvement is embedded throughout the project lifecycle. It is responsible for the evaluation plan and monitoring of the project. The partner leads the identification of synergies within the curriculum development work package and supports quality assurance and evaluation activities.
5. metalaxis s.r.o. (Czechia): specializes in digital innovation, training and consultancy, with a focus on generative AI and supporting SMEs in digital transformation. In the AITRaIN project, metalaxis is actively involved in developing real-world capstone project scenarios and implementing capstone activities, collaborating closely with other partners to ensure practical, industry-relevant outcomes.

All partners contribute to stakeholder engagement, content development and quality assurance through the Project Steering Committee and national AITRaIN Committees. Full Project Name is AITRaIN – Developing a professional profile of AI training specialist

The paper is structured as follows: Section 2 presents the objectives, methodology and expected tangible outputs of AITRaIN project. Section 3 describes the AI Competence Framework developed for SMEs in the framework of AITRaIN while section 4 deals with AITRaIN project issue relevance to advanced information systems engineering.

2. Project objectives, methodology and expected tangible outputs

A key innovation of the project is its focus on micro-credentialing and certification in line with ISO 17024 norms, ensuring that professionals who complete the training are recognized as "AI integration specialists for SMEs". The project also prioritizes ongoing learning, encouraging certified professionals to stay updated with AI advancements and to continue their professional development journey. Through its comprehensive approach—spanning needs analysis, curriculum design, digital training materials, examination mechanisms and robust dissemination—AITRaIN aspires to bridge the AI skills gap, enhance career opportunities and contribute to the digital transformation of the European SME sector [7, 8].

The main AITRaIN project objectives are as follows:

- Design a AI Competence Framework: structured set of AI knowledge and skills for SMEs, developed through stakeholder engagement and expert consultation.
- Build the standardized AI curriculum: covering AI fundamentals, generative AI models and practical applications relevant to SME practices.
- Develop training materials: delivered via an e-platform, accessible to SME professionals and VET providers.
- Engage micro-credentialing system: awarding digital badges and certificates based on competency attainment, supporting lifelong learning and career progression.
- Integrate project outcomes into standard VET policies and practices, ensuring sustainability and long-term impact.

The methodology of AITRaIN include the following approaches:

- Design thinking: user-centered, iterative development of the AI Competence Framework and curriculum, ensuring alignment with SME needs.
- Stakeholder engagement: involvement of SMEs, communication experts and industry representatives in needs analysis, piloting and feedback collection.
- Digital delivery: all training materials and micro-credentials delivered via an online platform, supporting flexible and scalable access.
- Monitoring and evaluation: regular assessment of project impact, effectiveness and partner satisfaction.

The AITRaIN project employs a structured, quality-driven, and inclusive methodology to ensure the effective development and implementation of AI training for SMEs. The project uses the PDCA (Plan, Do, Check, Act) cycle as its core quality management framework. This ensures that all activities are systematically planned, executed, evaluated and refined for ongoing improvement and inclusivity throughout the project lifecycle. All activities and outputs are designed to be accessible, inclusive and equitable, addressing the needs of diverse groups of learners, educators and SMEs. The methodology emphasizes resource accessibility, infrastructure development, effective communication, stakeholder engagement and process optimization to reach a broad audience.

The project applies Design Thinking methodology, especially in the development of real-world, "messy" problem scenarios (capstone projects) that reflect the actual challenges faced by SMEs. Stakeholder engagement is central, involving SMEs, educators, and industry representatives in needs analysis, piloting, and feedback loops to ensure relevance and practical value.

A particular emphasis is placed on accessibility and inclusion. All materials are developed following Universal Design, UDL, and WCAG 2.2 standards. The project ensures: involvement of individuals

with disabilities in resource creation, accessible events and digital materials, and transparent feedback channels for continuous improvement [7, 9, 10].

The AITRaIN project design and implementation was determined in few important steps:

1. Needs analysis – the project began with a comprehensive needs analysis involving SMEs, VET providers and industry experts. Surveys, interviews and focus groups were conducted to identify current gaps in AI skills, barriers to adoption and specific training needs. The findings informed the design of the AI Competence Framework and curriculum, ensuring relevance and applicability.
2. AI Competence Framework development – the framework is to be developed through literature review, benchmarking against existing standards and iterative consultation with stakeholders. It defines core AI competencies, including data literacy, machine learning, ethical AI and practical application in SME contexts. The framework serves as the foundation for curriculum development and micro-credentialing.
3. Curriculum and Training Materials development – based on the competence framework, a standardized curriculum will be designed, covering AI fundamentals, generative AI models and real-world applications. Digital training materials will be created, including interactive modules, video tutorials and case studies. The materials are required to be accessible via an online platform, supporting self-paced learning and blended delivery.
4. Micro-credentialing system – digital micro-credentialing system will be implemented, awarding badges and certificates to learners who demonstrate competency in specific AI skills. The system supports lifelong learning and career progression, providing recognition of skills acquired through the AITRaIN program.
5. Dissemination and engagement – comprehensive dissemination strategy was developed, including the creation of a branding toolkit, project website and active social media presence. Regular updates, news articles and newsletters are distributed to stakeholders, raising awareness and promoting engagement. Five multiplier events are planned, one in each partner country, to showcase project results and foster networking.
6. Sustainability and exploitation – sustainability plan was developed to ensure the long-term impact of the project. Strategies include partnerships with other organizations, commercialization opportunities and ongoing use of project materials by SMEs and VET providers. Feedback from stakeholders is continuously collected to inform future development and exploitation.

This methodology ensures that AITRaIN's activities are not only innovative and high-quality but also inclusive, practical, and sustainable—addressing the real needs of SMEs and the broader vocational education and training ecosystem.

3. AI Competence Framework development

Through a comprehensive mapping of AI technologies, an analysis of European policy frameworks and the review of relevant EU-funded initiatives, AITRAIN establishes a robust foundation for designing a competence framework, a professional profile and a tailored curriculum keeping into consideration the current market needs. Ultimately the goal is to the project supports SME workers, managers, and VET providers in acquiring the knowledge, skills, and attitudes required to use AI responsibly, efficiently, and sustainably, contributing to digital transformation and increased competitiveness across Europe.

AITRAIN project aims to generate a comprehensive and systematic review of the current landscape of generative artificial intelligence (AI) technologies, the specific potential of generative AI for SMEs, the European regulatory and policy environment governing AI deployment, and the ecosystem of relevant European projects. The goal is to ensure that subsequent project outputs—namely the competence framework, the professional profile and curriculum design – are grounded in robust, up-to-date, and multi perspective evidence.

To meet this objective, the consortium adopted a three-pillar methodological structure, each with its own defined research approach and purpose: (1) Analysis of Generative AI models for SMEs; (2) Analysis of European AI Policy and Regulatory Frameworks; (3) Analysis of European AI-related projects.

Table 1

Selected AI foundational models.

Chat models	Image generation
Claude (Anthropic)	Midjourney
Gemini (Google)	Nano Banana Pro
ChatGPT (OpenAI)	DALLE-3
Copilot (Microsoft)	Stable Diffusion
Meta AI (Meta)	Flux

Table 2

Selected AI services.

Marketing and content	Customer support
Runaway	Tidio
Jasper	Hubspot
Synthesia	Zendesk
Canva AI	Freshdesk
Copy.ai	Intercom

Analysis of Generative AI models for SMEs. In the initial phase of the AITRaIN project, the consortium conducted a systematic review to define the thematic scope and identify relevant AI technologies, applications, tools and methodological practices applicable to SMEs. The review specifically targeted solutions that are either already in use within vocational education and training (VET) contexts or demonstrate strong potential to transform teaching, learning, assessment, and workplace-based training for SMEs. Each partner organization analysed generative AI tools selected according to their own institutional profile and national context. To ensure methodological consistency and enable meaningful comparison across the consortium, all partners employed a standardized analysis template. This template guided the assessment of each tool's technical characteristics, functional capabilities, relevance for SMEs and potential impact on VET. The collaborative review process ensured a comprehensive and context-sensitive mapping of AI innovations, laying a robust foundation for the subsequent development of the project's competence framework and curriculum (Tables 1 and 2).

Analysis of European AI Policy and Regulatory Frameworks. The consortium conducted a comprehensive analysis of European policies, regulations, and governance frameworks shaping AI deployment, with a particular emphasis on SMEs, generative AI systems, and their implications for the VET sector. The aim was to understand the obligations, risks, opportunities and skills implications arising from these frameworks.

To ensure consistency, comparability, and thorough coverage across all participating countries, each partner followed a coordinated set of tasks aligned with the project's defined methodology. While the core policy analysis focused on EU-level legislation and regulatory frameworks, partners also incorporated insights from national implementation contexts, national guidance and country-specific SME needs. Each partner began by identifying relevant European-level policies, legislation, strategies and regulatory frameworks governing or influencing the adoption of AI—including generative AI—in SMEs.

The methodology applied a policy analysis framework that combined systematic document review with interpretative analysis, considering legal, ethical, economic, and skills-related aspects of AI regulation. The process included the following steps: (1) Identification of relevant EU-level policies and legal instruments. (2) Collection and review of official documents. (3) Analytical mapping of obligations, opportunities, and requirements. (4) Translation of policy insights into competence needs for SME professionals.

To guarantee robust coverage, each partner provided authoritative European policy resources, selected from categories such as:

- EU policies and strategies on generative AI for SMEs.
- EU regulations and directives (e.g. AI Act, Data Governance Act, GDPR, DSA/DMA).

- EU strategies (e.g. Coordinated Plan on AI, Digital Strategy, Skills Agenda).
- EU guidelines and ethical frameworks (e.g. Trustworthy AI, JRC technical reports).
- EU standardisation and governance documents (e.g. ISO/IEC AI standards, CEN/CENELEC outputs).

This coordinated approach ensured a comprehensive, multi-level understanding of the policy landscape, directly informing the development of the AI Competence Framework and training materials for SMEs.

Analysis of European AI-related projects. The analysis of European projects was carried out collaboratively across the partnership to ensure a broad, representative overview of the European landscape in artificial intelligence, SME digital transformation, and AI-related skills development. Partners followed a coordinated research approach that was both systematic and comparable, allowing the consortium to identify transferable tools, methodologies, and results that could contribute meaningfully to the development of the AITRaIN competence framework and curriculum model.

Each partner conducted a structured search within major European project repositories such as Horizon Europe and H2020, the Erasmus+ Project Results Platform, the Digital Europe Programme database, and other relevant European programs. Projects were selected based on their relevance to one or more of the following themes: artificial intelligence technologies, SME support and innovation, digital skills or workforce upskilling, AI training or competence development, and digital transformation initiatives. Partners prioritized projects completed or active within the last 5–7 years to ensure that the review reflected current trends, technologies, and policy directions.

Projects were screened according to the following criteria:

- Relevance to AI tools, generative AI, or digital technologies, AI for VET.
- SME orientation.
- Focus on skills, training, or competence development.
- Production of tangible outputs (toolkits, frameworks, curricula, demonstrators).
- Alignment with AITRaIN objectives.

Projects that were purely technical, unrelated to SMEs, or lacking publicly available results were excluded.

The results of all the reviews according to the methodology presented above are accessible on the AITRaIN website *URL: <https://aitrain-project.eu/>*. In general, it can be stated that Generative AI adoption in SMEs increasingly requires: the ability to identify and assess AI-related risks in concrete business use cases; basic governance practices, including documentation, oversight and accountability; awareness of data protection and data governance principles in everyday AI use; understanding of ethical and societal implications of AI-generated content; continuous upskilling of staff involved in AI-supported processes. These requirements point to a clear skills and competence gap that cannot be addressed solely through technical training on AI tools.

The regulatory and policy frameworks analysed by partners place significant responsibility on VET systems and training providers. Vocational education is expected to respond not only to technological change but also to regulatory and ethical expectations related to AI. Partners' findings indicate that VET programmes should: integrate AI literacy as a transversal competence across vocational profiles; address regulatory awareness, not as legal theory but as applied workplace practice; include ethical and responsible AI use as core learning outcomes; support trainers and educators in understanding and teaching AI-related governance issues; align training content with SME realities, including limited resources and practical constraints. This confirms the need for structured, practice-oriented training models tailored to SMEs and VET contexts (Table 3).

4. Relevance to advanced information systems engineering

AITRaIN is highly relevant to topics of advanced information systems engineering, particularly digital transformation, AI in business and skills development. The project's focus on AI competence frameworks,

Table 3

Competence implications for AITRaIN – from regulatory framework to training needs.

Regulatory & policy area	Key regulatory expectations	Implications for SMEs using GenAI	Competence areas to address by AITRaIN
AI Governance (EU AI Act & related frameworks)	Risk-based classification of AI systems, transparency, human oversight, documentation.	SMEs must identify AI use cases, assess risk levels, apply oversight measures, and document AI use even when relying on third-party tools.	AI risk awareness and classification; Basic AI governance practices; Human-in-the-loop decision-making.
Generative AI Transparency	Disclosure and transparency duties for certain AI uses (e.g. content generation).	SMEs must understand when AI-generated content should be identified or explained to users and customers.	Transparency and explainability awareness; Responsible use of AI-generated content; Communication of AI use in business contexts.
AI Literacy Requirements	Organisational expectation of AI literacy and staff awareness.	SMEs must ensure staff understand AI capabilities, limitations, risks, and ethical implications.	AI literacy for non-technical users; Critical understanding of generative AI outputs; Responsible prompt and output evaluation.
Data Protection (GDPR)	Lawful data use, minimisation, accountability, protection of personal data.	SMEs remain responsible for data used in prompts, workflows, and AI outputs.	Data protection awareness in AI use; Safe handling of personal and sensitive data; Data minimisation and anonymisation practices.
Data Governance & Data Sharing	Trust-based data access and reuse mechanisms.	SMEs must understand data ownership, access rights and responsible reuse when using or training AI systems.	Data governance basics; Understanding data roles (controller/processor); Responsible data sourcing for AI.
Platform Regulation (DMA / DSA)	Algorithmic transparency, platform accountability, fair access.	SMEs using generative AI for marketing, content or e-commerce must understand platform rules and risks.	Platform-aware AI use; Awareness of algorithmic influence on visibility and content; Compliance with platform terms.
Ethical & Human-Centred AI Principles	Avoidance of bias, discrimination and harmful outcomes.	SMEs must ensure AI use does not create unfair, discriminatory or misleading outcomes.	Ethical reasoning in AI use; Bias awareness and mitigation; Inclusive and responsible AI practices.
Cybersecurity & System Safety	Secure and robust AI-enabled digital systems.	SMEs must ensure AI tools are used within secure digital environments.	Basic cybersecurity awareness; Safe integration of AI tools into workflows; Risk awareness related to external AI services.
Education & Training Policy (VET-focused)	Integration of AI competences into training systems.	VET providers and trainers must align training with regulatory and labour-market expectations.	Pedagogical competences for AI training; Ability to translate regulation into learning outcomes; Curriculum design for AI in SMEs.

digital curriculum and micro-credentials aligns with information systems engineering emphasis on innovative information systems, workforce upskilling and the societal impact of digital solutions. The dissemination and engagement strategy demonstrates best practices in project communication, stakeholder involvement and sustainability planning.

AITRaIN follows the information systems engineering in the following areas:

- Integration of Generative AI into business information systems – AITRaIN directly addresses

the challenge of integrating cutting-edge generative AI technologies into the operational and decision-making processes of Small and Medium-sized Enterprises (SMEs). By designing a curriculum and training materials that focus on practical AI applications—such as AI-driven market analysis, chatbot automation, and generative AI for content creation—the project exemplifies how information systems can be enhanced with advanced AI components. This focus on the engineering of systems that leverage AI and machine learning to support complex business functions, improve efficiency, and enable new forms of value creation.

- AI-enhanced Learning Management Systems (LMS) – core output of AITRaIN is a fully functional, AI-enhanced LMS platform for vocational education and training (VET). This platform features adaptive learning paths, interactive AI tutors and gamified assessments—demonstrating the application of information systems engineering principles to the design of next-generation educational technologies. The LMS will not only deliver content but also personalizes the learning experience, collects analytics and supports micro-credentialing, reflecting the IS engineering emphasis on user-centred, data-driven and scalable system architectures.
- Micro-credentials and flexible learning pathways – project’s micro-credentialing system introduces modular, stackable certifications for AI skills, which are validated and transferable across borders. This approach leverages information systems for credential management, interoperability and recognition—key concerns in AISE, especially in the context of digital transformation, workforce mobility and lifelong learning.
- Design Thinking and Capstone Projects – AITRaIN incorporates a "capstone" project based on Design Thinking methodology, where learners tackle real-world, "messy" problems using generative AI tools. This mirrors the information systems engineering tradition of project-based learning and systems prototyping, where students and professionals apply engineering methods to solve complex, open-ended problems in organizational contexts.
- Scalability, transferability and policy impact – AITRaIN’s cross-border implementation and engagement with multiple sectors demonstrate how advanced information systems can be designed for scalability and transferability. The project’s outputs—frameworks, curricula, digital platforms—are intended to be adopted and adapted by other educational and economic sectors, embodying the information systems engineering principle of creating reusable, interoperable and impactful systems.
- Bridging the skills gap in the digital economy – AITRaIN’s focus on upskilling and reskilling SME professionals in AI directly addresses one of the most pressing challenges in information systems engineering: ensuring that the workforce is prepared to design, implement, and manage advanced digital systems. By providing accessible, industry-aligned training, AITRaIN contributes to the resilience and competitiveness of the European digital economy.

5. Conclusions

The AITRaIN project demonstrates a scalable, transferable approach to AI skills development for SMEs. By integrating design thinking, digital delivery, and micro-credentialing, the project addresses both immediate and long-term needs of the European workforce. The robust dissemination and sustainability strategy ensures that project outcomes will continue to benefit SMEs, educators, and policymakers beyond the project’s duration. Lessons learned include the importance of stakeholder engagement, the value of a strong project identity and the need for ongoing adaptation to technological and market changes.

AITRaIN is a strategic investment in the future of the European economy, equipping SMEs with the AI skills necessary to thrive in a rapidly evolving digital landscape. The project’s comprehensive framework, curriculum, and dissemination strategy provide a model for similar initiatives in AI training and workforce development. Ongoing collaboration, evaluation, and adaptation will ensure the continued relevance and impact of AITRaIN’s results.

Future directions include expanding the training platform to additional languages and regions, integrating emerging AI technologies, and fostering deeper collaboration with industry partners. Ongoing evaluation and feedback will guide continuous improvement and ensure the continued relevance and impact of AITRaIN's results. The identified challenges and lessons learned during the implementation of AITRaIN project till now are the following:

- Engaging SMEs with limited time and resources requires flexible training formats and clear value propositions.
- Continuous feedback and iterative development are essential for ensuring relevance and impact.
- Building strong project identity and stakeholder networks enhances dissemination and sustainability.

6. Acknowledgments

This project is co-funded by the Erasmus+ Programme of the European Union under Project No. 2025-1-PL01-KA220-VET-000358450. The authors thank the National AITRaIN Committees for their invaluable feedback during the field research phase.

Declaration on Generative AI

The author(s) have not employed any Generative AI tools.

References

- [1] Mbah, N.: Artificial Intelligence as a Catalyst for SME Digital Transformation: Frameworks and Case Studies. In: IRE Journals, 9(3), 353–356. <https://www.irejournals.com/formatedpaper/1710477.pdf> (2025)
- [2] Schwaewe, J., Peters, A., Kanbach, D. K., Kraus, S., and Jones, P.: The new normal: The status quo of AI adoption in SMEs. In: Journal of Small Business Management. (2024)
- [3] Szedlak, M., Tikkanen, J., and Baierl, R.: The adoption of AI in SMEs: Opportunities and challenges. In: Journal of Business Management, 21, 94–110. <https://journals.riseba.eu/index.php/jbm/article/download/336/269> (2021)
- [4] Samuel, L., and Alzeiby, E. A.: Digital transformation or digital divide? SMEs' use of AI during global crisis. Technological Forecasting and Social Change, 217, 124184. <https://www.sciencedirect.com/science/article/pii/S004016252500215X>
- [5] Peretz-Andersson, F., Tabares, S., Mikalef, P., and Parida, V.: Artificial intelligence implementation in manufacturing SMEs: A resource orchestration approach. In: International Journal of Information Management, 77, 102781. <https://www.sciencedirect.com/science/article/pii/S026840122400029X> (2024)
- [6] Robinson, D., and Patel, S.: AI Integration in the Workplace: Empowering Employees for the Future. In: Journal of Artificial Intelligence in Business, 5(1), 78–92. (2020)
- [7] Richard, H.: AI and Digital Transformation for SMEs: Regional Challenges and Global Opportunities Across Continents. In: Journal of Small Business and Enterprise Development (2025)
- [8] Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., and Podsakoff, N. P.: Common method biases in behavioral research: A critical review of the literature and recommended remedies. In: Journal of Applied Psychology, 88(5), 879–903. (2003)
- [9] Umutoni, J.: Intelligent Customer Service: AI-powered Automation in SMEs. In: Journal of Service Management, 36(1), 112–130. (2025)
- [10] Rahman, Md., Alam, Md., Alam, Shah, and Mrida, Md.: How Interactive Dashboards Improve Managerial Decision-Making in Operations Management. American Journal of Advanced Technology and Engineering Solutions, 1, 122–146. (2025)