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ESCOLA SUPERIOR
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NUNO MARIA
COLAÇO
BOTELHO
RODRIGUES

***GENERATIVE AI* E LLM E O SEU IMPACTO NA MELHORIA DO DESEMPENHO DAS APLICAÇÕES COMERCIAIS NAS PEQUENAS E MÉDIAS EMPRESAS**

Dissertação de Mestrado em Ciência de Dados
para Empresas

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4 de Dezembro de 2025

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A *Generative AI* e LLM e o seu impacto para melhorar o desempenho de aplicações comerciais em pequenas e médias empresas

Resumo

Esta dissertação explora o impacto da *Generative Artificial Intelligence* (*Generative AI*) e dos *Large Language Models* (LLM) na melhoria do desempenho das aplicações comerciais nas pequenas e médias empresas (PME). Através de uma revisão estruturada da literatura, o estudo visa proporcionar uma compreensão abrangente da evolução e do estado atual destas tecnologias, com especial incidência na sua aplicação nas PME. A investigação aborda uma lacuna significativa na literatura, desenvolvendo uma nova categorização das aplicações de LLM e *Generative AI* em vários domínios empresariais.

A metodologia inclui uma análise exaustiva de fontes académicas e industriais, tendências de mercado e padrões de adoção entre as PME. Ao sintetizar esta informação, o estudo identifica os principais casos de utilização, os potenciais impactos no desempenho e os desafios associados à implementação destas tecnologias em ambientes de PME. Além disso, a investigação incorpora exemplos do mundo real e estudo de caso, incluindo uma análise dos impactos da adoção interna em organização na área de TI.

A dissertação não só destaca o potencial da *Generative AI* e dos LLM para melhorar o desempenho empresarial, como também apresenta uma análise baseada em provas do seu impacto efetivo nas PME. Ao desenvolver uma taxonomia abrangente de aplicações e ao avaliar a sua eficácia em diferentes domínios empresariais, esta investigação fornece informações valiosas para as PME que consideram a integração destas tecnologias nas suas operações.

O estudo conclui com recomendações acionáveis para as PME sobre como aproveitar eficazmente a *Generative AI* e os LLM, abordando os desafios de implementação e maximizando os seus potenciais benefícios. Além disso, delinea futuras linhas de investigação para continuar a avançar na compreensão destas tecnologias transformadoras no contexto das PME.

Palavras chave: Modelos de linguagem de grande escala, Inteligência Artificial Generativa, Inteligência Artificial, ChatGPT, Processamento de linguagem natural, Aprendizagem automática, Aplicações empresariais, PME

***Generative AI* and LLM and their impact on improving the performance of business applications in small and medium-sized enterprises**

Abstract

This thesis explores the impact of *Generative AI* and Large Language Models (LLM) on improving the performance of business applications in small and medium-sized enterprises (SME). Through a structured literature review, the study aims to provide a comprehensive understanding of the evolution and current state of these technologies, with a particular focus on their application in SME. The research addresses a significant gap in the literature by developing a novel categorization of LLM and *Generative AI* applications across various business domains.

The methodology includes a thorough analysis of academic and industry sources, market trends, and adoption patterns among SME. By synthesizing this information, the study identifies key use cases, potential performance impacts, and challenges associated with implementing these technologies in SME environments. Additionally, the research incorporates real-world examples and case study, including an analysis of in-house adoption impacts from the author's workplace.

The thesis not only highlights the potential of *Generative AI* and LLM to enhance business performance but also presents an evidence-based analysis of their actual impact on SME. By developing a comprehensive taxonomy of applications and assessing their effectiveness across different business domains, this research provides valuable insights for SME considering the integration of these technologies into their operations.

The study concludes with actionable recommendations for SME on effectively leveraging *Generative AI* and LLM, addressing implementation challenges, and maximizing their potential benefits. Furthermore, it outlines future research directions to continue advancing the understanding of these transformative technologies in the context of SME.

Keywords: Large Language Models, *Generative AI*, Artificial Intelligence, ChatGPT, Natural Language Processing, Machine Learning, Business Applications, SME

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Lista de abreviaturas:

AI – *Artificial intelligence*

API – *Application Programming Interface*

LLM – *Large Language Models*

ML – *Machine Learning*

NLP - *Natural Language Processing*

ROI – *Return of investment*

PME – Pequenas e médias empresas

WoS – *Web of Science*

Introdução

A emergência de tecnologias baseadas em Inteligência Artificial (AI) tem catalisado uma transformação profunda na forma como as organizações operam, competem e criam valor (OECD , 2025) . No seio deste movimento disruptivo, os LLM e os sistemas de *Generative AI* têm-se afirmado como alicerces centrais de uma nova era de automação inteligente, com especial destaque para a sua capacidade de gerar conteúdo textual, visual e multimodal de forma autónoma, coerente e contextualizada (Metzger et al., 2025). Estas tecnologias, sustentadas por arquiteturas avançadas de *deep learning*, estão a expandir de forma inédita os limites do que é computacionalmente possível em tarefas de processamento de linguagem natural, síntese de conhecimento e interação homem-máquina (Obreja et al., 2025).

As PME, que representam mais de 90% do tecido empresarial mundial (European Commission , 2025) e especificamente Português (DGAE, s.d.) e desempenham um papel crucial na criação de emprego e inovação, enfrentam hoje o duplo desafio e oportunidade de integrar estas capacidades de *Generative AI* nas suas operações. Enquanto as grandes organizações têm liderado os investimentos em IA, beneficiando de recursos financeiros, técnicos e humanos significativos, observa-se uma crescente democratização do acesso à IA, impulsionada por plataformas *cloud*, *Application Programming Interface* (API) abertas e modelos de utilização *pay-as-you-go*. Neste novo contexto, as PME emergem não apenas como beneficiárias potenciais da AI, mas como agentes centrais da sua adoção estratégica, sobretudo em áreas como atendimento ao cliente, automatização de processos, geração de conteúdos, análise de dados e apoio à decisão (Costa et al., 2024).

Contudo, apesar do entusiasmo crescente em torno da *Generative AI* e dos LLM, a literatura científica carece ainda de um enquadramento sistemático e aplicado que clarifique os impactos reais e potenciais destas tecnologias no contexto específico das PME. A maioria dos estudos existentes tende a focar-se em grandes empresas ou em análises conceptuais sem granularidade suficiente para orientar decisões práticas nos contextos mais limitados, mas igualmente complexos, das PME (Rajaram & Tinguely, 2024). Além disso, subsiste uma lacuna evidente no que respeita à categorização estruturada dos casos de uso da *Generative AI* e dos LLM em domínios empresariais distintos, dificultando a transferência de conhecimento e a adaptação contextualizada das soluções tecnológicas.

É neste enquadramento que esta investigação se insere, propondo-se a analisar, o impacto da *Generative AI* e dos LLM na melhoria do desempenho das aplicações comerciais em PME. A dissertação parte de uma revisão estruturada da literatura, tanto académica como em estudos publicados por empresas consideradas de referência, com o objetivo de identificar as principais linhas de evolução tecnológica, os domínios de aplicação com maior evidência empírica, os benefícios reportados, os riscos identificados e as condições de sucesso para a adoção sustentável destas tecnologias.

Esta investigação analisa de forma aprofundada um estudo de caso num contexto organizacional concreto, permitindo articular os *insights* da literatura com a realidade operacional das PME e refletir sobre os fatores críticos de sucesso, resistências à mudança e impactos no desempenho organizacional.

Com uma abordagem metodológica mista, que conjuga revisão estruturada bibliográfica, análise de estudos de mercado e exploração de dados de um caso de estudo, este trabalho visa responder às seguintes questões fundamentais: Quais são os principais domínios empresariais onde a *Generative AI* e os LLM estão a ser aplicados em PME? Que impactos mensuráveis têm estas tecnologias nos processos e resultados empresariais? Que barreiras e desafios enfrentam as PME na sua adoção? E que direções futuras devem orientar a investigação e o desenvolvimento tecnológico para maximizar o valor destas ferramentas no ecossistema das pequenas e médias empresas?

A relevância desta investigação transcende o plano académico, tendo implicações diretas para a formulação de políticas públicas de apoio à digitalização das PME, para o desenho de soluções tecnológicas mais acessíveis e éticas, e para a capacitação dos profissionais em competências de AI aplicadas ao contexto empresarial. Ao articular um contributo teórico com uma preocupação prática e aplicada, esta dissertação pretende proporcionar uma melhor compreensão do papel estratégico da *Generative AI* e dos LLM na transformação digital das PME.

Justificação do tema

A escolha do tema “*Generative AI* e LLM e o seu impacto na melhoria do desempenho das aplicações comerciais nas pequenas e médias empresas” justifica-se pela necessidade de compreender como estas tecnologias emergentes estão a transformar os principais domínios de atividade das PME, destacando-se áreas como automação de tarefas,

personalização de conteúdos, apoio à tomada de decisão e geração de valor em diversos setores. Ao explorar de forma sistemática a evolução e o estado atual da *Generative AI* e dos LLM, este trabalho pretende identificar e categorizar os principais casos de utilização, evidenciando impactos mensuráveis nos processos e resultados empresariais.

Considera-se ainda pertinente abordar as barreiras e desafios enfrentados pelas PME na adoção destes sistemas, como limitações de competências, preocupações com privacidade, resistência à mudança e avaliação do retorno do investimento, através da análise de literatura, estudos de mercado, relatórios da indústria e exemplos práticos da empresa onde trabalho. Por fim, a dissertação promove uma reflexão sobre as direções futuras para a investigação e o desenvolvimento tecnológico, no sentido de maximizar o valor estratégico destas ferramentas para o ecossistema das pequenas e médias empresas. Desta forma, o estudo visa proporcionar um quadro completo que responde às questões: quais os principais domínios empresariais de aplicação, quais os impactos mensuráveis, que barreiras estão presentes e que perspetivas orientam o futuro da *Generative AI* e LLM neste tipo de organizações.

Objetivos da investigação

Os objetivos desta investigação centram-se na realização de uma revisão estruturada da literatura com o intuito de compreender o estado atual da *Generative AI* e dos LLM no mercado, com especial ênfase na sua evolução, principais casos de uso e domínios de aplicação em PME .

Com base nos resultados da revisão da literatura, o estudo visa analisar os impactos potenciais e reais que estas tecnologias têm no desempenho das PME , tendo como base os casos de uso e domínios identificados.

Outro objetivo fundamental é examinar as tendências atuais de mercado e os padrões de adoção de *Generative AI* e LLM por parte das PME , com o propósito de compreender como estas empresas estão a integrar estas tecnologias nos seus processos. A partir dessa análise, pretende-se gerar recomendações práticas e acionáveis que possam orientar as PME na adoção eficaz destas soluções, ultrapassando eventuais desafios técnicos, humanos ou estratégicos.

Por fim, a investigação sugere linhas futuras de investigação, com base nos resultados obtidos, que contribuam para o avanço do conhecimento científico e para o apoio contínuo à transformação digital das PME com recurso à *Generative AI* e aos LLM.

Metodologia

A presente investigação segue uma abordagem mista e sistemática, com o objetivo de compreender o impacto da *Generative AI* e dos LLM na melhoria do desempenho de aplicações empresariais em PME . A metodologia adotada articula várias etapas que, em conjunto, permitem explorar de forma integrada a literatura científica, a prática empresarial e a realidade operacional.

A dissertação tem como base uma revisão estruturada da literatura. Esta revisão visa mapear o estado da arte sobre a aplicação de LLM e *Generative AI* no contexto das PME , identificando os principais casos de uso e áreas de atividade, os desafios e as lacunas existentes no conhecimento atual.

A investigação recorreu a várias bases de dados académicas para recolher literatura científica relevante. A base de dados principal utilizada foi a Web of Science (WoS), selecionada pelo seu rigor académico, cobertura multidisciplinar e compatibilidade com ferramentas de análise bibliométrica. Para enriquecer o âmbito da análise, foram igualmente consultadas bases de dados e repositórios complementares, nomeadamente Scopus, EBSCO, IEEE Xplore, ACM Digital Library, Springer, Elsevier, SAGE, Wiley, Cambridge Journals, JSTOR, Emerald, Nature e ERIC. Com o intuito de incluir os desenvolvimentos mais recentes na área, também foram considerados *preprints* disponíveis no arXiv e no Google Scholar.

A seguinte *query* de pesquisa foi aplicada na base de dados WoS, com o objetivo de garantir a cobertura da literatura relevante que cruza as PME e as tecnologias de *Generative AI* :

```
TOPIC: (SME OR SMES ) AND TOPIC: (Large Language Models OR  
Generative AI OR Artificial Intelligence OR ChatGPT OR Natural  
Language Processing OR Machine Learning OR Business Applications)
```

Esta formulação assegurou que os artigos selecionados abordassem simultaneamente o contexto das PME e pelo menos um domínio tecnológico relevante.

A pesquisa inicial resultou em 1.045 artigos, publicados entre 2020 e 31 de maio de 2025, todos redigidos em inglês e classificados como artigos científicos com *peer review*. Este volume forneceu uma base empírica robusta para análises bibliométricas, tanto quantitativas como qualitativas.

Para garantir a relevância e a qualidade da amostra, foi aplicado um processo de seleção em várias etapas:

- Critérios de inclusão: Artigos que abordassem explicitamente o contexto das PME ou aplicações empresariais, e que envolvessem pelo menos uma tecnologia central (LLM, *Generative AI*, Natural Language processing(NLP), ChatGPT, etc.);
- Critérios de exclusão: Artigos centrados exclusivamente em arquiteturas técnicas sem qualquer enquadramento empresarial ou organizacional, bem como estudos que não abordassem diretamente o contexto das PME ;
- Controlo de qualidade: Apenas foram considerados artigos científicos com revisão por pares, excluindo editoriais, re-edições de livros, resumos de conferências e *working papers* sem rigor metodológico;
- Ferramentas analíticas: Os artigos selecionados foram importados para ferramentas de análise bibliométrica (VOSviewer) para identificação de clusters temáticos, coocorrência de palavras-chave e análise temporal. Estas ferramentas permitiram o agrupamento semântico e a deteção de tendências por temas.

Após o processo de triagem, o corpo final foi composto por 312 artigos científicos com revisão por pares, 12 artigos de revisão, complementados por 20 relatórios de mercado e 6 documentos de casos empresariais internos. Estes documentos foram analisados tematicamente e triangulados com dados da indústria, constituindo a base empírica para o desenvolvimento da taxonomia, mapeamento de casos de uso e avaliação do impacto no desempenho apresentados nesta dissertação.

Complementarmente, foi realizada uma análise bibliométrica com o apoio de ferramentas como o VOSviewer, com vista à identificação de padrões de publicações, coocorrência de termos e formação de clusters temáticos. Esta análise permitiu segmentar a literatura em grupos de interesse, destacando áreas com maior densidade investigativa e outras com menor cobertura, contribuindo assim para a construção de uma taxonomia de aplicações de LLM e *Generative AI* nos diferentes domínios empresariais.

A investigação inclui ainda uma análise de mercado baseada na recolha e sistematização de estudos de casos reais, provenientes de empresas líderes na adoção destas tecnologias. Foram considerados exemplos provenientes de fontes como Gartner, McKinsey, BCG, EY, PwC, Accenture e *European Commission*. Estes casos ilustram

aplicações práticas, benefícios obtidos, barreiras enfrentadas e estratégias adotadas, permitindo validar a pertinência das categorias identificadas na literatura académica.

Adicionalmente, o trabalho integra um estudo de caso centrado na experiência de adoção interna de soluções baseadas em LLM e *Generative AI* numa PME especializada em *business applications*. A observação participante e a recolha qualitativa de dados nesta empresa permitiram analisar de forma detalhada os impactos operacionais, os desafios organizacionais, as competências requeridas e os resultados alcançados com a adoção destas tecnologias.

Por fim, os dados recolhidos nas etapas anteriores foram integrados numa análise global que cruza as dimensões académica, empresarial e prática. Esta triangulação permitiu validar as categorizações identificadas, identificar padrões de sucesso e formular recomendações concretas e acionáveis para outras PME que pretendam adotar soluções baseadas em LLM e *Generative AI*.

Contribuições para a literatura

Esta dissertação tem como objetivo fazer contribuições significativas para o conhecimento existente sobre *Generative AI* e LLM no contexto das PME. Uma das principais contribuições é o desenvolvimento de uma estrutura de categorização abrangente que aborda uma lacuna notável na literatura. Esta estrutura irá classificar as aplicações de LLM e *Generative AI* em vários domínios de negócio específicos das PME, fornecendo uma abordagem estruturada para analisar e compreender a implementação destas tecnologias em diferentes contextos de negócio.

Além disso, enquanto grande parte da investigação existente se centra nas grandes empresas ou em aplicações comerciais gerais, este estudo examina especificamente o impacto da *Generative AI* e das LLM nas PME. Ao visar este segmento frequentemente negligenciado, a dissertação oferece informações valiosas sobre a forma como as organizações mais pequenas, que podem ter recursos limitados, podem aproveitar eficazmente estas tecnologias avançadas.

A inclusão de provas empíricas através de análises de estudos de mercado e do caso de estudo aumenta a contribuição desta investigação. Ao fornecer exemplos concretos de implementação e impacto práticos, esta dissertação preenche a lacuna entre o potencial teórico e os resultados comerciais efetivos. A análise estende-se aos impactos potenciais e reais do desempenho da *Generative AI* e dos LLM nas PME, contribuindo para uma

compreensão mais profunda da forma como estas tecnologias podem melhorar a eficiência, a produtividade e a competitividade das empresas.

Esta dissertação adota uma perspectiva interdisciplinar ao examinar a intersecção entre a *Generative AI*, os LLM e as aplicações de negócio. Esta abordagem enriquece o crescente corpo de literatura interdisciplinar neste domínio, oferecendo conhecimentos valiosos para os criadores de tecnologia, bem como para a definição de estratégia na adoção de *business applications*.

A dissertação também identifica áreas de investigação futura, contribuindo para o desenvolvimento contínuo deste domínio em rápida evolução. Sugere direções para enfrentar os desafios da implementação, considerações éticas e novos avanços tecnológicos adaptados às necessidades das PME.

Finalmente, ao fornecer *insights* acionáveis e recomendações para as PME sobre a integração efetiva dessas tecnologias em suas operações, esta dissertação contribui com conhecimento prático que pode orientar os líderes empresariais na adoção de *Generative AI* e LLM. Coletivamente, estes contributos fazem avançar a compreensão de como a *Generative AI* e os LLM podem ser utilizados de forma eficaz nas PME.

Estrutura do trabalho de investigação

O presente trabalho está organizado em seis capítulos principais, para além desta introdução.

No Capítulo 1, realiza-se uma revisão estruturada da literatura académica sobre a aplicação da *Generative AI* e dos LLMs no contexto empresarial, com especial ênfase nas PME s. Este capítulo apresenta a metodologia adotada para a revisão, descreve a definição das palavras-chave utilizadas, a seleção das fontes de dados e a apresentação do conjunto de artigos selecionados. A análise organiza-se segundo as principais áreas de atividade e os casos de uso identificados, permitindo mapear o estado da arte e destacar os domínios de maior impacto.

No Capítulo 2 apresenta-se a revisão estruturada de literatura, complementando a análise da literatura. São explicitadas as fontes utilizadas, a formulação da *query* de pesquisa e os principais resultados obtidos. Por meio desta abordagem quantitativa, são identificados e discutidos os *clusters* temáticos predominantes, proporcionando uma visão abrangente da evolução da investigação nesta área.

No Capítulo 3 são explorados os estudos de mercado e relatórios corporativos de entidades de referência. Neste capítulo explicita-se a metodologia de recolha dos dados, as fontes de informação selecionadas, bem como os dados analisados. O objetivo é compreender o enquadramento prático da adoção da *Generative AI* e dos LLMs, evidenciando as tendências, padrões de utilização e as suas implicações para as PME.

O Capítulo 4 apresenta um estudo de caso aprofundado sobre a adoção interna dessas tecnologias numa PME tecnológica. São descritos os dados recolhidos, as etapas do processo de implementação e os resultados alcançados, procurando validar empiricamente as conclusões teóricas e as evidências de mercado.

No Capítulo 5 são discutidos os resultados da investigação, resultantes da articulação entre a revisão de literatura, a análise bibliométrica, os estudos de mercado e o estudo de caso. Este capítulo é organizado em cinco secções: síntese dos principais domínios de aplicação da *Generative AI* e dos LLMs em PME s; tipologia dos casos de uso e respetivos impactos no desempenho organizacional; identificação das barreiras à adoção e fatores críticos de sucesso; análise da complementaridade entre as diferentes fontes de dados; e, por fim, uma reflexão crítica sobre a maturidade da adoção tecnológica e as perspetivas futuras.

No Capítulo 6 apresentam-se as conclusões gerais, que respondem às questões da investigação formuladas na introdução, assim como expõe as principais limitações do estudo e sugere linhas para futuras investigações no âmbito da *Generative AI* e dos LLMs nas PME s.

1. Revisão de literatura

A crescente relevância da AI, em particular LLM e da *Generative AI*, tem motivado um número significativo de estudos nos últimos anos. Esta dissertação visa compreender o impacto destas tecnologias emergentes na *performance* das *business applications* em PME.

Os LLM emergiram como uma área significativa de pesquisa em NLP, demonstrando capacidades notáveis em vários domínios (Fan et al., 2024), revisões de literatura sistemáticas recentes analisaram o cenário da pesquisa LLM, abrangendo tópicos como desenvolvimento de algoritmos, aplicações em engenharia de *software* e impactos nas organizações (Hou et al., 2023; Naveed et al., 2023). Estes estudos destacam as diversas aplicações dos LLM, incluindo na medicina, engenharia, ciências sociais e humanidades (Fan et al., 2024). As principais áreas de investigação incluem inovações de arquitetura, estratégias de formação, LLM multimodais e melhorias de eficiência (Naveed et al., 2023). Enquanto os LLM têm demonstrado potencial disruptivo em múltiplos sectores, subsistem desafios éticos e técnicos significativos, como enviesamentos nos dados, falta de explicabilidade e preocupações com a segurança e privacidade dos dados, que necessitam de uma abordagem crítica e responsável (Ding et al., 2024). A rápida evolução da pesquisa LLM ressalta a necessidade de investigação contínua e colaboração interdisciplinar para navegar no cenário complexo de desenvolvimento e implantação de LLM (Ding et al., 2024; Fan et al., 2024).

Pesquisas recentes destacam o potencial transformador da *Generative AI* e dos LLM em aplicações de negócio. Estas tecnologias estão a revolucionar as tarefas de NLP e a automatizar interações homem-máquina complexas (Han et al., 2023). As suas aplicações abrangem vários setores, incluindo saúde, finanças e gestão de produtos de *software*, oferecendo benefícios como redução de tempo e custos de desenvolvimento, melhores respostas do cliente e melhores resultados de produtos (Ahmed Ali Linkon et al., 2024; Parikh, 2023). LLM como o ChatGPT e GPT-4 têm particular impacto em negócios e economia, com estudos focados na criação de novas aplicações, pesquisa empírico-qualitativa e diversos métodos de engenharia (Han et al., 2023). Além disso, os modelos de AI e as técnicas de modelação de tópicos estão a aperfeiçoar as revisões de literatura computacional, a auxiliar os investigadores na categorização de tópicos, geração de conteúdo e na melhoria da eficiência da escrita académica (Guler et al., 2023). No entanto, considerações éticas e desafios regulatórios persistem, enfatizando a necessidade de inovação responsável (Ahmed Ali Linkon et al., 2024; Parikh, 2023).

Artigos recentes mostram que, embora as grandes empresas estejam na vanguarda da adoção da AI, as PME estão a recuperar rapidamente, especialmente devido à acessibilidade das ferramentas de *Generative AI* baseadas na nuvem. De acordo com Rajaram & Tinguely (2024) as PME beneficiam das baixas barreiras de entrada dos LLM, usando-os para automatizar as interações com os clientes, analisar dados de negócios e melhorar a comunicação interna. Outros autores também enfatizam que modelos especializados (como LLM) estão sendo projetados com requisitos reduzidos de hardware e custo, tornando-os viáveis para PME (Ahmed Ali Linkon et al., 2024). Além disso, alguns identificam a personalização do cliente como uma área-chave onde a *Generative AI* oferece um ROI para PME que é atingindo com uma facilidade considerável quando comparando com grandes empresas (Abrokwah-Larbi, 2023).

Esses desafios, no entanto, são equilibrados por fortes indícios de que a *Generative AI* se pode tornar um equalizador competitivo para PME quando aplicada estrategicamente.

1.1 Metodologia

A revisão da literatura para esta dissertação sobre o impacto da *Generative AI* e dos LLM em *business applications* em PME seguiu uma abordagem estruturada e abrangente. O processo de revisão foi estruturado para garantir uma cobertura ampla e profunda do tema.

A pesquisa foi conduzida usando diversas bases de dados académicas e fontes profissionais, incluindo WOS, EBSCO, Cambridge Journals, Elsevier, Emerald, IEEE, JSTOR, SAGE, Springer, Taylor & Francis, Wiley, Scopus, ACM Digital Library e IEEE Xplore. Para captar os desenvolvimentos mais recentes neste campo em rápida evolução, foram também incluídos artigos do arXiv.

Complementarmente, foi conduzida uma análise bibliométrica e de tópicos com ferramentas como VOSviewer e BERTopic, permitindo a identificação de *clusters* temáticos emergentes e a evolução temporal da literatura sobre LLM e *Generative AI*.

As pesquisas foram realizadas usando uma combinação de palavras-chave relevantes, como "Large Language Model", "*Generative AI*", "Artificial Intelligence", "ChatGPT", "Natural Language Processing", "Machine Learning" e "Business Applications". Essas palavras-chave foram cuidadosamente selecionadas para capturar a amplitude do tópico e suas aplicações específicas em contextos de negócios.

Esta abordagem assegurou uma compreensão abrangente do estado atual da investigação neste domínio. Ao longo do processo de revisão, foi dada especial atenção à identificação de lacunas na investigação existente, especialmente no que diz respeito à categorização de LLM e aplicações de *Generative AI* em diferentes domínios de negócio. Este foco ajudou a destacar áreas onde mais pesquisas são necessárias e informou a direção da dissertação.

Foram estabelecidos critérios claros de inclusão e exclusão para orientar a seleção dos estudos relevantes. Os critérios de inclusão centraram-se em publicações que abordavam especificamente a aplicação de *Generative AI* e LLM em PME, bem como estudos que discutiam o impacto dessas tecnologias no desempenho de aplicações de negócios. Foram excluídos os estudos sem relevância direta para as PME ou aqueles que se centravam exclusivamente em aspetos técnicos sem considerar aplicações empresariais práticas.

Estudos selecionados foram analisados em profundidade para identificar temas recorrentes e tendências emergentes. Foi dada especial atenção à categorização de aplicações generativas de AI e LLM em diferentes domínios de negócio e à avaliação do seu impacto no desempenho das PME. Dada a natureza dinâmica e em rápida evolução do campo generativo de AI e LLM, a revisão da literatura foi conduzida iterativamente, com atualizações regulares incorporadas para incluir as publicações mais recentes e relevantes ao longo do período de pesquisa.

Esta metodologia rigorosa e abrangente para a revisão da literatura forneceu uma base sólida para o desenvolvimento subsequente da taxonomia de aplicação e análise dos impactos destas tecnologias nas PME.

Esta revisão foi ainda atualizada por revisões de literatura recentes da literatura (Han et al., 2023; Oldemeyer et al., 2024), que categorizam a maturidade das aplicações generativas de AI em todos os setores. Estudos com foco em PME foram considerados como prioritários para identificar não apenas capacidades tecnológicas, mas também prontidão organizacional, desafios e condições favoráveis. Sempre que possível, aplicou-se o cruzamento entre temas da literatura e exemplos de casos específicos de PME para contextualizar os resultados.

1.2 Escolha de *keywords*

As *keywords* escolhidas refletem coletivamente os principais temas e tecnologias abordados na dissertação, garantindo uma cobertura abrangente dos aspetos teóricos e práticos da *Generative AI* e dos LLM em relação ao desempenho empresarial das PME .

Large Language Models (LLM): Esta *keyword* é essencial, uma vez que está diretamente relacionada com as tecnologias de AI específicas que estão a ser analisadas na dissertação. Os LLM representam um avanço significativo no processamento da linguagem natural e são fundamentais para a discussão das suas aplicações nas PME.

Generative AI : Este termo engloba uma categoria mais vasta de inteligência artificial que inclui os LLM e outras tecnologias generativas. É crucial para abordar o tema geral da inovação e da transformação no âmbito das aplicações empresariais.

Artificial Intelligence: Como conceito fundamental, esta *keyword* capta o campo abrangente no qual operam os LLM e a *Generative AI*. Contextualiza a investigação no panorama mais vasto dos avanços tecnológicos com impacto em vários sectores.

ChatGPT: Sendo um dos exemplos mais reconhecidos de LLM, esta *keyword* destaca uma aplicação específica de *Generative AI* que ganhou uma atenção significativa tanto na esfera académica como na comercial, ilustrando as implicações práticas para as PME .

Natural Language Processing (NLP): Esta *keyword* representa a tecnologia central que permite aos LLM compreender e gerar linguagem humana. Liga a dissertação aos aspetos técnicos da AI relevantes para as aplicações comerciais.

Machine Learning (ML): Sendo uma metodologia fundamental subjacente aos LLM e à *Generative AI* , este termo situa a investigação no contexto mais vasto das tecnologias orientadas para os dados que estão a remodelar as práticas comerciais

Business Applications: A escolha da *keyword* está diretamente relacionada com o foco da dissertação sobre como a *Generative AI* e os LLM podem ser utilizados em vários contextos empresariais, particularmente em pequenas e médias empresas, enfatizando a sua relevância prática.

1.4 Dados

A literatura fornece alguns exemplos de como os LLM estão a ser utilizados numa variedade de setores. Embora existam informações limitadas sobre a utilização específica em

PME, podem ser retiradas conclusões sobre os casos de utilização em vários setores empresariais.

De acordo com (Naveed et al., 2023), os LLM estão a ser considerados como ferramentas de uso geral para uma grande variedade de tarefas devido à sua capacidade inerente de compreender, gerar e manipular texto semelhante ao humano de forma contextualmente relevante. Isto permite-lhes executar tarefas que vão desde a tradução simples e resposta a perguntas mais complexas, como sumarização, geração de texto e até mesmo ajuda à programação. Alguns exemplos de utilização quotidiana de LLM incluem assistentes pessoais, representantes de apoio ao cliente e geradores de conteúdos para plataformas digitais.

No domínio dos negócios e da economia, foram desenvolvidas e publicadas muitas pesquisas e aplicações de LLM baseados em GPT para automatizar tarefas que exigem interação avançada homem-máquina (Han et al., 2023). Alguns exemplos de utilização incluem a geração de mensagens de marketing personalizadas, a análise de grandes conjuntos de dados para identificar tendências e padrões e a melhoria da precisão das previsões financeiras (Han et al., 2023).

Os LLM podem ajudar as empresas a melhorar o seu desempenho de várias formas, como, por exemplo, automatizando tarefas, melhorando a tomada de decisão e criando novos produtos e serviços (Han et al., 2023).

Embora os LLM tenham o potencial de revolucionar a forma como as empresas operam, é importante notar que ainda estão numa fase inicial de desenvolvimento. Como tal, é importante estar ciente dos desafios e riscos associados à utilização de LLM, como o potencial de enviesamento, a necessidade de grandes quantidades de dados e a possibilidade de utilização indevida.

As fontes (Han et al., 2023; Naveed et al., 2023) observam que existe uma necessidade de mais investigação sobre a utilização de LLM em PME. Isto porque as PME enfrentam desafios únicos que podem não ser abordados pela investigação existente sobre LLM, que muitas vezes se concentra em grandes empresas. Por exemplo, as PME podem não ter os recursos necessários para recolher e anotar os grandes conjuntos de dados necessários para treinar LLM. Além disso, as PME podem não ter a perícia técnica necessária para implementar e utilizar LLM de forma eficaz.

Apesar destes desafios, os LLM têm o potencial de trazer benefícios significativos para as PME. Ao automatizar tarefas e melhorar a tomada de decisões, os LLM podem ajudar as PME a libertar recursos, reduzir custos e melhorar a sua competitividade.

De acordo com a pesquisa (Ding et al., 2024; Han et al., 2023; Naveed et al., 2023) , podemos argumentar que os LLM estão em transição de experimentais para operacionais em ambientes de PME. Na prática, as PME relatam benefícios, incluindo:

- Trabalho manual reduzido na criação de conteúdo e documentação.
- Tempos de resposta mais rápidos no suporte ao cliente e geração de *leads*
- Tomada de decisão interna aprimorada por meio de ferramentas de resumo de dados.

Para realizar plenamente o potencial dos LLM, as PME devem estar cientes dos desafios e oportunidades associadas à sua utilização. Também devem estar preparadas para investir nos recursos necessários para implementar e utilizar LLM de forma eficaz.

1.5 Áreas de atividade

Os principais casos de uso identificados para cada domínio, com base na análise da literatura (Ahmed Ali Linkon et al., 2024; Ding et al., 2024; Fan et al., 2024; Guler et al., 2023; Gupta et al., 2024; Hou et al., 2023; Kanbach et al., 2024; Naveed et al., 2023; Oldemeyer et al., 2024; Parikh, 2023):

Saúde

- Análise de Registos Médicos: LLM podem analisar relatórios de saúde eletrónicos, relatórios laboratoriais e notas clínicas para fornecer assistência no diagnóstico médico.
- Sugestões de Tratamento: Com base na análise de dados médicos, os LLM podem oferecer sugestões de tratamento a profissionais de saúde.
- Educação Médica Assistida por IA: LLM demonstram potencial para auxiliar na educação médica.
- Detecção de Doenças: A análise de dados médicos por meio de LLM pode contribuir para a detecção de doenças.
- Aplicações Clínicas e Cuidados com o Paciente: LLM podem ser utilizados em aplicações clínicas e para melhorar os cuidados com o paciente.

Engenharia:

- **Análise de Documentos Técnicos:** LLM podem ser utilizados para analisar grandes volumes de documentos de engenharia.
- **Geração de Planos de Emergência:** LLM podem auxiliar na criação de planos de emergência em situações críticas.
- **Deteção e Classificação de Defeitos em Edifícios:** LLM podem ser utilizados para identificar e classificar defeitos na manutenção de edifícios.

Educação:

- **Apoio ao Ensino e Aprendizagem:** LLM têm sido utilizados como ferramentas para auxiliar no ensino e aprendizagem em sala de aula.

Ciência:

As fontes fornecem informações limitadas sobre aplicações de LLM específicas ao domínio da ciência. No entanto, a sua capacidade de analisar grandes conjuntos de dados textuais sugere um potencial para:

- **Análise de Literatura Científica:** LLM poderiam ser utilizados para analisar e sintetizar grandes volumes de literatura científica, acelerando a pesquisa e descoberta.
- **Modelagem e Simulação:** LLM poderiam ser utilizados para criar modelos e simulações complexos, com base em dados científicos, para aprofundar a compreensão de fenómenos naturais.

Direito:

- **Aplicações em Ética e IA:** LLM podem contribuir para a análise de implicações éticas e regulamentares da AI.

Economia e Finanças:

- **Previsões Financeiras:** LLM podem ser utilizados para analisar dados financeiros e melhorar a precisão das previsões.
- **Análise de Tendências e Padrões Económicos:** LLM podem ajudar a identificar tendências e padrões em grandes conjuntos de dados económicos.
- **Gestão de Riscos Financeiros:** LLM demonstram potencial para auxiliar na gestão de riscos em instituições financeiras.

- Pontuação de crédito e relatórios: relatórios automatizados, pontuação de crédito, *bots* de consultoria ao cliente

Marketing:

- Geração de Conteúdo de Marketing Personalizado: LLM podem criar mensagens de marketing personalizadas, adaptadas a diferentes públicos.
- Análise de Sentimentos de Clientes: LLM podem analisar dados de redes sociais e outras fontes para compreender as opiniões e sentimentos dos clientes.
- Marketing Direcionado: LLM podem ser usados para segmentar clientes e direcionar campanhas de marketing de forma mais eficaz.

Gestão:

- Gestão de Recursos Humanos: LLM demonstram potencial em tarefas como recrutamento, análise de currículos e gestão de talentos.
- Tomada de Decisões Estratégicas: LLM podem auxiliar na análise de dados e cenários complexos para apoiar a tomada de decisões estratégicas.
- Gestão de Projetos: LLM podem ser utilizados para melhorar a gestão de projetos, automatizando tarefas, gerindo recursos e acompanhando o progresso.

Os autores (Ding et al., 2024; Fan et al., 2024; Guler et al., 2023; Hou et al., 2023; Kanbach et al., 2024; Naveed et al., 2023; Parikh, 2023) reconhecem a necessidade de mais pesquisas sobre a aplicação de LLM em PME, dada a sua capacidade de automatizar tarefas, melhorar a tomada de decisões e criar novos produtos e serviços.

Embora na literatura não se concentrem especificamente em PME, os casos de uso mencionados acima podem ser relevantes para este tipo de empresas, dependendo das suas necessidades e recursos. Na tabela 1 estão listados os casos de uso identificados. Por exemplo, a análise de sentimentos de clientes e a geração de conteúdo de marketing personalizado são áreas onde os LLM podem trazer benefícios significativos para PME, mesmo com recursos limitados.

No entanto, é crucial que as PME considerem os desafios da implementação de LLM, como a necessidade de dados de treino robustos, a perícia técnica para a sua utilização eficaz e os aspetos éticos da AI.

Tabela 1 - Casos de uso identificados na revisão de literatura

Domínio de Atividade	Casos de Uso de LLM	Aplicabilidade em PME	Autores
Saúde	Análise de Registos Médicos Sugestões de Tratamento Educação Médica Assistida por IA Deteção de Doenças Aplicações Clínicas e Cuidados com o Paciente	Pode ser desafiador para PME devido aos recursos necessários e questões de privacidade de dados. Exemplos: <i>Startups</i> de tecnologia médica podem utilizar LLM para análise de dados e desenvolvimento de soluções inovadoras.	(Ding et al., 2024; Naveed et al., 2023)(Ding et al., 2024; Hou et al., 2023)
Engenharia	Análise de Documentos Técnicos Geração de Planos de Emergência Deteção e Classificação de Defeitos em Edifícios	Aplicável a PME de engenharia especializada, especialmente em análise de dados e gestão de projetos.	(Ding et al., 2024; Hou et al., 2023)
Educação	Apoio ao Ensino e Aprendizagem	PME na área de educação e desenvolvimento de plataformas de aprendizagem podem beneficiar da aplicação de LLM.	(Ding et al., 2024; Naveed et al., 2023)
Ciência	Análise de Literatura Científica Modelação e Simulação	A utilização em PME depende da natureza da pesquisa e dos recursos disponíveis.	(Naveed et al., 2023)
Direito	Aplicações em Ética e IA	Escritórios de advocacia de pequena e média dimensão podem utilizar LLM para	(Naveed et al., 2023)

		pesquisa jurídica e análise de documentos.	
Economia e Finanças	Previsões Financeiras Análise de Tendências e Padrões Económicos Gestão de Riscos Financeiros	Fintechs e PME de serviços financeiros podem beneficiar da aplicação de LLM para análise de dados e automatização de tarefas. As PME fintech beneficiam de LLM em ferramentas de previsão e aconselhamento	(Ding et al., 2024; Guler et al., 2023)
Marketing	Geração de Conteúdo de Marketing Personalizado Análise de Sentimentos de Clientes Marketing Direcionado	Alta relevância para PME , pois LLM podem automatizar tarefas de marketing e permitir campanhas mais direcionadas, mesmo com recursos limitados.	(Ding et al., 2024)
Gestão	Gestão de Recursos Humanos Tomada de Decisões Estratégicas Gestão de Projetos	Aplicável a PME de diversas áreas, com potencial para otimizar processos, melhorar a tomada de decisões e aumentar a eficiência. LLM podem ser particularmente úteis para automatizar tarefas administrativas e liberar tempo para gestores se concentrarem em atividades estratégicas.	(Guler et al., 2023)
Desenvolvimento Software	Código e gestão de produto	Alta utilidade para pequenas equipes de desenvolvimento. Aumenta a produção e reduz os erros técnicos	(Hou et al., 2023)

Fonte: elaboração própria

1.6 Casos de uso

Os autores (Ahmed Ali Linkon et al., 2024; Ding et al., 2024; Fan et al., 2024; Guler et al., 2023; Gupta et al., 2024; Hou et al., 2023; Kanbach et al., 2024; Naveed et al., 2023; Oldemeyer et al., 2024; Parikh, 2023) sugerem uma visão abrangente sobre os casos de uso de LLM em diversas áreas de atividade, destacando o seu potencial transformador em vários setores.

Aplicações Multi-Domínio:

LLM como Ferramentas Multiuso: Os LLM são cada vez mais vistos como ferramentas versáteis, capazes de executar uma ampla gama de tarefas, desde tradução e resposta a perguntas até tarefas mais complexas, como sumarização de texto, geração de código e assistência em programação.

Adaptação Contextual: A capacidade dos LLM de se adaptarem ao estilo e tom específicos do texto em processamento torna-os ferramentas poderosas para diversas aplicações, incluindo assistentes pessoais, atendimento ao cliente e geração de conteúdo.

Tabela 2 - Casos de Uso específicos por Área de Atividade

Área de Atividade	Casos de Uso de LLM	Autores
Saúde	Análise de registos médicos, relatórios laboratoriais e notas clínicas para auxílio no diagnóstico e sugestões de tratamento. Educação médica assistida por IA. <i>Startup</i> de saúde: Implementou <i>chatbot</i> baseado em LLM para triagem de consultas de pacientes, liberando 20% do tempo de administração (Abrokwah-Larbi, 2023)	(Abrokwah-Larbi, 2023; Ding et al., 2024)
Engenharia	Análise de grandes quantidades de documentos de engenharia Geração de planos de emergência. Deteção e classificação de defeitos em edifícios.	(Hou et al., 2023)
Ciência Social	Análise de conteúdo em redes sociais. Análise de respostas a pesquisas. Análise de artigos noticiosos.	(Ding et al., 2024)

	Investigação orientada por dados em áreas como sociologia, economia e política.	
Humanidades	Análise de questões sociais. Apoio à resposta a desastres. Melhoria da comunicação. Promoção de iniciativas educacionais.	(Ding et al., 2024)
Gestão de Produtos de Software	Geração de ideias e brainstorming Pesquisa de mercado Design de produto. Análise de feedback do cliente. Planeamento e gestão de projetos.	(Chang et al., 2024)
Engenharia de Software	Geração de código (<i>Python, Java, C++</i>, etc.). Compreensão e execução de código. Raciocínio sobre código. Sumarização de código. Geração de comentários e documentação de código. Deteção e reparação de vulnerabilidades. Geração de nomes de métodos. Estimativa de pontos de história em projetos <i>Agile</i>. Deteção de problemas na documentação de API. Extração de entidades e relações de API. Reparação de conflitos de código. Análise de sentimentos em código e documentação. Recomendação de <i>tags</i> em plataformas de perguntas e respostas de código	(Hou et al., 2023)

	Recuperação de rastreabilidade entre artefactos de software.	
Negócios e Gestão	Tomada de decisão estratégica Gestão de Recursos Humanos (ex: recrutamento, gestão de desempenho). Gestão de Projetos. Finanças (ex: previsão de falência, gestão de riscos). Agência de Marketing (Reino Unido): Usou o GPT-4 para gerar conteúdo de campanha, aumentando a velocidade de entrega ao cliente em 35% (Abrokwah-Larbi, 2023)	(Abrokwah-Larbi, 2023; Ding et al., 2024)

Fonte: elaboração própria

2. Revisão bibliométrica

A análise da literatura existente sobre a aplicação de LLM e *Generative AI* em PME s revela uma produção científica crescente, mas ainda marcada por dispersão temática e ausência de uma estrutura sistemática. Embora as PME tenham vindo a adotar estas tecnologias de forma progressiva, a investigação académica tende a focar-se nos avanços técnicos, e em contextos organizacionais genéricos, deixando uma lacuna na compreensão integrada dos principais eixos temáticos associados a este fenómeno.

Com o objetivo de responder a essa lacuna, esta dissertação incorpora uma análise bibliométrica como parte da revisão da literatura, permitindo observar de forma estruturada o desenvolvimento da investigação sobre o tema ao longo do tempo. Esta abordagem revela-se particularmente relevante numa área em rápida evolução, onde os conceitos, aplicações e implicações se transformam rapidamente e exigem atualização constante.

A pesquisa foi desenhada para captar artigos científicos que estivessem simultaneamente relacionados com o universo das PME e com tecnologias como LLM, *Generative AI* e demais ferramentas associadas à inteligência artificial aplicada a processos de negócio. Foram aplicados filtros que garantiram a relevância, qualidade e atualidade dos resultados, restringindo a amostra a artigos científicos em inglês publicados entre 2020 e 2025.

Para organizar e interpretar os dados obtidos, recorreu-se à ferramenta VOSviewer, que possibilita a criação de mapas de coocorrência de termos, identificando redes semânticas e agrupamentos temáticos na literatura científica (van Eck & Waltman, 2010). Este tipo de

visualização é particularmente eficaz para explorar relações entre conceitos, padrões emergentes e áreas de investigação consolidadas. Ao aplicar técnicas de *text mining* sobre os resumos dos artigos, foi possível isolar os principais tópicos abordados pelos investigadores e agrupar os estudos em clusters representativos de diferentes abordagens e preocupações (Eck & Waltman, 2009).

2.1 Fontes para revisão bibliométrica

Foi realizada uma pesquisa sistemática na base de dados WoS, tendo em vista a recolha e análise de literatura científica relevante, segundo a literatura analisada (Cascajares et al., 2021; Fan et al., 2024; Singh et al., 2021)

A escolha da WoS como base de dados principal nesta dissertação fundamenta-se em diversos critérios metodológicos e estratégicos:

- **Qualidade e Rigor Editorial** - a WoS é reconhecida pela curadoria rigorosa dos periódicos que indexa, garantindo que os artigos analisados passaram por processos de revisão por pares exigentes. Isto assegura a fiabilidade e validade científica das fontes consideradas.
- **Cobertura Multidisciplinar e Internacional** - A plataforma cobre uma vasta gama de disciplinas, desde ciência da computação, gestão, economia e engenharia até ciências sociais aplicadas. Isto é particularmente relevante para uma investigação transversal como a presente, que combina tecnologias emergentes com contextos de negócio em PME.
- **Funcionalidades Avançadas de Pesquisa** - A WoS permite a construção de *queries* complexas com operadores booleanos, definição de filtros por tipo de documento, idioma, data, entre outros. Estas funcionalidades permitiram criar uma amostra focada, mas abrangente, alinhada com os objetivos da investigação.
- **Compatibilidade com Ferramentas de Análise Bibliométrica** - A exportação estruturada dos resultados em formatos compatíveis com ferramentas como VOSviewer facilita análises avançadas, como mapeamento temático, coocorrência de palavras-chave e evolução temporal da produção científica.
- **Reputação Académica** - Enquanto uma das bases mais utilizadas a nível mundial por universidades, centros de investigação e organismos de financiamento, a WoS assegura também uma elevada aceitabilidade e reconhecimento nos meios académicos e científicos internacionais.

Em síntese, a escolha da WOS garantiu o acesso a literatura científica de elevada qualidade, permitiu análises quantitativas e qualitativas robustas, e reforçou a credibilidade da revisão bibliográfica empreendida nesta dissertação.

A pesquisa foi delineada para capturar estudos que se situassem na interseção entre dois grandes domínios: por um lado, o universo das PME, enquanto contexto operacional e organizacional específico, e por outro, o conjunto de tecnologias que inclui LLM e *Generative AI*.

O VOSviewer foi utilizado para análise de coocorrência de termos e agrupamento temático, dada a sua robustez na visualização de redes semânticas e clusters bibliométricos, e a sua aplicabilidade em análises similares anteriores (Santos & Laureano, 2022).

2.2 Formulação de *query*

Foi utilizada como base de dados a WoS reconhecida pela abrangência, número e qualidade de investigação que possui.

Assim, a *query* formulada foi:

```
TOPIC: (PME OR PME ) AND TOPIC: (Large Language Models OR Generative AI OR Artificial Intelligence OR ChatGPT OR Natural Language Processing OR Machine Learning OR Business Applications).
```

Esta combinação de termos visou garantir que todos os artigos incluídos abordassem explicitamente o contexto das PME e, simultaneamente, fizessem referência a tecnologias ligadas à AI.

Além da formulação da *query*, foram definidos filtros para assegurar a qualidade, relevância e atualidade dos resultados. O primeiro filtro aplicado foi o tipo de documento, restringindo a pesquisa apenas a artigos científicos (*document type: article*). Este critério exclui revisões, resumos de conferências, editoriais ou outros documentos menos robustos em termos de conteúdo metodológico e científico. Em segundo lugar, restringiu-se a pesquisa à língua inglesa, por ser a mais comum em publicações científicas internacionais, garantindo também consistência na análise dos textos e palavras-chave. Por fim, foi aplicado um filtro temporal, selecionando apenas publicações entre os anos de 2020 e 2025, de forma a captar os desenvolvimentos mais recentes e relevantes sobre o tema.

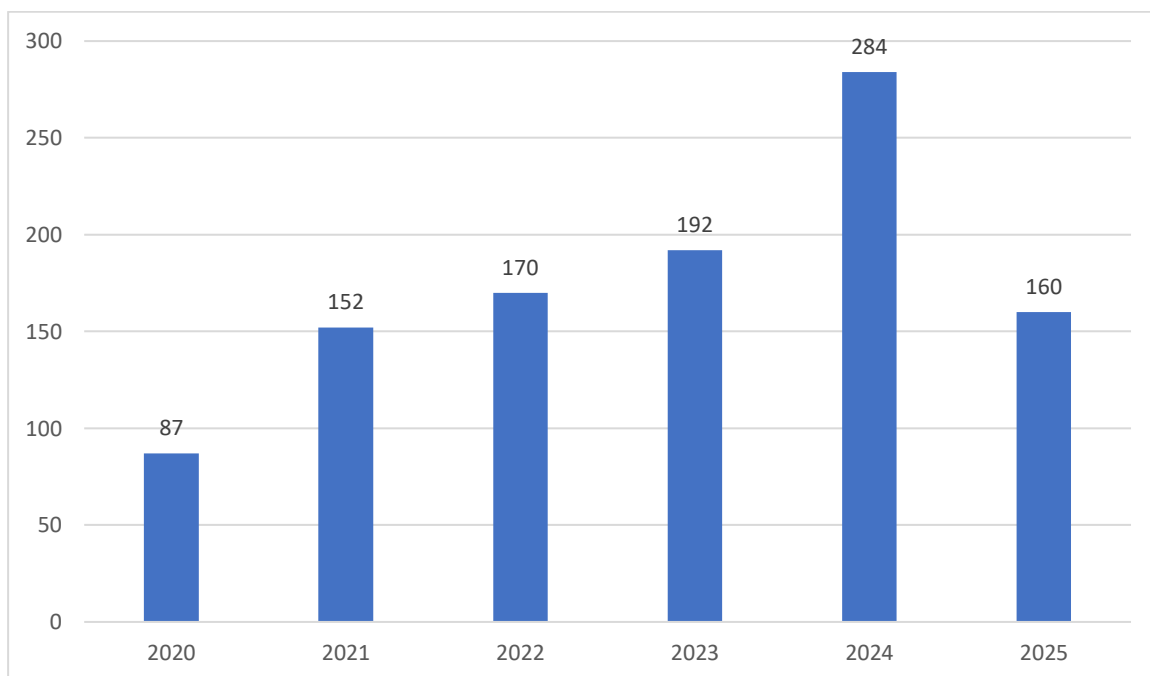
2.3 Resultados revisão bibliométrica

Como resultado, a *query* devolveu 1.045 artigos, cujos resultados podem ser consultados no apêndice, cobrindo um período de seis anos. Esta amostra serve como base empírica para a análise exploratória da evolução do conhecimento académico sobre a aplicação de AI e LLM em contextos de PME. Através do uso da ferramenta VOSviewer, foi possível extrair clusters temáticos com base na coocorrência de termos-chave, permitindo identificar subtemas, tendências e áreas de investigação predominantes (van Eck & Waltman, 2010). Esta

abordagem não só estrutura a revisão de literatura de forma objetiva, como também contribui para a construção de uma taxonomia coerente dos principais usos e impactos destas tecnologias.

O número total de artigos publicados por ano na amostra extraída do WoS confirma a pertinência e atualidade do tema, com um aumento crescente nos últimos anos, como verificável no Gráfico 1.

Gráfico 1 - N.º de artigos por ano em análise



Fonte: Elaboração própria

Nota: A pesquisa foi feita em junho, pelo que apenas estão contemplados os artigos até 31/05/2025.

O objetivo desta análise é oferecer uma visão clara sobre os caminhos já explorados e os espaços de oportunidade ainda por desenvolver, nomeadamente em áreas de negócio específicas. Ao segmentar a literatura por temas e temporalidade, e ao associá-la ao contexto das PME, esta dissertação pretende produzir recomendações fundamentadas e úteis tanto para investigadores como para decisores empresariais interessados em adotar *Generative AI* e LLM nos seus processos.

2.4 Clusters identificados

A análise bibliométrica realizada com base nos dados extraídos do WOS e processados com recurso ao VOSviewer permitiu identificar seis grandes clusters temáticos (Eck & Waltman, 2009). Estes agrupamentos representam diferentes vertentes do discurso académico em torno da aplicação de tecnologias como os LLM, *Generative AI* e ML no

tecnologias, embora mais comuns em empresas de maior dimensão, estão progressivamente a ser exploradas por PME inovadoras com perfil técnico robusto.

Tabela 3 - Cluster 1: Tecnologias Avançadas e Arquiteturas Algorítmicas

Termos	Número de ocorrências	Termos	Número de ocorrências
<i>artificial intelligence</i>	193	<i>feature selection</i>	12
<i>models</i>	129	<i>additive manufacturing</i>	10
<i>machine learning</i>	120	<i>cybersecurity</i>	10
<i>industry 4.0</i>	69	<i>ensemble</i>	10
<i>systems</i>	67	<i>classification</i>	10
<i>supply chain</i>	59	<i>ratios</i>	9
<i>predictive models</i>	35	<i>ahp</i>	9
<i>risk management</i>	33	<i>algorithm</i>	8
<i>design</i>	32	<i>default prediction</i>	7
<i>internet</i>	31	<i>cyber-physical systems</i>	7
<i>neural networks</i>	28	<i>decision support</i>	6
<i>bankruptcy</i>	25	<i>data models</i>	6
<i>blockchain</i>	23	<i>fuzzy logic</i>	6
<i>internet of things</i>	23	<i>topsis</i>	6
<i>deep learning</i>	22	<i>security</i>	6
<i>empirical-evidence</i>	22	<i>automation</i>	6
<i>quality</i>	22	<i>software</i>	6
<i>analytics</i>	17	<i>survival</i>	6
<i>credit risk</i>	15	<i>training</i>	5
<i>cost</i>	15	<i>support vector machines</i>	5
<i>digital twin</i>	15	<i>transfer learning</i>	5
<i>network</i>	15	<i>robots</i>	5
<i>natural language processing</i>	14	<i>architecture</i>	5
<i>smart manufacturing</i>	14	<i>machine</i>	5
<i>artificial neural network</i>	14	<i>reinforcement learning</i>	5
<i>logistics</i>	13	<i>forecasting</i>	5
<i>optimization</i>	12	<i>industries</i>	5
<i>selection</i>	12	<i>xgboost</i>	5

Fonte: elaboração própria

Cluster 2: Capacidades Organizacionais e Performance Empresarial

Neste grupo, representado na Tabela 4, encontramos literatura que explora o papel das capacidades internas das PME na adoção e sucesso da implementação de AI. Conceitos como "*absorptive capacity*" (capacidade de absorver conhecimento), "*business intelligence*" e "*behavior*" mostram que os fatores organizacionais são tão ou mais importantes do que os tecnológicos. Os estudos apontam para a necessidade de cultura de inovação, liderança sensível à mudança e alinhamento estratégico para maximizar os benefícios das novas tecnologias.

Tabela 4 - Cluster 2: Capacidades Organizacionais e Performance Empresarial

Termos	Número de ocorrências	Termos	Número de ocorrências
performance	174	data analytics	15
innovation	164	green innovation	15
management	132	china	14
impact	121	internationalization	14
knowledge management	69	behavior	14
capabilities	53	resources	14
dynamic capabilities	43	antecedents	13
firm performance	40	open innovation	13
competition	38	resource-based view	13
market	32	construct	12
organization	29	business intelligence	9
enterprises	27	moderating role	9
business performance	20	integration	8
orientation	19	vietnam	6
entrepreneurial orientation	18	work	6
mediating role	17	business strategy	5
product innovation	17	customer	5
context	16	evolution	5
environment	16	roles	5
satisfaction	16	exploration	5
resilience	15	<i>Generative AI</i>	5
value creation	15	institutional theory	5
absorptive-capacity	15	customer orientation	5

human resource management	15		
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Fonte: elaboração própria

Cluster 3: Modelos de Negócio e Barreiras à Inovação
Este *cluster*, representado na Tabela 5, revela preocupações com os desafios práticos que as PME enfrentam para adotar tecnologias como os LLM. Termos como "*barriers*", "*awareness*", "*business model*" e "*benefits*" sugerem uma análise crítica das limitações de recursos, do desconhecimento ou da percepção de risco. Muitos destes estudos são exploratórios, abordando casos reais onde as oportunidades da *Generative AI* estão condicionadas por resistências culturais, escassez de competências ou falta de apoio institucional.

Tabela 5 - *Cluster* 3: Modelos de Negócio e Barreiras à Inovação

Termos	Número de ocorrências	Termos	Número de ocorrências
<i>sustainability</i>	99	<i>tool</i>	12
<i>framework</i>	73	<i>issues</i>	9
<i>digital innovation</i>	52	<i>methodology</i>	9
<i>challenges</i>	50	<i>simulation</i>	8
<i>barriers</i>	41	<i>critical success factors</i>	8
<i>implementation</i>	39	<i>manufacturing PME s</i>	8
<i>business model</i>	32	<i>dynamics</i>	7
<i>circular economy</i>	30	<i>identification</i>	7
<i>future</i>	26	<i>maturity model</i>	7
<i>digitalisation</i>	23	<i>benefits</i>	7
<i>transformation</i>	22	<i>eco-innovation</i>	7
<i>opportunity</i>	18	<i>waste</i>	6
<i>economics</i>	16	<i>enablers</i>	6
<i>manufacturing</i>	16	<i>readiness</i>	5
<i>collaboration</i>	15	<i>dematel</i>	5
<i>drivers</i>	14	<i>cognitive mapping</i>	5
<i>energy</i>	13	<i>transition</i>	5
<i>support</i>	12	<i>awareness</i>	5

Fonte: elaboração própria

Cluster 4: Inclusão Financeira e Acesso a Mercados

Esta seleção de termos, representada na Tabela 5, o foco desloca-se para o impacto das tecnologias no acesso a serviços financeiros e mercados. Termos como "access", "*banks*", "*bias*" e "*causation*" apontam para uma preocupação com a forma como algoritmos e sistemas de IA podem influenciar decisões de crédito, seguros ou financiamento. Em particular, vários estudos abordam os riscos de discriminação algorítmica e a urgência de desenhar sistemas mais justos e inclusivos, sobretudo para PME em contextos periféricos ou emergentes.

Tabela 6 - Cluster 4: Inclusão Financeira e Acesso a Mercados

Termos	Número de ocorrências	Termos	Número de ocorrências
<i>small and medium enterprises</i>	497	<i>banks</i>	9
<i>business</i>	78	<i>education</i>	8
<i>firm</i>	58	<i>science</i>	8
<i>finance</i>	49	<i>uncertainty</i>	7
<i>information</i>	46	<i>creation</i>	7
<i>entrepreneurship</i>	42	<i>chatgpt</i>	7
<i>covid-19</i>	34	<i>ghana</i>	6
<i>decision making</i>	33	<i>discrimination</i>	6
<i>growth</i>	28	<i>crisis</i>	6
<i>industry</i>	17	<i>power</i>	6
<i>decision</i>	16	<i>gender</i>	5
<i>research-and-development</i>	15	<i>hospitality</i>	5
<i>effectuation</i>	14	<i>experience</i>	5
<i>access</i>	13	<i>causation</i>	5
<i>productivity</i>	12	<i>size</i>	5
<i>credit</i>	11	<i>bias</i>	5
<i>fintech</i>	10	<i>failure</i>	5
<i>policy</i>	9		

Fonte: elaboração própria

Cluster 5: Adoção de AI e Big Data nas PME

Este é possivelmente o *cluster mais* alinhado com os objetivos da presente dissertação, , representado na Tabela 7. Reúne literatura sobre a adoção de IA, incluindo *Generative AI* e LLM, dentro das estruturas organizacionais das PME. Conceitos como "*AI adoption*", "*big*

data" e "*acceptance*" revelam um foco em modelos de adoção, fatores críticos de sucesso e percepções dos gestores. É também neste grupo que se encontram estudos empíricos sobre casos de uso e impacto operacional, com ênfase na automatização de tarefas, apoio à decisão e inovação de serviço.

Tabela 7 - Cluster 5: Adoção de AI e Big Data nas PME

Termos	Número de ocorrências	Termos	Número de ocorrências
<i>technologies</i>	119	<i>success</i>	17
<i>big data</i>	71	<i>service</i>	15
<i>adoption</i>	67	<i>user acceptance</i>	11
<i>determinants</i>	61	<i>e-business</i>	9
<i>perspective</i>	41	<i>diffusion</i>	9
<i>information technology</i>	32	<i>tourism</i>	9
<i>pls-sem</i>	31	<i>electronic commerce</i>	8
<i>medium enterprises</i>	30	<i>digital marketing</i>	8
<i>social media</i>	27	<i>intention</i>	8
<i>cloud computing</i>	26	<i>perceived usefulness</i>	7
<i>acceptance</i>	24	<i>trust</i>	7
<i>e-commerce</i>	24	<i>Usage</i>	7
<i>toe framework</i>	20	<i>ai adoption</i>	6
<i>ai</i>	19	<i>lct</i>	5

Fonte: elaboração própria

Cluster 6: Responsabilidade Social Corporativa e Governança Empresarial
Este último cluster, representado na Tabela 8, apresenta uma dimensão mais institucional e ética da integração tecnológica. Termos como "*corporate governance*", "*CSR*" e "*culture*" demonstram um interesse pela forma como as tecnologias emergentes são compatibilizadas com valores de responsabilidade social, sustentabilidade e boas práticas de liderança. Algumas PME são aqui retratadas como laboratórios de inovação social, usando IA de forma alinhada com objetivos mais amplos de impacto positivo.

Tabela 8 - Cluster 6: Responsabilidade Social Corporativa e Governança Empresarial

Termos	Número de ocorrências	Termos	Número de ocorrências
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<i>strategic management</i>	64	<i>corporate governance</i>	6
<i>leadership</i>	20	<i>culture</i>	6
<i>corporate social responsibility</i>	20	<i>legitimacy</i>	6
<i>perception</i>	16	<i>motivation</i>	6
<i>companies</i>	12	<i>indicators</i>	5
<i>csr</i>	10	<i>insights</i>	5
<i>investment</i>	10	<i>responsibility</i>	5
<i>engagement</i>	9	<i>Sector</i>	5
<i>governance</i>	9	<i>stakeholders</i>	5

Fonte: elaboração própria

Esta classificação dos *clusters* oferece uma base sólida para desenvolver uma taxonomia de aplicações da IA e LLM nas PME , organizada por dimensões tecnológicas, organizacionais, institucionais e económicas. Cada *cluster* fornece indícios valiosos sobre desafios, oportunidades e condições de sucesso, servindo como referência para os capítulos seguintes da dissertação.

Para além da análise quantitativa, foi feita uma análise qualitativa dos *clusters* gerados, complementada com tabelas que agrupam as *keywords* mais representativas de cada domínio e com o mapa de visualização semântica (Tabelas 3,4,5,6,7 e 8). Estes recursos permitem captar de forma intuitiva as áreas de concentração temática dentro da literatura científica.

3. Estudos de mercado

A *Generative AI* está a revolucionar as operações de negócios ao permitir a criação automatizada de conteúdo, compreensão de linguagem natural e inteligência preditiva. Para as PME, estas capacidades representam uma oportunidade única para aumentar a competitividade, racionalizar as operações e inovar sem os amplos recursos normalmente exigidos pelas soluções tradicionais de IA.

3.1 Metodologia

Este relatório foi compilado através da revisão estruturada de *whitepapers* da indústria e relatórios de pesquisa de mercado publicados por organizações líderes, incluindo Gartner, McKinsey, Boston Consulting Group (BCG), EY, PwC, Accenture e Comissão Europeia. Foram considerados apenas os relatórios de 2024 e 2025. Cada fonte foi examinada em busca de referências específicas a:

- A adoção do *Generative AI* em PME
- Casos de uso por indústria ou função de negócios
- Resultados estratégicos, económicos ou de produtividade
- Exemplos práticos de implementação ou tecnologias

3.2 Fontes de informação

Segue-se uma lista dos principais relatórios utilizados como fontes de dados primárias para esta análise:

- Gartner (2025): '*Generative AI*'
- McKinsey (2024): 'The State of AI in 2024'
- BCG (2024): 'The Stairway to GenAI Impact'
- EY (2024): 'How Can AI Augment Your People?'
- PwC (2025): 'AI Business Predictions'
- Accenture (2024): 'Technology Vision 2024'
- European Commission (2024): 'European AI Strategy'

3.3 Dados

Cada relatório apresenta uma lente única sobre como a *Generative AI* está a afetar o cenário das PME :

- (McKinsey, 2025) com base em uma pesquisa global com 1.400 empresas, incluindo PME, a McKinsey descobriu que 65% das empresas estão usando o *Generative AI* regularmente. O relatório enfatiza as melhorias de produtividade e identifica o marketing e o desenvolvimento de software como os principais domínios para os ganhos da *Generative AI*.
- (Gartner, 2025) agrega dados de adoção de tecnologia entre setores, relatando um aumento de 19 pontos no uso de *Generative AI* desde 2023, com quase dois terços das empresas usando *Generative AI* em pelo menos uma função. Descobriu-se que as PME adotam modelos de base pré-treinados, mais comumente por meio de APIs de nuvem.
- (BCG, 2024) foca nos estágios de maturidade da adoção do *Generative AI*. Identifica que a maioria das PME se encontra em fase de «prova de conceito» ou em fase inicial de implantação. Os dados incluem 40 estudos de caso em todo o mundo, com comentários detalhados sobre barreiras como talento e integração.
- (EY, 2024), investiga o papel da AI no aumento da produtividade humana. Apresenta *benchmarks* sobre melhorias de desempenho de PME com *Generative AI* em RH, atendimento ao cliente e P&D.
- (PwC, 2025) fornece cenários preditivos para a adoção de AI em 2025, projetando um crescimento significativo das PME em ferramentas *Generative AI* adaptadas para operações, marketing e conformidade.
- (European Commission, 2024) Destaca os quadros regulamentares e de financiamento para promover a inovação *Generative AI* nas PME, especialmente através de programas *sandbox* e da Lei da IA.

Na tabela 9 estão identificadas as áreas de negócio sinalizadas nos estudos de mercado analisados.

Tabela 9 – Áreas de negócio identificadas

Industria	Gartner	McKinsey	BCG	EY	PwC	Accenture	EU Commission
<i>Marketing</i>	✓	✓	✓	✓	✓	✓	
<i>Customer Service</i>	✓	✓	✓	✓	✓	✓	
<i>HR</i>				✓	✓		
<i>Software Development</i>	✓	✓	✓				
<i>Healthcare</i>		✓	✓	✓			✓
<i>Retail</i>	✓		✓		✓	✓	

<i>Finance</i>	✓	✓	✓	✓	✓		✓
<i>Compliance</i>	✓		✓	✓	✓		✓

Fonte: Elaboração própria

Foram vários os casos de uso identificados nos relatórios, a Tabela 10 apresenta estes dados organizados para cada um dos relatórios.

Tabela 10 – Casos de uso identificados

Caso de uso	Descrição	Fonte(s)
Automação de Marketing	Criação de conteúdo, otimização de SEO, personalização de campanhas	Gartner, McKinsey, EY
<i>Chatbots</i> de apoio ao cliente	<i>Chatbots</i> suportados por LLM para apoio ao cliente, triagem, e resolução de casos	EY, Accenture
Geração de código	Compilação de Código, geração de protótipos, ferramentas de apoio ao programador	McKinsey
Monitorização e compliance	Monitorização regulamentar, documentação e automatização de auditorias	PwC, Gartner, EU Commission
<i>Forecasting</i> financeiro	Modelagem de <i>Cash flow</i> , orçamentação assistida por IA, análise de tendências	BCG, McKinsey

Fonte: Elaboração própria

4. Estudo de caso

A Infinity Group, reconhecida como um dos mais destacados parceiros da Microsoft no Reino Unido, tem vindo a consolidar uma posição de referência no domínio da transformação digital, com especialização avançada em *Business Applications*, *Data & AI* e *Cloud Adoption*. A sua reputação assenta na entrega de soluções digitais de elevada complexidade técnica e estratégica, em contextos empresariais exigentes, tanto no panorama nacional como internacional. Esta competência tem vindo a ser reiteradamente validada através de sucessivos reconhecimentos atribuídos pela própria Microsoft, que conferem à organização o estatuto de *Solutions Partner* com múltiplas especializações, incluindo Azure, Power Platform e Dynamics 365.

A atuação da Infinity Group desenvolve-se num ecossistema caracterizado por um ritmo acelerado de evolução tecnológica, particularmente intensificado nos últimos anos pelo surgimento de novas capacidades proporcionadas por sistemas de *Generative AI* e, em especial, pelos LLM. Tecnologias como o ChatGPT, bem como os serviços do Azure OpenAI, criaram condições para transformar radicalmente processos de negócio, fomentar a automatização inteligente, e ampliar a tomada de decisão baseada em dados. Embora estas ferramentas estejam teoricamente acessíveis a empresas de qualquer dimensão, a sua apropriação com impacto significativo depende de um grau de maturidade digital organizacional que nem sempre se encontra uniformemente distribuído. Neste contexto, a Infinity Group destaca-se como um exemplo paradigmático de uma PME com cultura de experimentação ativa e capacidade instalada para incorporar tecnologias emergentes de forma estratégica, segura e eficaz.

A adoção da *Generative AI* pela organização não se circunscreve a um mero alinhamento de oportunidade com uma tendência tecnológica em voga. Pelo contrário, trata-se de uma decisão integrada numa visão de transformação digital sustentada por um compromisso de longo prazo com a inovação. A Infinity Group defende, de forma inequívoca, que a liderança na transformação digital dos seus clientes exige, em primeiro lugar, uma transformação real e tangível dentro da própria organização. Esta filosofia, por vezes traduzida na metáfora organizacional do “*internal lighthouse*”, assume que a credibilidade do processo de consultoria tecnológica só pode emergir da experiência direta e prática do próprio parceiro. Neste sentido, os profissionais da Infinity Group não se posicionam apenas como promotores ou implementadores de soluções junto dos seus clientes, mas também como utilizadores experientes que testam, validam e refinam essas mesmas soluções no seu ambiente interno.

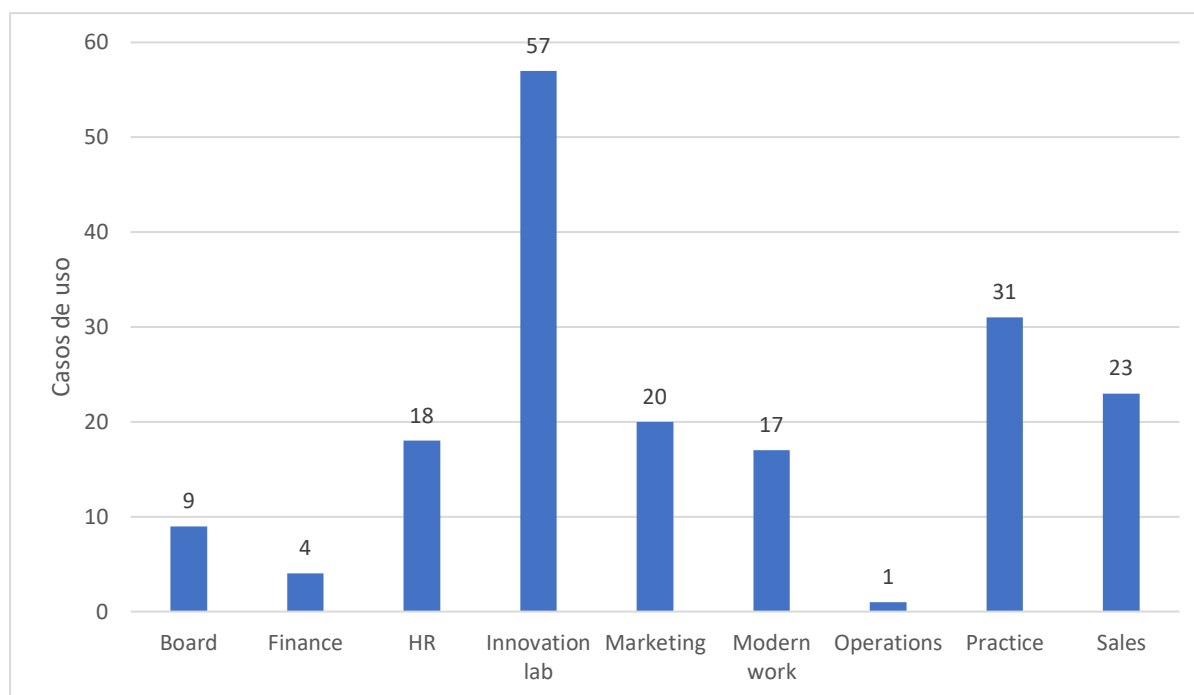
Esta abordagem assenta numa articulação entre a adaptação progressiva das ferramentas já em uso, a criação de novos *Copilots* personalizados recorrendo ao ecossistema Azure OpenAI e Power Platform, e a disseminação transversal de competências orientadas para o reforço da literacia em AI. O propósito não é a substituição de processos existentes por mecanismos automatizados, mas a criação de uma nova lógica de trabalho em que a inteligência artificial se apresenta como aliada estratégica. A AI é concebida, neste quadro, como catalisador da geração de conhecimento, como instrumento para acelerar ciclos de decisão e como plataforma potenciadora das capacidades humanas.

O estatuto da Infinity Group como parceiro estratégico da Microsoft oferece-lhe uma posição privilegiada para atuar como *early adopter* de tecnologia, conferindo-lhe acesso antecipado a recursos e funcionalidades em fase piloto. Esta vantagem manifesta-se na integração em programas de inovação da Microsoft, no acesso a ambientes de teste altamente controlados e na possibilidade de utilizar, em primeira mão, funcionalidades como o Microsoft 365 Copilot, o Azure AI Studio e as APIs da família OpenAI. Esta proximidade com a fonte tecnológica reforça não apenas a agilidade na adoção, mas também a capacidade de antecipar tendências, de influenciar *roadmaps* de produto e de adaptar soluções com base em necessidades empresariais reais.

Um dos pilares da estratégia da Infinity Group para a adoção de *Generative AI* consistiu na implementação de um programa interno de criação e validação de ideias, de forma estruturada. Este programa baseou-se na realização de 13 sessões colaborativas, desenhadas para fomentar a participação ativa das diversas áreas da organização, desde as funções comerciais e técnicas até às equipas administrativas, de recursos humanos e inovação. As sessões, denominadas internamente como “*Copilot Sessions*”, visavam identificar, em ambiente de cocriação, oportunidades concretas para a integração de *Copilots* em fluxos de trabalho quotidianos. O envolvimento das equipas foi voluntário e revelou não apenas uma predisposição para a mudança, mas também uma capacidade de imaginar novas formas de resolver problemas e de melhorar processos com o apoio da AI. Na primeira fase, nas 13 sessões colaborativas, foram identificados 180 exemplos de utilização de *Generative AI* e LLM no total das áreas envolvidas.

A equipa de *Innovation Lab* foi aquela que mais exemplos identificou, embora as equipas de *Practice*, *Sales*, *Marketing*, *HR* e *Modern Work* apresentando também números bastante respeitáveis (Gráfico 2).

Gráfico 2 - Casos de uso por equipa



Fonte: Elaboração própria

A identificação de mais de 180 oportunidades de aplicação concreta, ultrapassou largamente as expectativas iniciais. Entre as propostas surgiram iniciativas envolvendo o Microsoft 365 Copilot para otimização de tarefas em Outlook e Word, *Copilots* desenvolvidos na Power Platform para apoio à tomada de decisão, e processos de automatização baseados em linguagem natural utilizando os modelos do Azure OpenAI. Esta identificação de exemplos de utilização conferiu autenticidade ao processo e favoreceu uma apropriação genuína da tecnologia por parte dos utilizadores finais. Ao contrário do que ocorre frequentemente em processos de adoção impostos de forma vertical, a Infinity Group optou por cultivar uma dinâmica horizontal, promovendo uma verdadeira jornada de descoberta tecnológica, suportada por especialistas internos e alicerçada na realidade operacional de cada equipa.

Numa segunda fase, e para garantir a continuidade e a consistência do esforço de adoção, foi desenvolvida uma infraestrutura de apoio que incluiu, entre outros recursos, a criação de uma plataforma de formação e gestão de processos e utilização de AI: a plataforma UNITE, agregadora de conteúdos formativos e de acompanhamento da adoção; a estruturação de percursos formativos com diferentes níveis de complexidade e especialização, com diversos níveis “AI Aware”, “AI Practitioner” e “AI Champion”; e ainda um sistema de monitorização centralizada com indicadores sobre tempo poupado, impacto funcional e maturidade dos copilots em desenvolvimento. Esta infraestrutura constituiu uma base essencial para sustentar a adoção em escala e garantir que o processo evoluía de forma

consistente, com dados empíricos a informar as decisões e a orientar o *roadmap* tecnológico interno.

Os resultados obtidos até ao momento são reveladores do impacto profundo desta estratégia. Em áreas como a elaboração de propostas comerciais, a análise de documentação técnica, a gestão de correspondência eletrónica e o apoio à tomada de decisão em processos de recursos humanos, observou-se uma redução significativa do tempo despendido por tarefa, bem como melhorias na qualidade e consistência das entregas. Estima-se que, em algumas equipas, tenham sido poupadas dezenas de horas por semana, com ganhos evidentes em eficiência operacional, motivação dos colaboradores e capacidade de resposta ao mercado.

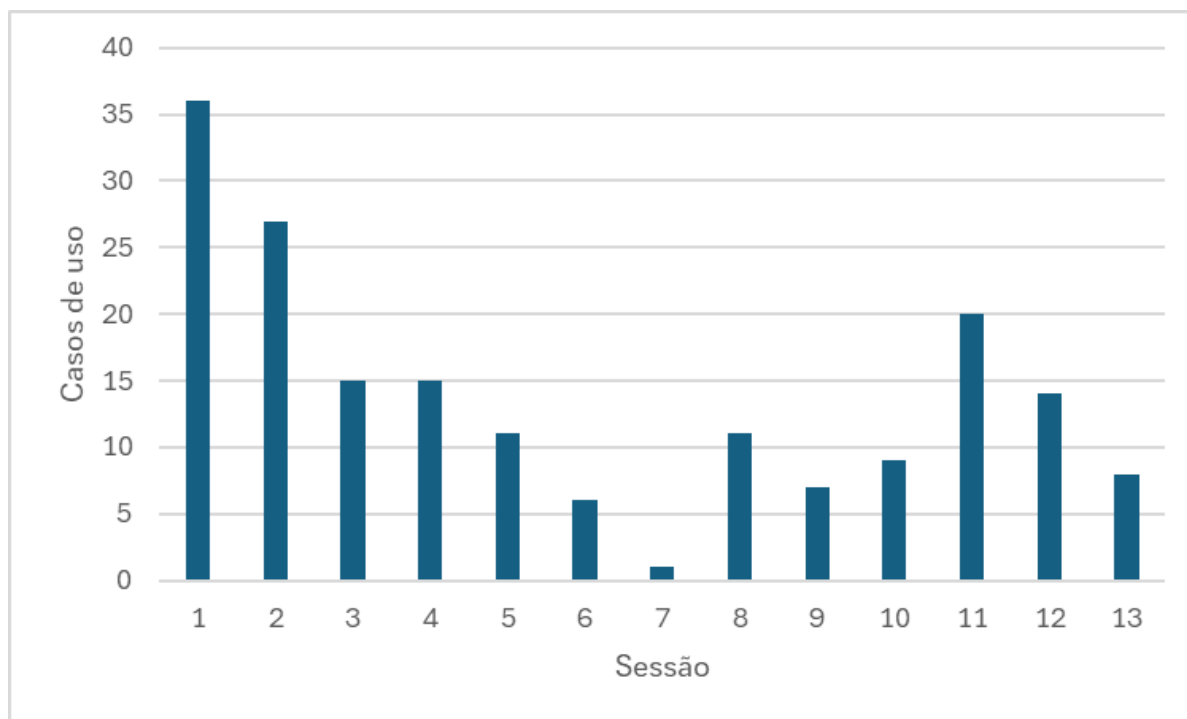
A experiência interna da Infinity Group serve assim como uma demonstração tangível do potencial transformador da *Generative AI* num contexto de PME com vocação tecnológica.

4.1 Dados

A análise dos resultados decorrentes da adoção de IA na Infinity Group revela um conjunto de impactos concretos e mensuráveis, sustentados por dados empíricos recolhidos ao longo de várias fases do processo. Esta análise não se limita à quantificação de ganhos operacionais, estendendo-se à identificação de padrões de uso, perceção de valor por parte dos utilizadores e maturidade funcional das soluções desenvolvidas. A riqueza e diversidade dos dados obtidos permitem compreender com maior profundidade a natureza das transformações desencadeadas, bem como as dinâmicas internas que sustentaram a sua implementação com sucesso.

Desde o início do programa de adoção, foram registados mais de 180 casos de uso (distribuídos nas sessões representadas no gráfico 3) propostos por equipas de todas as áreas da organização. A sistematização destes dados revelou uma distribuição heterogénea, mas consistente dos impactos, sendo possível identificar tanto sectores com ganhos operacionais expressivos como áreas onde o valor adveio sobretudo da melhoria da qualidade do trabalho ou da inovação nos processos

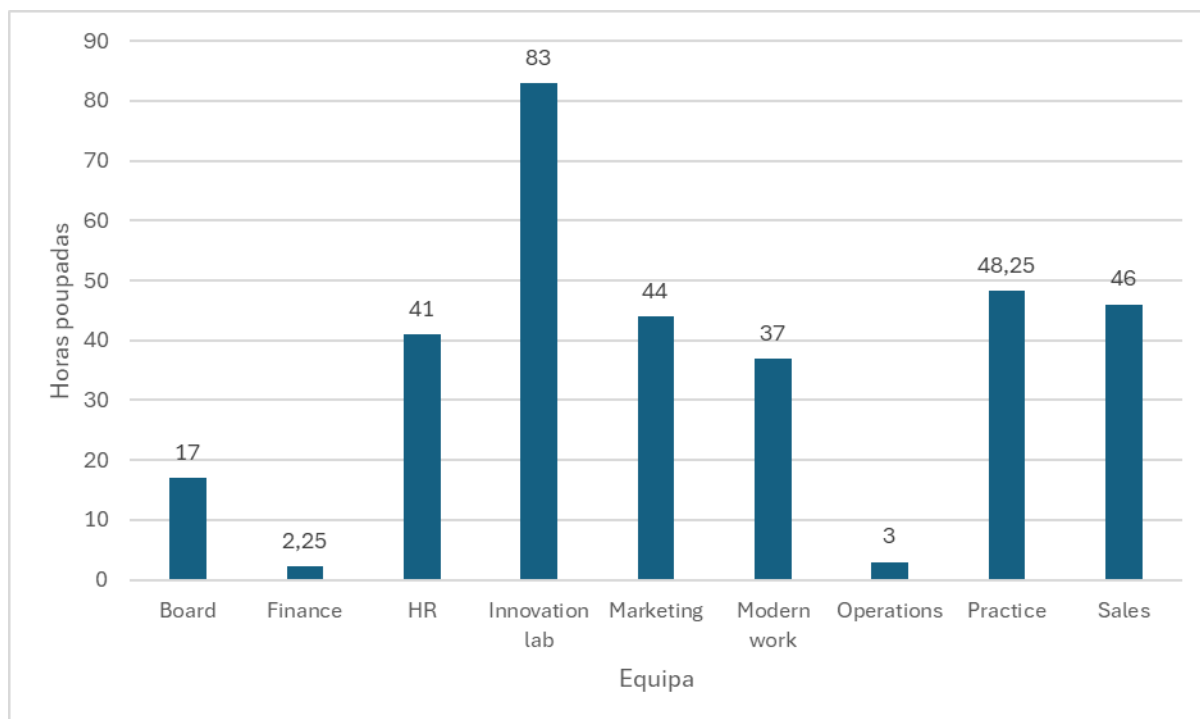
Gráfico 3 - Casos por sessão



Fonte: Elaboração própria

Os dados agregados por equipa, por exemplo, demonstram que as equipas ligadas à Inovação, Vendas e Marketing foram particularmente ativas, tanto no número de propostas submetidas como no volume de horas poupadas por semana, com valores estimados de 83, 46 e 44 horas respetivamente, o que corresponde, no caso da primeira, a mais de dez jornadas de trabalho poupadas semanalmente (Gráfico 4).

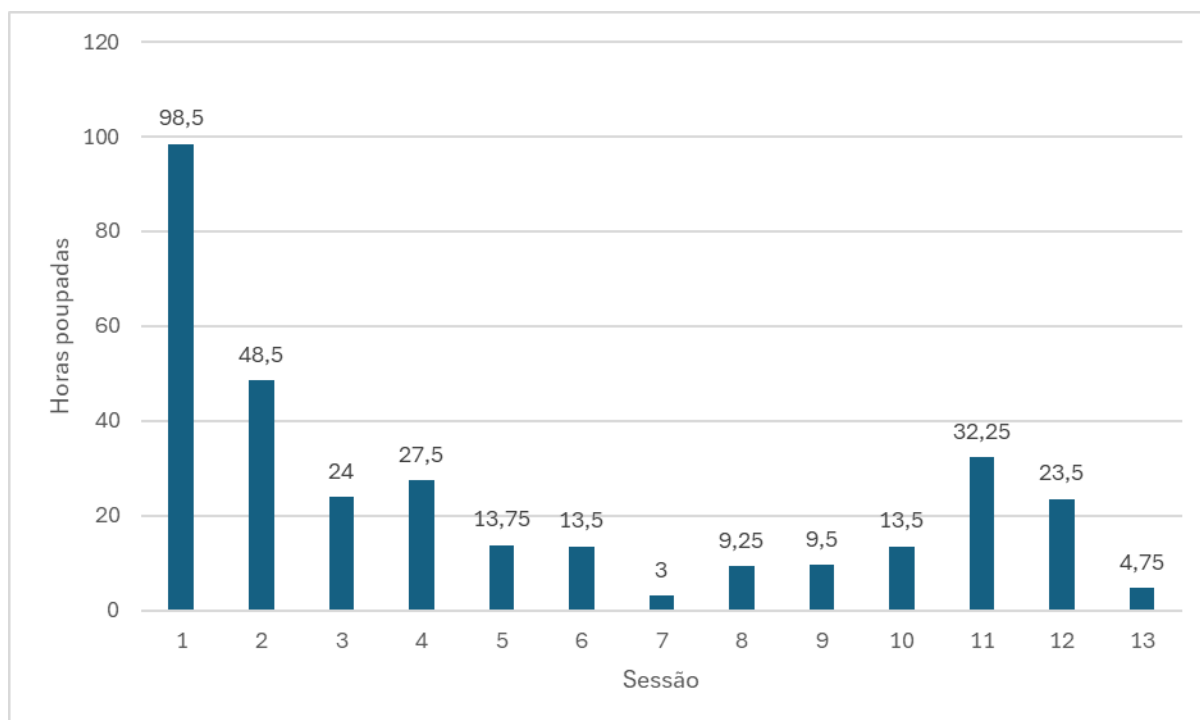
Gráfico 4 - Horas poupadas por equipa



Fonte: Elaboração própria

Ao longo das sessões foi possível observar que a tendência de horas poupadas em novos casos de uso apresentados diminuiu consideravelmente (Gráfico 5).

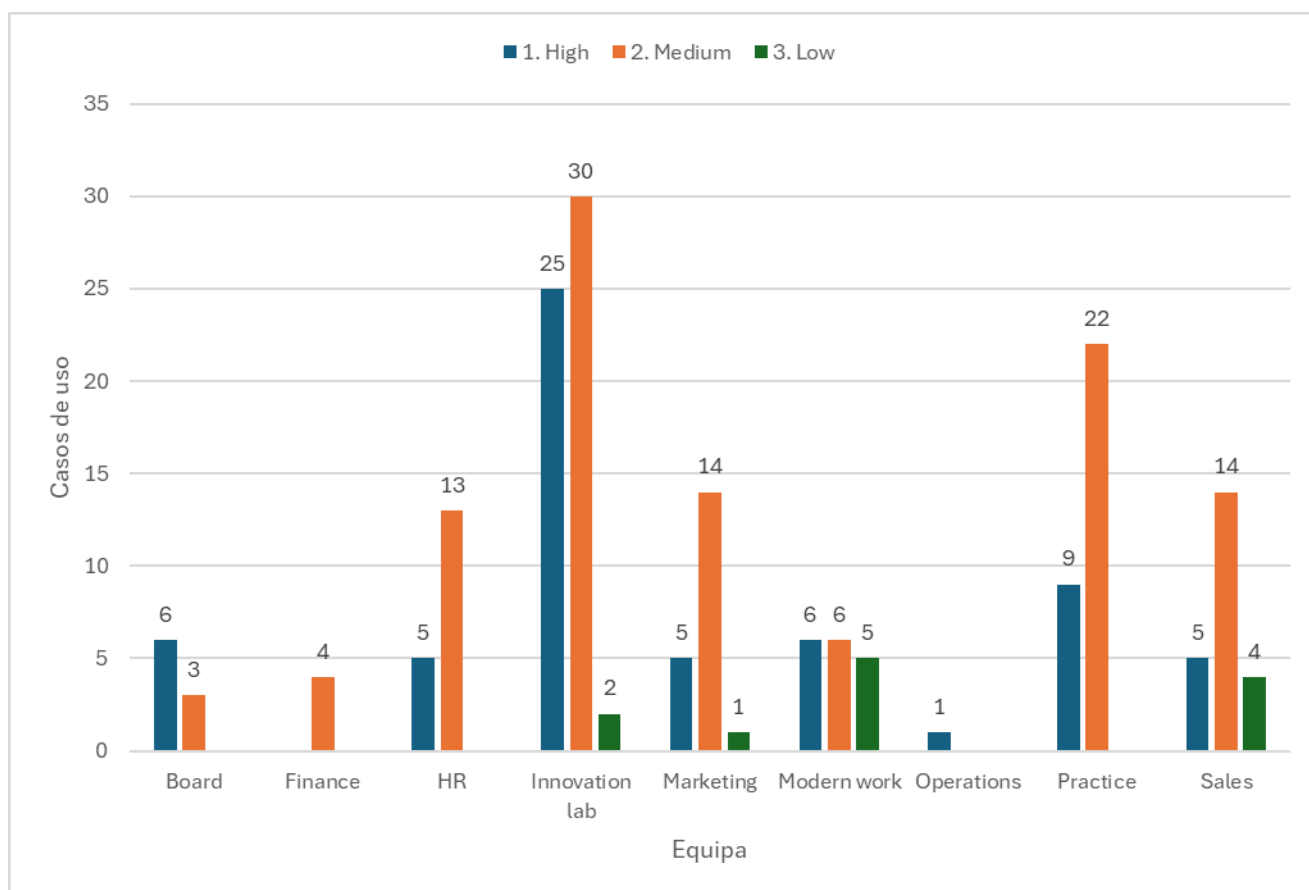
Gráfico 5 - Horas poupadas por sessão



Fonte: Elaboração própria

Para além dos valores absolutos, importa considerar a intensidade do impacto percebido. A categorização dos casos por grau de impacto — alto, médio ou baixo — evidenciou que uma parte significativa dos *copilots* desenvolvidos foi classificada com impacto elevado, o que corrobora a eficácia da abordagem metodológica seguida (Gráfico 6). Esta classificação, baseada na avaliação direta dos utilizadores, reflete não apenas o tempo poupado, mas também o efeito percebido na clareza da informação, na fiabilidade das respostas automáticas e na redução de esforço cognitivo em tarefas repetitivas.

Gráfico 6 - Impacto por equipa



Fonte: Elaboração própria

A diversidade dos casos registados é igualmente digna de nota. As descrições revelam uma ampla gama de utilizações, desde a automatização da redação de emails e documentos internos, até à análise inteligente de estratégias empresariais, *benchmarking* competitivo, triagem de currículos e apoio à tomada de decisão em gestão de talento. Uma análise léxica

das descrições dos casos revelou que os termos mais recorrentes incluem “resumo”, “análise”, “gerar”, “proposta”, “resposta”, “automático” e “documento”, o que confirma a forte presença de tarefas orientadas ao processamento e geração de texto, bem como à extração de informação relevante a partir de fontes diversas.

No plano qualitativo, os testemunhos dos colaboradores recolhidos nos comentários associados aos casos de uso evidenciam uma valorização expressiva dos *copilots* como ferramentas de apoio real ao trabalho. Foram destacados, com frequência, o alívio da carga de tarefas repetitivas, o aumento da autonomia para iniciar tarefas complexas e a melhoria do tempo de resposta em contextos de pressão. Este reconhecimento por parte dos utilizadores finais corrobora a eficácia da AI em ambiente empresarial depende tanto da sua capacidade técnica como da sua integração fluida nos contextos operacionais reais.

De entre os sectores funcionais analisados, o marketing destacou-se na utilização de *Generative AI* para acelerar a criação de conteúdos, nomeadamente textos promocionais, descrições de produtos e esboços de campanhas digitais. Na área comercial, os *copilots* revelaram-se particularmente úteis na preparação de propostas, permitindo, por exemplo, a adaptação automática de modelos textuais ao perfil do cliente, a análise de requisitos e a construção de argumentos com recursos a bases de conhecimento existentes. Já na vertente de recursos humanos, foi dada especial atenção ao uso da AI como assistente na triagem de candidaturas, na preparação de planos de desenvolvimento e na redação de respostas formais a questões de colaboradores.

É de salientar que os ganhos reportados não se limitam ao plano operacional. Em várias equipas, os *copilots* foram descritos como promotores de transformação cultural, incentivando os utilizadores a pensar de forma mais estruturada sobre os seus processos, a identificar redundâncias e a explorar soluções mais criativas para problemas antigos. Esta mudança de postura, embora menos mensurável, tem um impacto profundo na capacidade de adaptação e de inovação organizacional.

No que respeita à maturidade das soluções implementadas, verificou-se uma progressiva transição de protótipos experimentais para *copilots* estabilizados e integrados em fluxos de trabalho consolidados. Esta evolução foi acompanhada por um sistema de monitorização contínua, alimentado por métricas como número de utilizadores ativos, frequência de utilização e grau de autonomia funcional das soluções. Os dados extraídos desse sistema permitiram identificar casos com retorno sustentado e justificar a sua integração plena nas operações da organização.

De forma complementar, a experiência da Infinity Group também revelou áreas onde os *copilots* foram menos eficazes ou onde a complexidade do processo não justificou, para

já, a sua automatização. Estas aprendizagens, longe de serem falhas, constituem indicadores valiosos para a definição de critérios de seleção e para a calibração de expectativas quanto ao papel da AI em ambientes profissionais heterogéneos.

A leitura integrada destes dados, aliada à análise qualitativa dos testemunhos dos utilizadores, permite concluir que a adoção de *Generative AI* na Infinity Group não se limitou à introdução de tecnologia, mas operou uma reconfiguração real das práticas de trabalho, da organização da informação e da forma como as equipas se posicionam perante os seus próprios processos. Esta transformação, sustentada por dados e acompanhada de perto, constitui uma base sólida para a consolidação de práticas inovadoras e para o alargamento da adoção de AI a outras dimensões da atividade empresarial.

4.2 Resultados

A experiência da Infinity Group na adoção interna de *Generative AI* e LLM revelou um conjunto de aprendizagens significativas, tanto ao nível técnico como organizacional. O processo de integração desta tecnologia em diversos domínios da atividade interna permitiu não apenas alcançar ganhos operacionais relevantes, como também consolidar uma cultura de inovação digital enraizada na prática quotidiana das equipas.

Um dos principais fatores críticos de sucesso residiu na decisão estratégica de iniciar o processo de adoção de forma participativa, envolvendo desde o início os colaboradores na identificação de oportunidades concretas de aplicação da AI. Ao promover sessões de cocriação, conduzidas em ambiente colaborativo, foi possível mapear um número expressivo de casos de uso com impacto direto nas rotinas de trabalho. Esta abordagem, centrada nas pessoas, revelou-se eficaz para gerar compromisso, confiança e entusiasmo, enquanto assegurava a relevância e aplicabilidade real das soluções tecnológicas propostas. Ao invés de um modelo centralizado e vertical, a Infinity Group optou por fomentar um processo ascendente, permitindo que as equipas reconhecessem na tecnologia uma resposta concreta às suas próprias necessidades.

Adicionalmente, a organização demonstrou uma notável agilidade na prototipagem das soluções identificadas. A conjugação de ferramentas como o Azure OpenAI Studio, a Power Platform e o Copilot do Microsoft 365 possibilitou transformar ideias em protótipos funcionais num horizonte temporal reduzido, muitas vezes inferior a três semanas. Este ritmo de experimentação sustentado revelou-se fundamental para validar hipóteses, ajustar funcionalidades e recolher *feedback* em tempo útil. Esta capacidade de iterar rapidamente permitiu à organização evitar investimentos excessivos em soluções de utilidade marginal, favorecendo uma abordagem pragmática centrada na geração de valor efetivo.

Outro elemento estruturante do processo foi a aposta clara na capacitação interna. A criação de um percurso formativo modular, composto por diferentes níveis de aprofundamento e adaptado às necessidades dos colaboradores, contribuiu decisivamente para aumentar os níveis de literacia digital e a confiança no uso das ferramentas de AI. Ao formar equipas não só para utilizar, mas também para compreender e criticar o funcionamento dos *copilots* e modelos linguísticos, a Infinity Group fomentou uma cultura de adoção informada e consciente. A literacia digital foi, assim, não apenas um meio técnico, mas um instrumento de empoderamento profissional.

A narrativa institucional construída em torno da AI foi também determinante para o sucesso da sua integração. A tecnologia foi consistentemente apresentada como um agente de amplificação das capacidades humanas, e não como um substituto dos colaboradores. Esta abordagem, cuidadosamente comunicada e refletida na prática organizacional, reduziu resistências e contribuiu para uma apropriação mais natural e positiva das ferramentas. Os casos documentados demonstram que os *copilots* não eliminaram funções, mas libertaram tempo e energia para atividades de maior valor, promovendo uma utilização mais estratégica dos recursos humanos e, em alguns casos, aumentando a motivação individual.

Não menos relevante foi a atenção dada à questão da governação da AI. Desde os primeiros passos, a Infinity Group instituiu mecanismos de acompanhamento, supervisão e regulação do uso da tecnologia, assegurando que a sua utilização respeitasse princípios de segurança, privacidade e responsabilidade ética. Foram definidas diretrizes claras para a validação humana dos conteúdos gerados, bem como para a proteção dos dados utilizados pelos modelos. A criação de um grupo interno de reflexão sobre a ética da AI demonstrou o compromisso da organização com uma integração tecnológica que não fosse apenas eficaz, mas também responsável e sustentável.

Importa destacar que esta transformação interna não foi concebida como um fim em si mesmo, mas como um catalisador de diferenciação competitiva no mercado. Ao incorporar AI nos seus próprios processos, a Infinity Group reforçou a sua legitimidade enquanto consultora especializada em transformação digital e inovação orientada por dados. A experiência acumulada permitiu à organização acelerar o desenvolvimento de ativos reutilizáveis, enriquecer a sua proposta de valor e consolidar a sua posição como parceira estratégica de referência no ecossistema Microsoft.

A experiência da Infinity Group comprova que a adoção bem-sucedida de tecnologias de *Generative AI* em contexto de PME depende de uma combinação equilibrada de fatores humanos, tecnológicos e estratégicos. O envolvimento das equipas, a aposta na capacitação, a experimentação ágil, o alinhamento ético e a visão de longo prazo revelaram-se elementos determinantes para que a integração da AI deixasse de ser apenas uma ambição tecnológica

e passasse a constituir uma componente intrínseca da cultura organizacional. Esta aprendizagem oferece um conjunto de orientações valiosas para outras organizações que pretendam trilhar o mesmo caminho de transformação digital com impacto e responsabilidade.

5. Resultados

5.1 Principais domínios de aplicação da *Generative AI* e dos LLM em PME

A revisão da literatura identificou uma diversidade crescente de domínios empresariais onde a *Generative AI* e os LLM estão a ser aplicados com sucesso. Entre os mais proeminentes destacam-se: atendimento ao cliente (através de *chatbots* e assistentes virtuais), *marketing* e personalização, desenvolvimento de software, análise de documentos e suporte à decisão estratégica. Estas aplicações estão fortemente centradas na automatização de tarefas repetitivas, na criação de conteúdo e na extração de informação de grandes volumes de dados não estruturados.

Os estudos de mercado analisados (PwC, 2025) (OECD , 2025) (McKinsey, 2025) (Gartner, 2025) (European Commission, 2024) (EY, 2024) confirmam esta tendência, com múltiplas empresas a relatar casos de uso em áreas como contabilidade, recrutamento, auditoria, design de produtos e apoio jurídico. O caso específico da Infinity Group reflete esta convergência: a empresa adotou *Generative AI* em áreas como *marketing*, apoio técnico e gestão do conhecimento.

A Tabela 11 resume os principais domínios de aplicação identificados nas três fontes analisadas.

Tabela 11 - Domínios de aplicação identificados

Domínio Empresarial	Literatura Académica	Estudos de Mercado	Caso de uso
Atendimento ao cliente	Elevada incidência	<i>Chatbots</i> e <i>call centers</i>	Automação de respostas técnicas
<i>Marketing</i> e conteúdos	Criação automatizada	Personalização e SEO	Copilot e Power BI para <i>insights</i>
Recursos Humanos	Menção crescente	Recrutamento assistido	Ainda não explorado
Desenvolvimento de <i>software</i>	LLM aplicados ao código	GitHub Copilot, DevOps	Em exploração inicial
Gestão documental	Sumarização e busca	Auditorias, compliance	Sistema de gestão documental

Fonte: elaboração própria

5.2 Tipologia dos casos de uso e impactos no desempenho organizacional

Os casos de uso analisados podem ser agrupados em três grandes tipos: (1) automação de tarefas cognitivas; (2) apoio à tomada de decisão; e (3) aumento da produtividade criativa. Na literatura, há evidência significativa de ganhos de eficiência e redução de custos operacionais (Ding et al., 2024; Hou et al., 2023), enquanto os estudos de mercado (European Commission, 2025) (EY, 2024) reforçam também os ganhos em qualidade de serviço e escalabilidade.

No estudo de caso, os impactos relatados incluem:

- Redução de tempo na preparação de documentos técnicos em mais de 60%;
- Aumento da eficiência da equipa de marketing com geração automatizada de posts, artigos e e-mails;
- Melhoria da qualidade e rapidez de resposta em processos internos, via *Generative AI* ligada a bases de conhecimento internas.

Estes resultados estão em linha com os identificados na literatura e nos relatórios de mercado, validando a hipótese de que as tecnologias LLM são particularmente eficazes na transformação de processos baseados em texto e conhecimento tácito.

5.3 Barreiras à adoção e fatores críticos de sucesso

Apesar do seu potencial, a adoção de *Generative AI* nas PME enfrenta barreiras significativas. A revisão de literatura destaca como entraves principais: limitações de competências internas, preocupações com a segurança dos dados, ausência de infraestruturas técnicas e resistência cultural à mudança. Os estudos de mercado apontam ainda para a dificuldade em medir ROI e a ausência de modelos claros de *governance* e ética. A abordagem do estudo de caso corrobora estas dificuldades. A empresa reportou os seguintes desafios:

- Necessidade de formação técnica da equipa para uma utilização segura e eficaz das ferramentas;
- Preocupações iniciais com a privacidade dos dados e dependência da *cloud*;
- Barreiras culturais internas, ultrapassadas apenas com envolvimento direto da liderança e apoio à experimentação.

Por outro lado, os fatores críticos de sucesso identificados incluem:

- Disponibilidade de ferramentas acessíveis na *cloud*;
- Liderança organizacional ativa e com visão digital;

- Pilotagem com equipes reduzidas antes da escalabilidade.

5.4 Validação e complementaridade dos dados entre fontes

Ao comparar os dados obtidos nas três frentes – literatura, estudos de mercado e estudo de caso – verifica-se uma forte coerência nas tendências observadas. A literatura fornece a base teórica e conceitual, os estudos de mercado demonstram a aplicabilidade prática em contextos reais e diversificados, e a abordagem Infinity Group funciona como uma prova de conceito integrada em contexto PME.

Tabela 12 - Convergência de dados analisados

Elemento	Revisão de Literatura	Estudos de Mercado	Estudo de caso
Domínios mais aplicados	<i>Marketing</i> , suporte, análise texto	Auditoria, <i>marketing</i> , RH	<i>Marketing</i> , suporte, documentos
Benefícios observados	Eficiência, escalabilidade	Produtividade, inovação	Redução de tempo, mais qualidade
Barreiras à adoção	Falta de <i>skills</i> , dados, cultura	ROI incerto, privacidade	<i>Skills</i> e cultura
Fatores críticos de sucesso	<i>Cloud</i> , liderança, <i>governance</i>	Ferramentas acessíveis, apoio	Equipa dedicada, liderança

Fonte: elaboração própria

5.5 Reflexões críticas sobre a adoção e perspectivas futuras

Os dados analisados permitem afirmar que a adoção de *Generative AI* e LLM nas PME se encontra ainda numa fase de maturação inicial, mas com evidências claras de valor. A literatura aponta para uma rápida evolução tecnológica e crescimento das aplicações específicas para PME, particularmente através de LLMs e infraestruturas escaláveis em *cloud*.

O estudo de caso demonstra que, com orientação estratégica, é possível obter benefícios concretos em curto espaço de tempo. Contudo, o gap entre potencial teórico e adoção generalizada persiste, em particular pela dificuldade em operacionalizar inovação com equipes reduzidas e orçamentos limitados.

As perspectivas futuras passam por:

- Continuação da descida de barreiras técnicas (via ferramentas mais simples);
- Necessidade de *frameworks* éticos e de *governance* adaptados a PME;

- Investigação aplicada orientada à medição de impacto em contextos PME específicos.

6. Conclusão

Esta dissertação explorou de forma aprofundada o impacto da *Generative AI* e dos LLMs na melhoria do desempenho das aplicações comerciais em PME, partindo de um enquadramento que valoriza tanto o seu potencial disruptivo como a sua aplicabilidade prática em organizações com recursos limitados e forte orientação operacional. Metodologicamente, o estudo combinou uma revisão estruturada da literatura académica, análise de estudos de mercado e relatórios empresariais, e a apresentação de um estudo de caso de adoção interna numa PME tecnológica, gerando uma perspetiva multidimensional baseada em evidência teórica, empírica e prática.

No que diz respeito aos principais domínios empresariais onde estas tecnologias têm vindo a ser aplicadas em PME, foram identificados quatro grandes eixos de impacto: automação de tarefas cognitivas repetitivas, personalização de conteúdos e interações, apoio à tomada de decisão baseada em dados não estruturados e geração de conteúdo com valor acrescentado, com setores como *marketing*, serviços ao cliente, contabilidade, desenvolvimento de *software* e análise documental a destacarem-se como áreas privilegiadas.

Quanto aos impactos mensuráveis nos processos e resultados empresariais, a literatura, os estudos de mercado e o caso prático revelaram melhorias na eficiência de produção de conteúdos, maior agilidade na resposta a pedidos internos e externos, aceleração dos processos de tomada de decisão, e criação de novas oportunidades de inovação, mesmo em contextos de estrutura enxuta e recursos financeiros limitados.

Relativamente às barreiras e desafios enfrentados pelas PME na adoção destas tecnologias, foram identificadas lacunas de competências internas, preocupações com segurança e privacidade de dados, resistência à mudança cultural e dificuldade em medir o retorno sobre o investimento. Em contrapartida, destacaram-se fatores críticos que facilitam o sucesso da adoção, como liderança estratégica, acesso a ferramentas *cloud*, formação contínua das equipas e políticas claras de ética e *governance* em AI.

Finalmente, no que respeita às direções futuras para investigação e desenvolvimento tecnológico, esta dissertação sugere a necessidade de estudos longitudinais para acompanhar a evolução da adoção dos LLM em PME, análises multissetoriais comparativas, investigação sobre modelos de avaliação de impacto económico e qualitativo, desenvolvimento de *frameworks* de *governance* ética específicas para PME, exploração de estratégias formativas acessíveis para equipas não técnicas, análise do potencial dos LLMs

e soluções *open-source* customizadas, bem como aprofundamento do estudo dos impactos em microempresas e negócios familiares.

Em síntese, os resultados obtidos reforçam que a *Generative AI* e os LLM constituem instrumentos eficazes para igualar oportunidades digitais, promover inovação e gerar valor sustentável nas PME, desde que a sua adoção seja feita de forma estratégica, ética e alinhada com os contextos específicos de cada organização.

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Apêndice 1

GENERATIVE AI E LLM E O SEU IMPACTO NA MELHORIA DO DESEMPENHO DAS APLICAÇÕES COMERCIAIS NAS PEQUENAS E MÉDIAS EMPRESAS

Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Carayannis, Elias G.; Dumitrescu, Roman; Falkowski, Tommy; Zota, Nikos-Rigert	Empowering SMEs Harnessing the Potential of Gen AI for Resilience and Competitiveness	Artificial intelligence; Technological innovation; Resilience; Generative AI; Navigation; Decision making; Chatbots; AI-driven innovation; AI integration; generative artificial intelligence (Gen AI); small and medium enterprise (SME) growth; SME resilience; technological adaptation	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2024	10.1109/TEM.2024.3456820
Fonseca, Luis; Oliveira, Eduardo; Pereira, Teresa; Sa, Jose Carlos	Leveraging ChatGPT for Sustainability: A Framework for SMEs to Align with UN Sustainable Development Goals and tackle sustainable development challenges	ChatGPT; sustainable development; Sustainable Development Goals; stakeholders' engagement; small and medium enterprises	SCIENDO	1842-0206	2024	10.2478/mmcks-2024-0021
Cho, Youngju; Park, Junsung; Yoo, Junyoung; Kim, Soyoung; Park, Heejun	A study on Gen-AI technology development trends to enhance small-medium sized enterprise digital competence and management quality	Digitalization; Gen-AI; SME; OS-Matrix; Patent analysis; Topic modelling; Scaling-up; Startup; Entrepreneurship	EMERALD GROUP PUBLISHING LTD	2053-4604	2025	10.1108/JEEE-10-2024-0485
Wang, Shaofeng; Zhang, Hao	Promoting sustainable development goals through generative artificial intelligence in the digital supply chain: Insights from Chinese tourism SMEs	Customer involvement; Digital supply chain innovation; ESG performance; Generative artificial intelligence; International SMEs; Sustainable development goals	WILEY	0968-0802	2025	10.1002/sd.3152
Carayannis, Elias G.; Dumitrescu, Roman; Falkowski, Tommy; Papamichail, George; Zota, Nikos - Rigert	Enhancing SME resilience through artificial intelligence and strategic foresight: A framework for sustainable competitiveness	SME resilience; Artificial intelligence (AI) in SMEs; Strategic foresight; Competitive advantage in SMEs; Long-term sustainability; Adaptive strategies; Digital transformation; AI-Enhanced forecasting	ELSEVIER SCI LTD	0160-791X	2025	10.1016/j.techsoc.2025.102835
Han, Changheon; Lee, Jiho; Lee, Hojun; Sim, Yuseop; Jeon, Jurim; Jun, Martin Byung-Guk	Zero-shot autonomous robot manipulation via natural language	Autonomous manufacturing; Human-machine interaction; Zero-shot robot manipulation; Large Language Model (LLM); Natural language	ELSEVIER	2213-8463	2024	10.1016/j.mfglet.2024.09.067
Zhang, Jun; Wu, Peiqiao; London, Jeffrey; Tenney, Dan	Benchmarking and Evaluating Large Language Models in Phishing Detection for Small and Midsize Enterprises: A Comprehensive Analysis	Phishing; Electronic mail; Data models; Large language models; Computer security; Security; Accuracy; Unsolicited e-mail; Benchmark testing; Analytical models; Large language models (LLMs); generative artificial intelligence (AI); small-to-medium enterprise; cybersecurity; technology management; social engineering; phishing detection	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2025	10.1109/ACCESS.2025.3540075

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Pelekamoyo, Jephther Kapika; Libati, Hastings M.	Considerations of an efficiency-intelligent geo-localised mobile application for personalised SME market predictions	Prediction; machine learning; forecasting; mobile applications; supply and demand; SME	SAGE PUBLICATIONS LTD	0020-2940	2023	10.1177/00202940231186675
Wang, Shaofeng; Zhang, Hao	Generative artificial intelligence and internationalization green innovation: Roles of supply chain innovations and AI regulation for SMEs	Generative artificial intelligence; Sustainable innovation; Supply chain innovation; Artificial intelligence regulation; Social transformation; SMEs	ELSEVIER SCI LTD	0160-791X	2025	10.1016/j.techsoc.2025.102898
Huseyn, Mammadov; Ruiz-Gandara, Africa; Gonzalez-Abril, Luis; Romero, Isidoro	ADOPTION OF ARTIFICIAL INTELLIGENCE IN SMALL AND MEDIUM-SIZED ENTERPRISES IN SPAIN: THE ROLE OF COMPETENCES AND SKILLS	Artificial intelligence; SME; digital competence; digital skill; digitalisation; information technology; GAN	EDITURA ASE	1582-9146	2024	10.24818/EA/2024/67/848
Haftor, Darek M.; Costa-Climent, Ricardo; Navarrete, Samuel Ribeiro	A pathway to bypassing market entry barriers from data network effects: A case study of a start-up's use of machine learning	Artificial intelligence; Machine learning; Market entry; Legitimacy; SMEs; Stakeholders	ELSEVIER SCIENCE INC	0148-2963	2023	10.1016/j.jbusres.2023.114244
Schwaewe, Julia; Peters, Anna; Kanbach, Dominik K.; Kraus, Sascha; Jones, Paul	The new normal: The status quo of AI adoption in SMEs	AI; artificial intelligence; small business; SME; technology	TAYLOR & FRANCIS INC	0047-2778	2025	10.1080/00472778.2024.2379999
Kaymakci, Can; Wenninger, Simon; Pelger, Philipp; Sauer, Alexander	A Systematic Selection Process of Machine Learning Cloud Services for Manufacturing SMEs	SME; cloud computing; machine learning; service selection problem; manufacturing; decision support system (DSS); analytic hierarchy process (AHP)	MDPI	2073-431X	2022	10.3390/computer s11010014
Gupta, Varun	An Empirical Evaluation of a Generative Artificial Intelligence Technology Adoption Model from Entrepreneurs' Perspectives	Generative Artificial Intelligence; Chat Generative Pre-Trained Transformer (ChatGPT); technology adoption; entrepreneurs; small- and medium-sized enterprises (SMEs)	MDPI		2024	10.3390/systems12030103
Rajaram, Kumaran; Tinguely, Patrick Nicolas	Generative artificial intelligence in small and medium enterprises: Navigating its promises and challenges	Generative artificial intelligence; Small and medium enterprises; AI management; Competitiveness; Digital innovation	ELSEVIER	0007-6813	2024	10.1016/j.bushor.2024.05.008
Rawindaran, Nisha; Jayal, Ambikesh; Prakash, Edmond	Machine Learning Cybersecurity Adoption in Small and Medium Enterprises in Developed Countries	UK SME; machine learning cybersecurity; cyber security; machine learning; artificial intelligence; barriers; challenges; cyberspace; cyber awareness	MDPI	2073-431X	2021	10.3390/computer s10110150
Putka, Dan J.; Oswald, Frederick L.; Landers, Richard N.; Beatty, Adam S.; McCloy, Rodney A.; Yu, Martin C.	Evaluating a Natural Language Processing Approach to Estimating KSA and Interest Job Analysis Ratings	Job analysis; Natural language processing; Machine learning	SPRINGER	0889-3268	2023	10.1007/s10869-022-09824-0

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Kshetri, Nir; Rojas-Torres, Diana; Hanafi, Mamduh M.; Al-kfairy, Mousa; O'Keefe, Gayle; Feeney, Nathan	Harnessing Generative Artificial Intelligence: A Game-Changer for Small and Medium Enterprises		IEEE COMPUTER SOC	1520-9202	2024	10.1109/MITP.2024.3501552
Abrokwhah-Larbi, Kwabena; Awuku-Larbi, Yaw	The impact of artificial intelligence in marketing on the performance of business organizations: evidence from SMEs in an emerging economy	SMEs; Emerging economy; Artificial intelligence in marketing (AIM); Business organization performance	EMERALD GROUP PUBLISHING LTD	2053-4604	2024	10.1108/JEEE-07-2022-0207
Etemad, Hamid	Transformative potentials of generative artificial intelligence: Should international entrepreneurial enterprises adopt GEN.AI?	Artificial intelligence (AI); Generative AI (GEN.AI); GPT. AI; Internationalization of AI; Firm's increased global competitiveness; Intensification of international competition; Potential contribution of GEN.AI to iSMEs' international competitiveness and growth; Potential GEN.AI's impact on international entrepreneurship	SPRINGER	1570-7385	2024	10.1007/s10843-024-00363-8
Sun, Wei; Dedahanov, Alisher Tohirovich; Li, Wei Ping; Shin, Ho Young	Sanctions and opportunities: Factors affecting China's high-tech SMEs adoption of artificial intelligence computing leasing business	Task technology fit; UTAUT; SME; Innovativeness; Artificial intelligence; Computing power leasing	CELL PRESS		2024	10.1016/j.heliyon.2024.e36620
Machin, M. Anthony; Machin, Tanya M.; Gasson, Natalie	Comparing ChatGPT With Experts' Responses to Scenarios that Assess Psychological Literacy	Psychological literacy; ChatGPT; Situational Judgement Test	SAGE PUBLICATIONS LTD	1475-7257	2024	10.1177/14757257241241592
Kufel, Wesley D.; Hanrahan, Kathleen D.; Seabury, Robert W.; Parsels, Katie A.; Gallagher, Jason C.; MacDougall, Conan; Covington, Elizabeth W.; Chahine, Elias B.; Britt, Rachel S.; Steele, Jeffrey M.	Let's Have a Chat: How Well Does an Artificial Intelligence Chatbot Answer Clinical Infectious Diseases Pharmacotherapy Questions?	artificial intelligence; chatbot; ChatGPT; infectious diseases; pharmacist	OXFORD UNIV PRESS INC	2328-8957	2024	10.1093/ofid/ofae641
Drydakakis, Nick	Artificial Intelligence and Reduced SMEs' Business Risks. A Dynamic Capabilities Analysis During the COVID-19 Pandemic	SMEs; Business Risks; COVID-19 pandemic; Artificial Intelligence; Dynamic Capabilities	SPRINGER	1387-3326	2022	10.1007/s10796-022-10249-6
Darda, Pooja; Pandey, Shailesh; Chaturvedi, Sharad	Cost Efficiency to Scenario Planning: Exploring Generative AI Application for Small Businesses in the Age of 5.0	Generative AI; Small Business; Scenario Planning; Strategic Planning; Industry 5.0; Netnography	PACIFIC INST MANAGEMENT	0974-438X	2025	
Hansen, Emil Blixt; Bogh, Simon	Artificial intelligence and internet of things in small and medium-sized enterprises: A survey	Artificial intelligence; SME; IoT; Machine learning; Industry 4; 0; Predictive analytics	ELSEVIER SCI LTD	0278-6125	2021	10.1016/j.jmsy.2020.08.009

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Abrokwah-Larbi, Kwabena; Awuku-Larbi, Yaw	The impact of marketing modification on the performance of food processing SMEs in Ghana	Ghana; Business performance; Food processing SMEs; Marketing modification	EMERALD GROUP PUBLISHING LTD	1471-5201	2024	10.1108/JRME-01-2022-0010
Preininger, Anita M.; South, Brett; Heiland, Jeff; Buchold, Adam; Baca, Mya; Wang, Suwei; Nipper, Rex; Kutub, Nawshin; Bohanan, Bryan; Jackson, Gretchen Purcell	Artificial intelligence-based conversational agent to support medication prescribing	conversational agents; pharmacological information systems; machine learning; natural language processing; artificial intelligence	OXFORD UNIV PRESS		2020	10.1093/jamiaopen/ooaa009
Jafarzadeh, Pouya; Vahamaki, Tanja; Nevalainen, Paavo; Tuomisto, Antti; Heikkonen, Jukka	Supporting SME companies in mapping out AI potential: a finnish AI development case	Artificial intelligence; Business; Development; collaboration; Small and medium sized enterprises; O330	SPRINGER	0892-9912	2024	10.1007/s10961-024-10122-5
Khan, Abdullah Ayub; Laghari, Asif Ali; Li, Peng; Dootio, Mazhar Ali; Karim, Shahid	The collaborative role of blockchain, artificial intelligence, and industrial internet of things in digitalization of small and medium-size enterprises		NATURE PORTFOLIO	2045-2322	2023	10.1038/s41598-023-28707-9
Babaei, Golnoosh; Giudici, Paolo; Raffinetti, Emanuela	Explainable FinTech lending	Fintech; Credit scoring; Artificial intelligence; Machine learning; Shapley values	ELSEVIER SCIENCE INC	0148-6195	2023	10.1016/j.jeconbus.2023.106126
Graham, Byron; Matikonis, Karolis	SME crisis management and performance: leveraging algorithm supported induction to unravel complexity	Crisis management; Algorithm supported induction; COVID-19; SME performance; Machine learning; Configuration analysis; Complexity theory	SPRINGER NATURE	2432-2717	2025	10.1007/s42001-025-00383-x
Baabdullah, Abdullah M.; Alalwan, Ali Abdallah; Slade, Emma Louise; Raman, Ramakrishnan; Khatatneh, Khalaf Fakhri	SMEs and artificial intelligence (AI): Antecedents and consequences of AI-based B2B practices	AI; SMEs; B2B; AI enablers; AI readiness; Customer AI-based interaction	ELSEVIER SCIENCE INC	0019-8501	2021	10.1016/j.indmarman.2021.09.003
Arranz, Carlos F. A.; Arroyabe, Marta F.; Arranz, Nieves; de Arroyabe, Juan Carlos Fernandez	Digitalisation dynamics in SMEs: An approach from systems dynamics and artificial intelligence	Digitalisation; Dynamics; SME; System dynamics; Artificial intelligence	ELSEVIER SCIENCE INC	0040-1625	2023	10.1016/j.techfore.2023.122880
Blanco-Moreno, Sofia; Gonzalez-Fernandez, Ana M.; Munoz-Gallego, Pablo Antonio; Casalo, Luis V.	Understanding engagement with Instagram posts about tourism destinations	Instagram; Destination image; Artificial intelligence; Machine learning; Deep learning; Social media engagement	ELSEVIER	2212-571X	2024	10.1016/j.jdmm.2024.100948
Wang, Jing	Using artificial intelligence to analyze SME e-commerce utilization and growth strategies	Artificial intelligence; smes; e-commerce; utilization rate; growth strategy	IOS PRESS	1472-7978	2024	10.3233/JCM-226933
Cubric, Marija; Li, Feng	Bridging the 'Concept-Product' gap in new product development: Emerging insights from the application of artificial intelligence in FinTech SMEs	Artificial intelligence (AI); FinTech; New product development (NPD); Small and medium enterprise (SME)	ELSEVIER	0166-4972	2024	10.1016/j.technovation.2024.103017

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Liu, Qingfu; Shi, Chen; Tse, Yiuman; Zhang, Linlin	The impact of public health emergencies on small and medium-sized enterprises: Evidence from China	Public health emergencies; SMEs; Machine learning	ELSEVIER	1044-0283	2023	10.1016/j.gfj.2023.100892
Rawindaran, Nisha; Jayal, Ambikesh; Prakash, Edmond; Hewage, Chaminda	Cost Benefits of Using Machine Learning Features in NIDS for Cyber Security in UK Small Medium Enterprises (SME)	network intrusion; intrusion detection; cybersecurity; cyber threat; machine learning; artificial intelligence; intrusion; detection; prevention; OpenSource	MDPI		2021	10.3390/fi13080186
Sanchez-Medina, Agustin J.; Blazquez-Santana, Felix; Pellejero, Monica; Cervino-Cortinez, Daniel L.	Prediction of tourism zombie companies using artificial intelligence algorithms and accounting data	zombie firms; tourism SMEs; artificial intelligence; machine learning; prediction	VARNA UNIV MANAGEMENT-VUM	1994-7658	2025	10.54055/ejtr.v39i.3648
Willenbacher, Martina; Scholten, Jonas; Wohlgemuth, Volker	Machine Learning for Optimization of Energy and Plastic Consumption in the Production of Thermoplastic Parts in SME	machine learning; artificial intelligence; reduction of emissions and material; energy saving; sustainability	MDPI		2021	10.3390/su13126800
Burggraef, Peter; Steinberg, Fabian; Sauer, Carl Rene; Nettesheim, Philipp	Machine learning implementation in small and medium-sized enterprises: insights and recommendations from a quantitative study	Data mining readiness; Regression analysis; Machine learning; SME	SPRINGER HEIDELBERG	0944-6524	2024	10.1007/s11740-024-01274-2
Gupta, Varun; Yang, Hongji	Study protocol for factors influencing the adoption of ChatGPT technology by startups: Perceptions and attitudes of entrepreneurs		PUBLIC LIBRARY SCIENCE	1932-6203	2024	10.1371/journal.pone.0298427
Rahaman, Md Atikur; Luna, Kaniz Fatema; Mite, Shi; Islam, Monwarul; Wafik, H. M. Atif	The Effect of Entrepreneurial Orientation, Market Orientation and Gender on Business Performance: An Empirical Study of SMEs in Bangladesh	Entrepreneurial Orientation; Bangladesh; Gender; Market Orientation; SME Performance	KODISA Foundation	2288-4637	2021	10.13106/jafeb.2021.vol8.no6.0741
Abbasi, Ghazanfar Ali; Rahim, Noor Fareen Abdul; Wu, Hongyan; Iranmanesh, Mohammad; Keong, Benjamin Ng Chee	Determinants of SME's Social Media Marketing Adoption: Competitive Industry as a Moderator	social media marketing; digital marketing; mobile marketing; technology adoption; technology-organizational-environmental; TOE factors; determinants; SMEs	SAGE PUBLICATIONS INC	2158-2440	2022	10.1177/21582440211067220
Ardito, Lorenzo; Filieri, Raffaele; Raguseo, Elisabetta; Vitari, Claudio	Artificial intelligence adoption and revenue growth in European SMEs: synergies with IoT and big data analytics	Artificial intelligence; Revenue growth; Small and medium sized enterprises; Europe; Big data analytics; Internet of things	EMERALD GROUP PUBLISHING LTD	1066-2243	2024	10.1108/INTR-02-2024-0195
Andrei, Andreia Gabriela; Matcu-Zaharia, Mara; Mariciuc, Dragos Florentin	Ready to Grip AI's Potential? Insights from an Exploratory Study on Perceptions of Human-AI Collaboration	generative AI; Human-AI collaboration; generation Z; Industry 4.0; AI	EDUSOFT PUBLISHING	2068-0473	2024	10.18662/brain/15.2/560
Hamdan, Ihab K. A.; Aziguli, Wulamu; Zhang, Dezheng; Sumartiah, Eli; Fauziyah, Fauziyah	A machine learning method to predict the technology adoption of blockchain in Palestinian firms	Artificial intelligence; Machine learning; Blockchain; Bayesian network; Adoption intention; Palestine; SMEs	EMERALD GROUP PUBLISHING LTD	1746-8809	2022	10.1108/IJOEM-05-2021-0769

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Sharma, Shavneet; Singh, Gurmeet; Islam, Nazrul; Dhir, Amandeep	Why Do SMEs Adopt Artificial Intelligence-Based Chatbots?	Chatbots; Artificial intelligence; Business; Costs; Technological innovation; Mathematical models; Complexity theory; Artificial intelligence (AI); chatbots; covariance-based structural equation modeling; small and medium enterprises (SMEs); technology-organization-environment (TOE) framework	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2024	10.1109/TEM.2022.3203469
Almashawreh, Ra'ed; Talukder, Majharul; Charath, Sarvjeet Kaur; Khan, Md Irfanuzzaman	AI Adoption in Jordanian SMEs: The Influence of Technological and Organizational Orientations	Artificial intelligence adoption; digital technology; Jordanian small and medium-sized enterprises; technology; attitude	SAGE PUBLICATIONS LTD	0972-1509	2024	10.1177/09721509241250273
Holland, Maximilian; Chaudhari, Kunal	Large language model based agent for process planning of fiber composite structures	Large language model; Generative AI; Planning agent; Process planning; Fiber composites; LangChain; OpenAI	ELSEVIER	2213-8463	2024	10.1016/j.mfglet.2024.03.010
Prashantham, Shameen; Birkinshaw, Julian	MNE-SME cooperation: An integrative framework	MNE-SME cooperation; interorganizational relationships; SME internationalization; global innovation; global value chain; Sustainable Development Goals	PALGRAVE MACMILLAN LTD	0047-2506	2020	10.1057/s41267-019-00214-y
Huang, Haonan; Li, Jing; Zheng, Chundan; Chen, Sikang; Wang, Xuanyin; Chen, Xingyan	Advanced Default Risk Prediction in Small and Medium-Sized Enterprises Using Large Language Models	large language model; commercial bill default; financial credit risks; SMEs	MDPI		2025	10.3390/app15052733
Yuan, Chunlin; Yin, Yajing; Wang, Shuman; Zhang, Zeran; Moon, Hakil	Exploring technology, organization and environmental factors driving firms generative AI adoption intention: the moderating role of trans-parasocial relation	Gen-AI; TOE; Trans-parasocial relation	EMERALD GROUP PUBLISHING LTD	0885-8624	2025	10.1108/JBIM-04-2024-0257
Cui, Linmu; Bulis, Aldis	Exploring Growth Strategies of European Small and Medium-sized Enterprises in the Service Sector using ChatGPT	artificial intelligence; ChatGPT; small and medium-sized enterprises (SMEs); service sector; efficiency improvement; growth strategy	KAUNO TECHNOLOGIJOS UNIV	1822-8402	2023	10.5755/j01.eis.1.17.33726
Soomro, Raheem Bux; Memon, Sanam Gul; Dahri, Nisar Ahmed; Al-Rahmi, Waleed Mugahed; Aldriwish, Khalid; A. Salameh, Anas; Al-Adwan, Ahmad Samed; Saleem, Atif	The Adoption of Digital Technologies by Small and Medium-Sized Enterprises for Sustainability and Value Creation in Pakistan: The Application of a Two- Staged Hybrid SEM-ANN Approach	digital technologies; small and medium-sized enterprises (SMEs); economic value creation; social value creation; sustainability; hybrid modeling	MDPI		2024	10.3390/su16177351
Mousa, Kawther; Zhang, Zenglian; Sumarliah, Eli; Hamdan, Ihab K. A.	The Impact of Cloud Computing Adoption on Firm Performance Among SMEs in Palestine: A Machine Learning Approach	Artificial Neural Network; Cloud Computing; Firm Performance; Machine Learning; Palestine; SMEs; Technology Adoption	IGI GLOBAL	1548-3657	2024	

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Ibrahim, Hussain; Ibrahim, Ahmed; Johnstone, Michael N.	Using Natural Language Processing and Machine Learning to Detect Online Radicalisation in the Maldivian Language, Dhivehi	Natural Language Processing; Machine Learning; radicalisation; terrorism; Dhivehi	MDPI		2025	10.3390/info16050342
Jalil, Muhammad Farhan; Lynch, Patrick; Marikan, Dayang Affizzah Binti Awang; Isa, Abu Hassan Bin Md	The influential role of artificial intelligence (AI) adoption in digital value creation for small and medium enterprises (SMEs): does technological orientation mediate this relationship?	Artificial intelligence (AI); Digital value creation; Small and medium enterprises (SMEs); Structural equation modeling; Malaysia	SPRINGER	0951-5666	2025	10.1007/s00146-024-01969-1
Gholizadeh, Javad; Chun, Kwang-Sung; Curd, Clive; Masters, Nolan; Gibson, David; Li, Yongmin	Automated Assessment of Capital Allowances	Finance; Expert systems; Artificial intelligence; Business; Encoding; Costs; Buildings; Natural language processing; Capital allowance; tax relief; expert systems; artificial intelligence; natural language processing; automation	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2024	10.1109/ACCESS.2024.3393830
Alkhodair, Majid; Alkhudhayr, Hanadi	Harnessing Industry 4.0 for SMEs: Advancing Smart Manufacturing and Logistics for Sustainable Supply Chains	Industry 4.0; SMEs; smart logistics; sustainability; smart manufacturing; sustainable supply chain management; blockchain; logistics; technology adoption	MDPI		2025	10.3390/su17030813
Codini, Anna Paola; Abbate, Tindara; Petruzzelli, Antonio Messeni	Business Model Innovation and exaptation: A new way of innovating in SMEs	Business Model Innovation; Exaptation; SMEs; Value creation; Value delivery; Value capturing	ELSEVIER	0166-4972	2023	10.1016/j.technovation.2022.102548
Zhong, Yijie	E-commerce utilization analysis and growth strategy for smes using an artificial intelligence	E-commerce utilization analysis; growth strategy for SMEs; artificial intelligence	IOS PRESS	1064-1246	2023	10.3233/JIFS-232406
Bridgelall, Raj	Alignment of Unsupervised Machine Learning with Human Understanding: A Case Study of Connected Vehicle Patents	natural language processing; NLP model evaluation; machine learning; patent classification; semantic analysis; human-centered interpretability; technological trend analysis	MDPI		2024	10.3390/app14020474
Bitzenis, Aristidis; Koutsoupias, Nikos; Nosios, Marios	Artificial intelligence and machine learning in production efficiency enhancement and sustainable development: a comprehensive bibliometric review	artificial intelligence; machine learning; bibliometrics; sustainable development; production efficiency	FRONTIERS MEDIA SA		2025	10.3389/frsus.2024.1508647
Thai, Hong-Danh; Huh, Jun-Ho	Building an Operational Solution Assistant System for Foreign SMEs in ROK	foreign direct investment; virtual assistant systems; chatbot; foreign SMEs; operational solution; innovative business practice	MDPI		2021	10.3390/app11104510

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Chatterjee, Sheshadri; Chaudhuri, Ranjan; Sakka, Georgia; Grandhi, Balakrishna; Galati, Antonino; Siachou, Evangelia; Vrontis, Demetris	Adoption of Social Media Marketing for Sustainable Business Growth of SMEs in Emerging Economies: The Moderating Role of Leadership Support	social media marketing; SMEs; technology acceptance model; leadership support; perceived usefulness; perceived ease of use; behavioral intention	MDPI		2021	10.3390/su132112134
Fries, Marco; Niessner, Julia; Ludwig, Thomas; Kotthaus, Christoph	Exploring AI Integration in SME Production Planning: Design Spaces and the Role of Workers: Exploring AI Integration in SME Production Planning	Work practices; Cooperative work; Empirical methods; Artificial intelligence; Production planning and scheduling; Small and medium-sized enterprises	SPRINGER	0925-9724	2025	10.1007/s10606-025-09512-6
Wei, Lijian; Lin, Junqin; Cen, Wanjun	Stronger relationships higher risk? Credit risk evaluation based on SMEs network microstructure	Credit risk; Firm relationship; SMEs; Network microstructure; Machine learning	ELSEVIER	1566-0141	2024	10.1016/j.ememar.2024.101189
Dossou, Paul-Eric; Laouenan, Gaspard; Didier, Jean-Yves	Development of a Sustainable Industry 4.0 Approach for Increasing the Performance of SMEs	Industry 4.0; sustainability; SMEs; digitalization; artificial intelligence	MDPI		2022	10.3390/pr10061092
Jaboob, Mohammed; Al-Ansi, Abdullah M.; Al-Okaily, Manaf; Ferasso, Marcos	Harnessing artificial intelligence for strategic decision-making: the catalyst impact of digital leadership	Artificial intelligence; AI applications; Strategic decision-making; Digital leadership; Omani SMEs	EMERALD GROUP PUBLISHING LTD	1757-4323	2025	10.1108/APJBA-12-2024-0706
Schaut, William; Shrivastav, Akash; Ramakrishnan, Srikanth; Bowden, Robert	Search, identification, and curation of cell and gene therapy product regulations using augmented intelligent systems	augmented intelligence; machine learning; CAR-T; regulations; automated systematic search; regulatory documents	FRONTIERS MEDIA SA		2023	10.3389/fmed.2023.1072767
Utaminingsih, Adijati; Widowati, Sri Yuni; Witjaksono, E. H.	Sustainable business model innovation: external and internal factors on SMEs	Sustainable business model innovation; Performance expectancy; Facilitating conditions; Social influence; Effort expectancy; Hedonic motivation; Speed	EMERALD GROUP PUBLISHING LTD	1757-2223	2024	10.1108/IJIS-04-2022-0061
Selamat, Moch Akbar; Windasari, Nila Armelia	Chatbot for SMEs: Integrating customer and business owner perspectives	Anthropomorphism; Chatbot adoption; SME; Shopping intention	ELSEVIER SCI LTD	0160-791X	2021	10.1016/j.techsoc.2021.101685
Barton, Martin; Budjac, Roman; Tanuska, Pavol; Gaspar, Gabriel; Schreiber, Peter	Identification Overview of Industry 4.0 Essential Attributes and Resource-Limited Embedded Artificial Intelligence-of-Things Devices for Small and Medium-Sized Enterprises	Industry 4; 0; Artificial Intelligence; Big Data; Smart Factory; resource-limited devices; AIoT; deep learning; edge AI	MDPI		2022	10.3390/app12115672
Wang, Dan; Zhang, Yina	Coupling of SME innovation and innovation in regional economic prosperity with machine learning and IoT technologies using XGBoost algorithm	Internet of things; Machine learning; Regional economy; Innovation environment; Enterprise performance; Coupling and coordination XGBoost algorithm	SPRINGER	1432-7643	2024	10.1007/s00500-024-09640-z

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Maceika, Augustinas; Bugajev, Andrej; Sostak, Olga Regina	Enhancing Organizational Resilience: Sustainable Development Scenarios Incorporating Disaster Impacts and AI Tools	sustainable development; disaster management; scenario generation; artificial intelligence; ChatGPT; prompt engineering; sustainable development goals; disaster preparedness; mutual information analysis; Lithuanian manufacturing companies	MDPI		2024	10.3390/su162411147
Basri, Wael	Examining the Impact of Artificial Intelligence (AI)-Assisted Social Media Marketing on the Performance of Small and Medium Enterprises: Toward Effective Business Management in the Saudi Arabian Context	Artificial intelligence; Machine learning; Deep learning	SPRINGER NATURE	1875-6891	2020	10.2991/ijcis.d.200127.002
Widtojo, Handyanto; Fontana, Avanti; Gayatri, Gita; Soehadi, Agus W.	VALUE CO-CREATION FOR MARKETING INNOVATION: COMPARATIVE STUDY IN THE SME COMMUNITY	Value co-creation; marketing innovation; collaborative networks; dynamic interaction; SME community	WORLD SCIENTIFIC PUBL CO PTE LTD	1363-9196	2020	10.1142/S1363919620500309
Kulathunga, K. M. M. C. B.; Ye, Jianmu; Sharma, Saurabh; Weerathunga, P. R.	How Does Technological and Financial Literacy Influence SME Performance: Mediating Role of ERM Practices	technological literacy; financial literacy; SME performance; ERM practices	MDPI		2020	10.3390/info11060297
Kim, Jong-Seok; Seo, Dongsu	Foresight and strategic decision-making framework from artificial intelligence technology development to utilization activities in small-and-medium-sized enterprises	Machine learning; Technological development; Utilization; Impact; Strategic decision-making framework; Artificial intelligence strategy; Small-and medium-sized enterprise; Mind map; Decision tree	EMERALD GROUP PUBLISHING LTD	1463-6689	2023	10.1108/FS-06-2022-0069
Peng, Qiaosheng; Xie, Chi; Li, Jing; Zhu, You; Wang, Gang-Jin	Impact of Enterprises Relationship on MI's Ability to Forecast SME's Credit Risk in SCF: A Research Based on Complex Network	Supply chain finance; small and-medium-sized enterprise's credit risk; machine learning algorithm; complex network; weighted one-mode projection; D85; G10; G21; G33; L14; M10	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1540-496X	2024	10.1080/1540496X.2024.2324195
Kuechler, Rebekka; Nicolai, Birte Maja; Herzig, Christian	Towards a sustainability management tool for food manufacturing small and medium-sized enterprises- Insights from a Delphi study	business sustainability; Delphi study; food manufacturing; SME; sustainability management; sustainable development	WILEY	1535-3958	2023	10.1002/csr.2376
Kaduwela, Naomi A.; Horner, Susan; Dadar, Priyansh; Manworren, Renee C. B.	Application of a human-centered design for embedded machine learning model to develop data labeling software with nurses: Human-to-Artificial Intelligence (H2AI)	Clinical decision support software; Data labeling; Human-centered Design for Embedded; Machine Learning Solutions Machine Learning; Machine learning models	ELSEVIER IRELAND LTD	1386-5056	2024	10.1016/j.ijmedinf.2023.105337
Dhaheri, Mariam Hamad Al; Ahmad, Syed Zamberi; Papastathopoulos, Avraam	Do environmental turbulence, dynamic capabilities, and artificial intelligence force SMEs to be innovative?	Environmental turbulence; Market turbulence; Competitive intensity; Dynamic capabilities; Artificial intelligence; SMEs	ELSEVIER ESPANA	2530-7614	2024	10.1016/j.jik.2024.100528

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Badghish, Saeed; Soomro, Yasir Ali	Artificial Intelligence Adoption by SMEs to Achieve Sustainable Business Performance: Application of Technology-Organization-Environment Framework	TOE; AI adoption; sustainable business performance; SMEs	MDPI		2024	10.3390/su16051864
Jin, Lei; Liu, Mingyang	Unlocking Financial Opportunities: The Substantial Alleviation of Financing Constraints on Small and Micro Enterprises Through Digital Inclusive Finance	Small and micro enterprises; Digital inclusive finance; Financing challenges; Empirical analysis; Financial limitations; Financial inclusion	SPRINGER	1868-7865	2024	10.1007/s13132-024-01863-7
McCauley-Smith, Catherine; Smith, Sue; Nantunda, Liz; Zhu, Xiaoxian	The role of anchor institutions in creating value for SMEs: insights from North East of England owner-managers	Anchor institution; SMEs; leadership and business development; measurement; impact; value creation	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0307-5079	2022	10.1080/03075079.2020.1861593
Rawindaran, Nisha; Jayal, Ambikesh; Prakash, Edmond	Exploration of the Impact of Cybersecurity Awareness on Small and Medium Enterprises (SMEs) in Wales Using Intelligent Software to Combat Cybercrime	machine learning; cyber security; SME; intelligent software; cyber threats	MDPI	2073-431X	2022	10.3390/computer s11120174
Zhang, Baizhen; Peng, Biyu	Artificial Intelligence and the Development of Specialized, Refined, Unique, and Innovative Small- and Medium-Sized Enterprises	artificial intelligence; intellectual property protection; productivity; small- and medium-sized enterprises (SMEs); Specialized, Refined, Unique, and Innovative (SRUI)	JOHN WILEY & SONS LTD	0143-6570	2025	10.1002/mde.4407
Wilson, Rory; Weets, Ciara M.; Rosner, Amanda; Katz, Rebecca	Evaluating generative artificial intelligence's limitations in health policy identification and interpretation		PUBLIC LIBRARY SCIENCE	1932-6203	2024	10.1371/journal.p one.0312078
Okfalisa; Anggraini, Wresni; Nawanir, Gusman; Saktioto, Saktioto; Wong, Kuan Yew	Measuring the effects of different factors influencing on the readiness of SMEs towards digitalization: A multiple perspectives design of decision support system	Small-Medium Enterprises; Performance Measurement; Decision Support System; Digitalization Readiness; Fuzzy Analytical Hierarchy; Process	GROWING SCIENCE	1929-5804	2021	10.5267/j.dsl.2021.1.002
Alhamami, Ahmed Abdullah; Hashim, Noor Azuan; Abdul Hamid, Roshayati; Ab. Hamid, Siti Ngayesah	The effect of external social media utilization on business performance of SMEs in Saudi Arabia: the mediating role of market orientation	External social media utilization; market orientation; business performance; customer satisfaction; profitability; SMEs	TAYLOR & FRANCIS AS	2331-1975	2024	10.1080/23311975.2024.2306974
Simba, Amon; Tajeddin, Mahdi; Dana, Leo-Paul; Soriano, Domingo E. Ribeiro E.	Deconstructing involuntary financial exclusion: a focus on African SMEs	Credit access; Collateral security; Gender; Financial exclusion; SMEs; Africa	SPRINGER	0921-898X	2024	10.1007/s11187-023-00767-1
Abonguie, DoraFonmbuh; Nyam, YongSebastian; Hoeyi, ProsperKweku	A systematic analysis of systems thinking and the sustainability of small and medium size enterprises (SMEs): A global evaluation	Systems thinking; SMEs; business sustainability; Small businesses; System dynamics	ELSEVIER	2468-2276	2025	10.1016/j.sciaf.2025.e02738

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Basu, Aveek; Jha, Rohini	ERP adoption prediction using machine learning techniques and ERP selection among SMEs	enterprise resource planning; ERP; cloud ERP; small and medium enterprise; SME; K-nearest neighbour; decision tree; machine learning algorithms; multi-criteria decision making	INDERSCIENCE ENTERPRISES LTD	1368-4892	2024	10.1504/IJBPM.2024.137005
Wee, Mak; Scheepers, Helana; Tian, Xuemei	Understanding the Processes of how Small and Medium Enterprises derive Value from Business Intelligence and Analytics	Business Intelligence and Analytics; Small and Medium Enterprises; Process Model	UNIV CANBERRA, FAC INFORMATION SCIENCES & ENGINEERING	1449-8618	2022	10.3127/ajis.v26i0.2969
Pap, Jozsef; Mako, Csaba; Illessy, Miklos; Dedaj, Zef; Ardabili, Sina; Torok, Bernat; Mosavi, Amir	Correlation Analysis of Factors Affecting Firm Performance and Employees Wellbeing: Application of Advanced Machine Learning Analysis	organizational performance; machine learning; big data; imperialist competitive algorithm; employee wellbeing; artificial neural networks; firm performance; artificial intelligence; deep learning; data science	MDPI		2022	10.3390/a15090300
Cooper, Robert G.	SMEs' use of AI for new product development: Adoption rates by application and readiness-to-adopt	Artificial intelligence; Product innovation; New product development; Readiness to adopt; Adoption of AI	ELSEVIER SCIENCE INC	0019-8501	2025	10.1016/j.indmarman.2025.01.016
Bagale, Girish Santosh; Vandadi, Venkata Ramana; Singh, Deepmala; Sharma, Dilip Kumar; Garlapati, Durga Venkata Kusuma; Bommiseti, Ravi Kumar; Gupta, Ravi Kumar; Setsiawan, Roy; Subramaniaswamy, V; Sengan, Sudhakar	Small and medium-sized enterprises' contribution in digital technology	SME; COVID-19; Digitization; Customer relationship management	SPRINGER	0254-5330	2023	10.1007/s10479-021-04235-5
Wei, Ruiqi; Pardo, Catherine	Artificial intelligence and SMEs: How can B2B SMEs leverage AI platforms to integrate AI technologies	Artificial intelligence; Digital platforms; SME AI adoption; Service dominant logic; Case study research	ELSEVIER SCIENCE INC	0019-8501	2022	10.1016/j.indmarman.2022.10.008
Cheraghali, Hamid; Molnar, Peter	Practical insights into predicting defaults in small and medium-sized enterprises	SME; default; failure; prediction; machine learning; feature selection; sample rebalancing; validation techniques	TAYLOR & FRANCIS LTD	2643-7015	2024	10.1080/26437015.2024.2430573
Oldemeyer, Leon; Jede, Andreas; Teuteberg, Frank	Investigation of artificial intelligence in SMEs: a systematic review of the state of the art and the main implementation challenges	Artificial intelligence; SMEs; Manufacturing; Barriers; PESTEL	SPRINGER NATURE	2198-1620	2025	10.1007/s11301-024-00405-4

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Farmanesh, Panteha; Dehkordi, Niloofar Solati; Vehbi, Asim; Chavali, Kavita	Artificial Intelligence and Green Innovation in Small and Medium-Sized Enterprises and Competitive-Advantage Drive Toward Achieving Sustainable Development Goals	artificial intelligence adoption; financial resources; green innovation strategy; SDG; SMEs; sustainable competitive advantage	MDPI		2025	10.3390/su17052162
Kumar, Anuj; Syed, Asif Ali; Pandey, Anoop	ARTIFICIAL INTELLIGENCE (ONLINE RESOURCE): A PANACEA FOR SMES IN HEALTHCARE	Artificial Intelligence; Healthcare; Technology; SMEs; Management	AUSTRALIAN COLL HEALTH SERVICE MANAGEMENT		2021	
Hewa Wellalage, Nirosha; Locke, Stuart; Samujh, Helen	Firm bribery and credit access: evidence from Indian SMEs	Corruption; Bribes; SME; Credit access; India; IV probit regression; Endogeneity	SPRINGER	0921-898X	2020	10.1007/s11187-019-00161-w
Choi, Doowon; Cho, Insu	Analysis of informatization-related factors for digital transformation in manufacturing small and medium-sized enterprises using machine learning techniques	Digital transformation; informatization factors; machine learning; SHAP analysis; manufacturing SMEs	TAYLOR & FRANCIS LTD	0020-7543	2025	10.1080/00207543.2025.2481182
Asante Boakye, Elijah; Zhao, Hongjiang; Coffie, Cephas Paa Kwasi; Asare-Kyire, Lydia	Seizing technological advancement; determinants of blockchain supply chain finance adoption in Ghanaian SMEs	Blockchain technology; supply chain finance; TOE; SMEs	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0953-7325	2024	10.1080/09537325.2022.2163384
Soomro, Raheem Bux; Al-Rahmi, Waleed Mugahed; Dahri, Nisar Ahmed; Almuqren, Latifah; Al-mogren, Abeer S.; Aldaijy, Ayad	A SEM-ANN analysis to examine impact of artificial intelligence technologies on sustainable performance of SMEs	Artificial Intelligence Adoption; SME Performance; Sustainable development; PLS-SEM	NATURE PORTFOLIO	2045-2322	2025	10.1038/s41598-025-86464-3
Yu, Wence; Ali, Zulqurnain; Hassan, Abul	An empirical investigation for application of big data use in fostering export performance: a dual moderation model	Big data use; Business strategy; IT strategy; Export performance; China; SMEs	EMERALD GROUP PUBLISHING LTD	1463-7154	2025	10.1108/BPMJ-06-2024-0440
Kolkova, Andrea; Kljucnikov, Aleksandr	DEMAND FORECASTING: AI-BASED, STATISTICAL AND HYBRID MODELS VS PRACTICE- BASED MODELS- THE CASE OF SMES AND LARGE ENTERPRISES	demand forecasting; prophet; SME; enterprise; statistical model; artificial intelligence; hybrid model	CENTER SOCIOLOGICAL RESEARCH	2071-789X	2022	10.14254/2071-789X.2022/15-4/2
Tanane, Badreddine; Bentaha, Mohand-Lounes; Dafflon, Baudouin; Moalla, Nejib	Bridging the gap between Industry 4.0 and manufacturing SMEs: A framework for an end-to-end Total Manufacturing Quality 4.0's implementation and adoption	Quality 4.0; SME; Sensor network; IoT; Artificial intelligence; Industry 4.0; Defect management; Smart manufacturing	ELSEVIER	2467-964X	2025	10.1016/j.jii.2025.100833
Dimitrov, Stanko; Cozzarin, Brian Paul	Impact of intellectual capital on small-firm growth: a longitudinal study from Inc. 5000	SME; intellectual property; Inc. 5000; patent data; zero-inflated negative binomial model	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1321-5906	2021	10.1080/13215906.2021.1929431

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Xu, Hong	What are the characteristics of a survivor? Evidence from bankruptcy analysis of newly formed Japanese SMEs	small and medium-sized enterprises; SMEs; bankruptcy; newly formed firms; resource-based view theory; resource-based view; RBV; sustained competitive advantage framework; entrepreneur experience; machine learning; Japan	INDERSCIENCE ENTERPRISES LTD	1476-1297	2024	10.1504/IJESB.2024.135705
Pramod, Dhanya; Patil, Kanchan Pranay; Bharathi, S. Vijayakumar; Vijaykumar, Bhalshankar Vaibhavi; Birabar, Shouryadipat; Sahoo, Biswajit	Artificial intelligence and machine learning adoption in automotive organizations using technology-organization-environment framework	Artificial intelligence; Machine learning; Automobile industry; Demand forecasting; Technology-organization-environment framework	TARU PUBLICATIONS	0252-2667	2024	10.47974/IIOS-1748
Abrokwah-Larbi, Kwabena	The impact of customer-focus on the performance of business organizations: evidence from SMEs in an emerging West African economy	Customer-focus; Performance; Business organization; Food processing SMEs; Ghana	EMERALD GROUP PUBLISHING LTD	2040-0705	2024	10.1108/AJEMS-04-2022-0167
Arroyabe, Marta F.; Arranz, Carlos F. A.; De Arroyabe, Ignacio Fernandez; de Arroyabe, Juan Carlos Fernandez	Analyzing AI adoption in European SMEs: A study of digital capabilities, innovation, and external environment	Artificial intelligence; SMEs; Digital capabilities; Innovation capabilities; Business environmental support	ELSEVIER SCI LTD	0160-791X	2024	10.1016/j.techsoc.2024.102733
Cornelisse, Miranda; van Klink, Arjen	Strategic Foresight and Barriers: The Application of Scenario Planning in SMEs	Scenario planning; SMEs; Strategic Foresight; Narratives	TAMKANG UNIV	1027-6084	2024	10.6531/JFS.2024_12_29(2).0003
Brundage, Michael P.; Sexton, Thurston; Hodkiewicz, Melinda; Dima, Alden; Lukens, Sarah	Technical language processing: Unlocking maintenance knowledge	Maintenance; Natural language processing; Asset management; Technical language processing; Artificial intelligence	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2020.11.001
Sun, Jia; Jiao, Yanrong	RETRACTED: Enterprise Financial Risk Analysis Based on Improved Model C-Means Clustering Algorithm (Retracted Article)		WILEY-HINDAWI	1939-0114	2022	10.1155/2022/1109813
Amoah, John; Bruce, Emmanuel; Shurong, Zhao; Bankuoru Egala, Sulemana; Kwarteng, Kofi	Social media adoption in smes sustainability: evidence from an emerging economy	Social media; Technology adoption; SME; Sustainability; TOE	TAYLOR & FRANCIS LTD	2331-1975	2023	10.1080/23311975.2023.2183573
Song, Myungjin; Ahn, Yongkil	The determinants of SME success in the Long Run: an ecosystem perspective	Small and medium-sized enterprises; innovation; government support; feature engineering; machine learning; L25; L26; O30	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0003-6846	2024	10.1080/00036846.2023.2301220
Lobos, Krzysztof; Wojciech, Magdalena	Management practices and their relation to success of Polish SMEs: The empirical verification		PUBLIC LIBRARY SCIENCE	1932-6203	2021	10.1371/journal.pone.0259892

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Lemos, Sara I. C.; Ferreira, Fernando A. F.; Zopounidis, Constantin; Galarotis, Emilios; Ferreira, Neuza C. M. Q. F.	Artificial intelligence and change management in small and medium-sized enterprises: an analysis of dynamics within adaptation initiatives	Artificial intelligence; Cognitive mapping; Decision-MAKING Trial and Evaluation Laboratory (DEMATEL); Neutrosophic logic; Small and medium-sized enterprise (SME)	SPRINGER	0254-5330	2022	10.1007/s10479-022-05159-4
Papikova, Lenka; Papik, Mario	Application of intellectual capital in SME bankruptcy	Intellectual capital; bankruptcy prediction model; data mining; machine learning; xgboost; C53; C55; G33	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0003-6846	2024	10.1080/00036846.2023.2281291
Hacker, Philipp	The European AI liability directives - Critique of a half-hearted approach and lessons for the future	Artificial intelligence; ChatGPT; Product liability; EU law; AI act; Sustainability; Innovation; Large generative AI models	ELSEVIER ADVANCED TECHNOLOGY	2212-473X	2023	10.1016/j.clsr.2023.105871
Azevedo, Americo; Almeida, Antonio Henrique	Grasp the Challenge of Digital Transition in SMEs-A Training Course Geared towards Decision-Makers	digital transition; industry 4.0; education 4.0; SME; e-learning	MDPI		2021	10.3390/educsci11040151
Kim, Seok-Soo	Influential Indicators and Measurements of Mediating and Moderating Roles on SME Performance	Influential Indicators; Mediating Effect; Moderating Effect; Performance; SMEs	IGI GLOBAL	1548-0666	2022	10.4018/IJKM.20210101.0a7
Robinson, Eric J.; Qiu, Chunyuan; Sands, Stuart; Khan, Mohammad; Vora, Shivang; Oshima, Kenichiro; Nguyen, Khang; Difronzo, L. Andrew; Rhew, David; Feng, Mark I.	Physician vs. AI-generated messages in urology: evaluation of accuracy, completeness, and preference by patients and physicians	Artificial intelligence (AI); Large language models (LLMs); Benign prostatic hyperplasia (BPH); Patient communication; Patient messages; Sandbox; ChatGPT; Chatbot; Care experience; Physician experience	SPRINGER	0724-4983	2024	10.1007/s00345-024-05399-y
Syed, Khajamoinuddin; Sleeman, William; Hagan, Michael; Palta, Jatinder; Kapoor, Rishabh; Ghosh, Preetam	Automatic Incident Triage in Radiation Oncology Incident Learning System	incident learning system; deep learning; automated triage; natural language processing; transfer learning	MDPI		2020	10.3390/healthcare8030272
Brasington, Alex; Godbold, Matthew; Harik, Ramy	Artificially intelligent process planner for automated fiber placement	Automated fiber placement; Process planning; Expert systems; Path planning; Artificial intelligence	ELSEVIER	2213-8463	2024	10.1016/j.mfglet.2024.03.020
Altman, Edward I.; Balzano, Marco; Giannozzi, Alessandro; Srhoj, Stjepan	Revisiting SME default predictors: The Omega Score	Default prediction modeling; small and medium-sized enterprises; machine-learning techniques; LASSO; logit regression	TAYLOR & FRANCIS INC	0047-2778	2023	10.1080/00472778.2022.2135718
Benzidia, Smail; Makaoui, Naouel	Improving SMEs performance through supply chain flexibility and market agility: IT orchestration perspective	SMEs' performance; IT application orchestration; supply chain flexibility; market agility; e-procurement	TAYLOR & FRANCIS LTD	1625-8312	2020	10.1080/16258312.2020.1801108
Telukdarie, Arnesh; Dube, Thabile; Munsamy, Megashness; Murulane, Khuliso; Mongwe, Regionald	Navigating Digital Challenges for SMEs: A Two-Tier Approach to Risks Mitigation and Sustainability	SMEs; MMEs; ICT4D; digital technologies; digital risk; sustainability; NLP	MDPI		2024	10.3390/su16145857

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Tereshchenko, Elizaveta; Happonen, Ari; Porras, Jari; Vaithilingam, Chockalingam Aravind	Green Growth, Waste Management, and Environmental Impact Reduction Success Cases From Small and Medium Enterprises Context: A Systematic Mapping Study	Small and medium enterprises (SMEs); waste; sustainability; business; success; climate change; emissions; systematic mapping study (SMS); collaboration; environmental activity; recycle; reuse; sustainable operations; sustainable business; business model; performance indicator; green growth	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2023	10.1109/ACCESS.2023.3271972
Barata, Sofia F. P. G.; Ferreira, Fernando A. F.; Carayannis, Elias G.; Ferreira, Joao J. M.	Determinants of E-Commerce, Artificial Intelligence, and Agile Methods in Small- and Medium-Sized Enterprises	Agile methods; artificial intelligence (AI); cognitive mapping; decision-making trial and evaluation laboratory (DEMATEL); e-commerce; multiple-criteria decision analysis (MCDA); strategic options development and analysis (SODA); technology	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2023	10.1109/TEM.2023.3269601
Eweje, Gabriel	Proactive environmental and social strategies in a small- to medium-sized company: A case study of a Japanese SME	environmental and social initiatives; Japan; managerial discretion theory; SMEs; sustainability	WILEY	0964-4733	2020	10.1002/bse.2582
Wang, Jinqiang; Lu, Yaobin; Fan, Si; Hu, Peng; Wang, Bin	How to survive in the age of artificial intelligence? Exploring the intelligent transformations of SMEs in central China	Intelligent manufacturing; SMEs; Intelligent transformation; Artificial intelligence	EMERALD GROUP PUBLISHING LTD	1746-8809	2022	10.1108/IJOEM-06-2021-0985
Altman, Edward I.; Balzano, Marco; Giannozzi, Alessandro; Liguori, Eric; Srhoj, Stjepan	Bouncing back to the surface: Factors determining SME recovery	Firm recovery; failing organizations; organizational decline; turnaround strategy; firm survival; Least Absolute Shrinkage and Selection Operator (LASSO)	TAYLOR & FRANCIS INC	0047-2778	2024	10.1080/00472778.2024.2415302
Yawised, Kritcha; Apasrawirote, Darlin; Chatrangsan, Maneerut; Muneesawang, Paisarn	Extending UTAUT-2 towards acceptance by SMEs of the mobile application platform Tripper Notifier Application	Mobile application; Travel application; UTAUT-2; SMEs; Mobile apps adoption; SME Thailand	EMERALD GROUP PUBLISHING LTD	2053-4620	2025	10.1108/JSTPM-02-2024-0072
Ayinaddis, Samuel Godadaw	Artificial intelligence adoption dynamics and knowledge in SMEs and large firms: A systematic review and bibliometric analysis	Small and medium enterprise (SMEs); Artificial intelligence (AI); Large firms; AI adoption	ELSEVIER ESPANA	2530-7614	2025	10.1016/j.jik.2025.100682
Arslan, Muhammad; Mahdjoubi, Lamine; Munawar, Saba	Driving sustainable energy transitions with a multi-source RAG-LLM system	Data-driven operations; Sustainable Energy Transitions (SETs); Information Extraction (IE); Large Language Models (LLMs); Retrieval Augmented Generation (RAG); Sustainable Development Goals (SDGs)	ELSEVIER SCIENCE SA	0378-7788	2024	10.1016/j.enbuild.2024.114827

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Werheid, Jonas; Muenker, Sven; Klasen, Nils; Hamann, Tobias; Abdelrazeq, Anas; Schmitt, Robert H.	Demonstrating computer vision to small- and medium-sized enterprises in manufacturing: Toward overcoming costs and implementation challenges	computer vision; fault detection; inventory management; machine vision; manufacturing; SME	WILEY		2024	10.1002/eng2.12910
Grashof, Nils; Kopka, Alexander	Artificial intelligence and radical innovation: an opportunity for all companies?	Radical innovations; Divergence; AI; Artificial intelligence; Firm level	SPRINGER	0921-898X	2023	10.1007/s11187-022-00698-3
Ramagli, Alberto Gonzalez; Miles, John; Sorondo, Alvaro; Prato, Jose Miguel	Organizational profiles that impact on the application of management practices: the case of Uruguayan SMEs	small enterprises; Uruguay; management	CENTRO LATINOAMERICANO ECONOMIA HUMANA	0797-6062	2023	10.29192/claeh.42.2.7
Atzeni, Daniele; Ramjattan, Reshawn; Figlie, Roberto; Baldi, Giacomo; Mazzei, Daniele	Data-Driven Insights through Industrial Retrofitting: An Anonymized Dataset with Machine Learning Use Cases	industry 4; 0; retrofit; machine learning; benchmark dataset; industrial IoT	MDPI		2023	10.3390/s23136078
Belhadi, Amine; Kamble, Sachin S.; Mani, Venkatesh; Benkhati, Imane; Touriki, Fatima Ezahra	An ensemble machine learning approach for forecasting credit risk of agricultural SMEs' investments in agriculture 4.0 through supply chain finance	Supply chain finance; Agriculture 4.0; Credit risk; Ensemble machine learning; African agriculture; SMEs	SPRINGER	0254-5330	2021	10.1007/s10479-021-04366-9
Shetty, Shekar; Musa, Mohamed; Bredart, Xavier	Bankruptcy Prediction Using Machine Learning Techniques	bankruptcy; deep learning; support vector machine; extreme gradient boosting; SMEs	MDPI	1911-8066	2022	10.3390/jrfm15010035
Hilal, Anwer Mustafa; Alsolai, Hadeel; Al-Wesabi, Fahd N.; Al-Hagery, Mohammed Abdullah; Hamza, Manar Ahmed; Al Duhayyim, Mesfer	Artificial Intelligence Based Optimal Functional Link Neural Network for Financial Data Science	Data science; small and medium-sized enterprises; business sectors; financial crisis prediction; intelligent systems; artificial intelligence; decision making; machine learning	TECH SCIENCE PRESS	1546-2218	2022	10.32604/cmc.2022.021522
Zhao, Jingjie; Zhang, Liming; Zhao, Yue	Informatization of Accounting Systems in Small- and Medium-Sized Enterprises Based on Artificial Intelligence-Enabled Cloud Computing		HINDAWI LTD	1687-5265	2022	10.1155/2022/6089195
Roux, Melanie; Chowdhury, Soumyadeb; Dey, Prasanta Kumar; Yaroson, Emilia Vann; Pereira, Vijay; Abadie, Amelie	Small and medium-sized enterprises as technology innovation intermediaries in sustainable business ecosystem: interplay between AI adoption, low carbon management and resilience	Digital transformation; Low carbon management; Resilience; Sustainability; Innovation intermediaries; Organisational capabilities	SPRINGER	0254-5330	2023	10.1007/s10479-023-05760-1
Goga, Alexandru-Silviu; Toth, Zsolt; Meclea, Mihai-Alin; Puiu, Ionela-Roxana; Boscoianu, Mircea	The Proliferation of Artificial Intelligence in the Forklift Industry-An Analysis for the Case of Romania	artificial intelligence; logistics; procurement; risks; safety; SMEs; forklift industry	MDPI		2024	10.3390/su16219306

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Li, Wenbo; Xu, Shan; Zheng, Xia; Sun, Ruoyu	Bridging the Knowledge Gap in Artificial Intelligence: The Roles of Social Media Exposure and Information Elaboration	artificial intelligence; AI; social media; knowledge gap; information elaboration	SAGE PUBLICATIONS INC	1075-5470	2024	10.1177/10755470241232352
Borges, Ana; Carvalho, Mariana	Short- and long-term financial distress prediction in SMEs: a survival model comparison	Financial stress; SME; Cox Proportional Hazard model; random survival forest	TAYLOR & FRANCIS LTD	0266-4763	2025	10.1080/02664763.2025.2501166
Din, Fareed Ud; Paul, David; Ryan, Joe; Henskens, Frans; Wallis, Mark	AOSR 2.0: A Novel Approach and Thorough Validation of an Agent-Oriented Storage and Retrieval WMS Planner for SMEs, under Industry 4.0	agent-oriented smart factory (AOSF); agent-oriented storage and retrieval system (AOSR); cyber-physical systems (CPS); warehouse management system (WMS); small-to-medium-sized enterprises (SME)	MDPI		2021	10.3390/fi13060155
Trinh, Hiep Thien	An SME approach to data analytics by management accountants in the transition economy of Vietnam	Data analytics; MAXQDA; Management accounting; Qualitative research; SME cluster; Vietnam; M10; M41; O33	EMERALD GROUP PUBLISHING LTD	2053-4620	2024	10.1108/JSTPM-12-2023-0222
Schoop, Julius; Poonawala, Hasan A.; Adeniji, David; Clark, Benton	AI-enabled dynamic finish machining optimization for sustained surface integrity	Machining; Surface integrity; Reinforcement learning; Smart manufacturing; Process modeling	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.04.002
Saad, Mohamed; Lutfi, Abdalwali; Almaiah, Mohammed Amin; Alshira'h, Ahmad Farhan; Alshirah, Malek Hamed; Alqudah, Hamza; Alkhassawneh, Akif Lutfi; Alsyounf, Adi; Alrawad, Mahmaod; Abdelmaksoud, Osama	Assessing the Intention to Adopt Cloud Accounting during COVID-19	cloud accounting; adoption; TOE; SME; COVID-19	MDPI		2022	10.3390/electronics11244092
Mina, Andrea; Di Minin, Alberto; Martelli, Irene; Testa, Giuseppina; Santoleri, Pietro	Public funding of innovation: Exploring applications and allocations of the European SME Instrument	Financial constraints; R&D grants; Innovation policy; Signalling; High-growth firms; Entrepreneurial finance	ELSEVIER	0048-7333	2021	10.1016/j.respol.2020.104131
Ahmad, Siti Aishah Hadawiah; Muhamed, Ariff Azly; Ab Rahman, Mohd Nizam; Zakariah, Habel	The Effect of Strategic Management Orientation on the Performance of Halal Businesses	Supply chain orientation; market orientation; halal industry; firm performance	UKM PRESS	0128-0198	2023	10.17576/jkukm-2023-35(1)-15
Darabi, Fariba; Saunders, Mark N. K.; Clark, Murray	Trust initiation and development in SME-university collaborations: implications for enabling engaged scholarship	Trust; Engaged scholarship; SME; University; Collaboration; HRD	EMERALD GROUP PUBLISHING LTD	2046-9012	2021	10.1108/EJTD-04-2020-0068
Moyo, Moses; Looock, Marianne	Conceptualising a Cloud Business Intelligence Security Evaluation Framework for Small and Medium Enterprises in Small Towns of the Limpopo Province, South Africa	cloud business intelligence; small and medium enterprise; security evaluation framework; security vulnerabilities; security risk	MDPI		2021	10.3390/info12030128

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Djordjevic, Marija Zahar; Djordjevic, Aleksandar; Klochkova, Elena; Mistic, Milan	Application of Modern Digital Systems and Approaches to Business Process Management	business process management; SME; customer satisfaction; fuzzy logic; TIFNs; AHP; Artificial Neural Network; Genetic Algorithm	MDPI		2022	10.3390/su14031697
Lecerf, Marjorie; Omrani, Nessrine	SME Internationalization: the Impact of Information Technology and Innovation	Knowledge management; SME; Internationalization; Information technology; ERP; Innovation; Information management	SPRINGER	1868-7865	2020	10.1007/s13132-018-0576-3
Pacheco, Barney G.; Akhter, Syed	Overcoming economic liminality: internationalization of B2B SME's from a small emerging economy	B2B marketing; OLI framework; Emerging economies; SME internationalization; Caribbean SMEs	EMERALD GROUP PUBLISHING LTD	1742-2043	2022	10.1108/cpoib-08-2020-0112
Chen, Jacky; Lim, Chee Peng; Tan, Kim Hua; Govindan, Kannan; Kumar, Ajay	Artificial intelligence-based human-centric decision support framework: an application to predictive maintenance in asset management under pandemic environments	Artificial Intelligence; Decision support; Small and medium enterprises; Predictive maintenance; Asset management; Pandemic preparedness	SPRINGER	0254-5330	2021	10.1007/s10479-021-04373-w
Amaral, Afonso; Pecos, Paulo	A Framework for Assessing Manufacturing SMEs Industry 4.0 Maturity	the fourth industrial revolution; advanced technology; readiness assessment; digital transformation; organization change	MDPI		2021	10.3390/app11136127
Khan, Ali Nawaz; Mehmood, Khalid; Soomro, Mohsin Ali	Knowledge Management-Based Artificial Intelligence (AI) Adoption in Construction SMEs: The Moderating Role of Knowledge Integration	Artificial intelligence; Technological innovation; Knowledge management; Developing countries; Mathematical models; Employment; Companies; Artificial intelligence (AI); effort expectancy; innovation openness; knowledge integration; perceived knowledge; performance expectancy; technology adoption	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2024	10.1109/TEM.2024.3403981
Molina-Castillo, Francisco-Jose; de Reuver, Mark; Bouwman, Harry; Clavel, Jose G.	Business model experimentation in SMEs: the application of a dual scaling technique	Business model innovation; business models; SME; business model experimentation	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1043-8599	2023	10.1080/10438599.2021.1974299
Nikolic, Nenad; Nikolic, Djordje; Marinkovic, Sanja; Mihajlovic, Ivan	Application of FAHP-PROMETHEE Hybrid Model for Prioritizing SMEs Failure Factors	SMEs; SME Failure; Fuzzy AHP; PROMETHEE; Decision Making & Risk Management	TAYLOR & FRANCIS LTD	1042-9247	2021	10.1080/10429247.2020.1788332
Denicolai, Stefano; Zucchella, Antonella; Magnani, Giovanna	Internationalization, digitalization, and sustainability: Are SMEs ready? A survey on synergies and substituting effects among growth paths	Export intensity; Internationalization; Artificial intelligence; Sustainability; Readiness; SMEs	ELSEVIER SCIENCE INC	0040-1625	2021	10.1016/j.techfore.2021.120650

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Lee, Rok	The Effect of Supply Chain Management Strategy on Operational and Financial Performance	supply chain management strategy; operational performance; financial performance; manufacturing firms; Korea	MDPI		2021	10.3390/su13095138
Quansah, Emmanuel; Hartz, Dale E.; Salipante, Paul	Adaptive practices in SMEs: leveraging dynamic capabilities for strategic adaptation	Strategy; SME; Dynamic capabilities; Strategic adaptation; Adaptive practices	EMERALD GROUP PUBLISHING LTD	1462-6004	2022	10.1108/JSBED-07-2021-0269
Angel Lopez, Miguel; Manuel Lombardo, Juan; Lopez, Mabel; Maria Alba, Carmen; Velasco, Susana; Alonso Braojos, Manuel; Fuentes-Garcia, Marta	Intelligent Detection and Recovery from Cyberattacks for Small and Medium-Sized Enterprises	Attack Detection; Attack Recovery; Blockchain; Cybersecurity; Machine Learning; SME	UNIV INT RIOJA-UNIR	1989-1660	2020	10.9781/ijimai.2020.08.003
Venkatesh, Ramamurthy; Singhal, Tarun Kumar; Hallur, Giri Gundu	VIDE-LEO: A Framework to Measure Business Innovation Success of SMEs	Business Innovation; Business Model Innovation; Digital Transformation; Innovation Leadership; Innovation Metrics; Value Proposition	IGI GLOBAL	1548-3673	2022	10.4018/IJeC.290294
Dvorsky, Jan; Frajtova-Michalikova, Katarina; Zvarikova, Katarina	Effect of Selected Determinants on the Sustainability of SMEs: Does Gender Matter?	empirical research; effect; SMEs; sustainability; V4 countries	MDPI		2024	10.3390/admsci14110281
Pekkaya, Mehmet; Zilifli, Volkan	A Preliminary Study on Generating Criteria Priorities Series via AHP for Decision Process of Commercial Credit Applications in Turkey	SMEs financial ratios; commercial credit; AHP; statistical hypothesis testing	WORLD SCIENTIFIC PUBL CO PTE LTD	0219-6220	2023	10.1142/S0219622022500894
Soldatenko, Tatyana D.; Ali, Faizan; Yessimzhanova, Saira R.; Fedorova, Tatyana; Aliyeva, Nargiza	From customer intelligence to sustainability: management feature of SMEs in Almaty City	Customer intelligence; customer data base; customer focus; customer journey map; customer feedback; small and medium enterprises	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0965-254X	2024	10.1080/0965254X.2023.2199024
Lafuente, Esteban; Rabetino, Rodrigo; Leiva, Juan Carlos	Learning from success and failure: implications for entrepreneurs, SMEs, and policy	Entrepreneurship; Learning; Learning from success; Learning from failure; SMEs; D2; D83; L26; M1; M2	SPRINGER	0921-898X	2025	10.1007/s11187-024-00889-0
Scuotto, Veronica; Crammond, Robert James; Murray, Alan; Del Giudice, Manlio	Achieving Global Convergence? Integrating disruptive technologies within evolving SME business models: A micro-level lens	Global convergence; International business; Small business; Management; Digital transformation; Disruptive technologies	ELSEVIER	1075-4253	2023	10.1016/j.intman.2023.101095
Hartl, Jakob; Bock, Juergen	A Maturity Model to Determine the Degree of Utilization of Machine Learning in Production Planning and Control Processes	machine learning; maturity model; production planning and control; project success; SME; success factors	UNIV NORTH	1846-6168	2024	10.31803/tg-20240513233046
Schalck, Christophe; Yankol-Schalck, Meryem	Predicting French SME failures: new evidence from machine learning techniques	SME; failure prediction; machine learning; xgboost; shap values	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0003-6846	2021	10.1080/00036846.2021.1934389

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Saura, Jose Ramon; Palacios-Marques, Daniel; Ribeiro-Soriano, Domingo	Leveraging SMEs technologies adoption in the Covid-19 pandemic: a case study on Twitter-based user-generated content	Small-medium sized enterprises; Entrepreneurs; SMEs technologies; Covid-19; UGC	SPRINGER	0892-9912	2023	10.1007/s10961-023-10023-z
Crowley-Henry, Marian; O'Connor, Edward P.; Suarez-Bilbao, Blanca	What goes around comes around. Exploring how skilled migrant founder-managers of SMEs recruit and retain international talent	SME; Skilled migrants; Self-initiated expatriates; HRM; Intelligent career theory; Career capital; Recruitment; Retention	EMERALD GROUP PUBLISHING LTD	2049-8799	2021	10.1108/JGM-01-2021-0003
Neamtu, Daniela Mihaela; Bejinaru, Ruxandra; Anichiti, Alexandru; Butnaru, Gina Ionela; Hapenciuc, Cristian Valentin	Current status and perspectives regarding the skills and meta-competencies needed by employees in the era 4.0	Business environment; Educational environment; Artificial intelligence; Skills and meta-skills; Industry 4.0	EMERALD GROUP PUBLISHING LTD	0368-492X	2025	10.1108/K-10-2024-2918
Horng, Sophea; Yenradee, Pisal	Delivery Service Management System Using Google Maps for SMEs in Emerging Countries	enterprise (SME); delivery service management (DSM); arrival time	TECH SCIENCE PRESS	1546-2218	2023	10.32604/cmc.2023.038764
Belahouaoui, Rida; Attak, El Houssain	Digital taxation, artificial intelligence and Tax Administration 3.0: improving tax compliance behavior - a systematic literature review using textometry (2016-2023)	Digital taxation; Tax Administration 3.0; Artificial intelligence; Blockchain; Tax compliance; Tax revenues; Systematic review; Textometry	EMERALD GROUP PUBLISHING LTD	1030-9616	2024	10.1108/ARJ-12-2023-0372
Wernli, Reto; Dietrich, Andreas	Only the brave: improving self-rationing efficiency among discouraged Swiss SMEs	Credit rationing; Discouraged borrowers; SME; Relationship lending; Sample selection model; Self-rationing	SPRINGER	0921-898X	2022	10.1007/s11187-021-00546-w
Heizmann, Michael; Braun, Alexander; Glitzner, Markus; Gunther, Matthias; Hasna, Gunther; Kluver, Christina; Krooss, Jakob; Marquardt, Erik; Overdick, Michael; Ulrich, Markus	Implementing machine learning: chances and challenges	Artificial Intelligence; neural networks; optical measurement and inspection systems; machine vision	WALTER DE GRUYTER GMBH	0178-2312	2022	10.1515/auto-2021-0149
Kiiveri, Kimmo; Naumanen, Paula; Liesivuori, Jyrki; Virtanen, Seppo; Isoaho, Jouni	A four-phase model and a mobile app for crisis preparedness and management in small and medium sized enterprises	crisis guidance; mobile app; preparedness; SME	WILEY	0966-0879	2024	10.1111/1468-5973.12618
Mukherjee, Subhodeep; Baral, Manish Mohan; Chittipaka, Venkataiah; Nagariya, Ramji; Patel, Bharat Singh	RETRACTED: Achieving organizational performance by integrating industrial Internet of things in the SMEs: a developing country perspective (Retracted article. See DEC, 2024)	Industrial internet of things; Organizational performance; Human perspective; SMEs; Competitive edge	EMERALD GROUP PUBLISHING LTD	1754-2731	2024	10.1108/TQM-07-2022-0221
da Silva, Agostinho; Cardoso, Antonio J. Marques	Designing the future of coopetition: An IIoT approach for empowering SME networks	Coopetition; Value Creation; S-D Logic; IIoT; SMEs	SPRINGER LONDON LTD	0268-3768	2024	10.1007/s00170-024-14528-1
Uzkurt, Cevahir; Ekmekcioglu, Emre Burak; Ceyhan, Semih; Hatiboglu, Muhammed Bugrahan	Digital technology use of SMEs during the COVID-19 pandemic in Turkey: mobile applications' role on motivation and job performance	Technology acceptance model (TAM); SMEs; Motivation at work; Job performance; Mobile application	EMERALD GROUP PUBLISHING LTD	0368-492X	2024	10.1108/K-08-2022-1189

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Qu, Sunping; Shi, Hongwei; Zhao, Huanhuan; Yu, Lin; Yu, Yunbo	Research on enterprise business model and technology innovation based on artificial intelligence	Technological innovation; Business model design; Business performance; Enterprise size; Artificial intelligence	SPRINGER	1687-1472	2021	10.1186/s13638-021-02025-y
Segarra-Blasco, Agusti; Tomas-Porres, Josep; Teruel, Mercedes	AI, robots and innovation in European SMEs	Artificial intelligence; Robots; Innovation; SMEs; O14; O31; O33	SPRINGER	0921-898X	2025	10.1007/s11187-025-01017-2
Tunio, Muhammad Nawaz; Yusrini, Lenny; Shah, Zubair A.; Katper, Naveeda; Jariko, Mushtaque Ali	How Hotel Industry Copes Up with the COVID-19: An SME Perspective	hotel industry; SMEs; covid-19; strategies	SYARIF SYARIF HIDAYATULLAH STATE UNIV JAKARTA	1412-8969	2021	10.15408/etk.v20i2.19172
Govindasamy, Alagiri; Rajeswari, D.; Srinivasan, R.; Arivarasi, A.	Cost-Effective digital twin Design for entertainment Enterprise's through Machine learning	Digital Twin; Industry 4.0; MSMEs; Maintenance cost reduction; Machine Learning; IoT	ELSEVIER SCI LTD	1875-9521	2024	10.1016/j.entcom.2024.100648
Kang, B. G.; Kim, B. S.	ATTACHABLE IOT-BASED DIGITAL TWIN FRAMEWORK SPECIALIZED FOR SME PRODUCTION LINES	Digital Twin; IoT Device; Modelling and Simulation; Production Line; Small and Medium-Sized Enterprise	DAAAM INTERNATIONAL VIENNA	1726-4529	2024	10.2507/IJSIMM23-3-694
Peretz-Andersson, Einav; Tabares, Sabrina; Mikalef, Patrick; Parida, Vinit	Artificial intelligence implementation in manufacturing SMEs: A resource orchestration approach	AI; Artificial intelligence; Resources; Capabilities; Manufacturing; Resource orchestration; Digital transformation; Small and medium-sized enterprises (SMEs); Competitive advantage	ELSEVIER SCI LTD	0268-4012	2024	10.1016/j.ijinfomgt.2024.102781
Siggelkow, Constantin; Fernandez, Roberto Marquez	SME default prediction using random forest including nonfinancial features: An empirical analysis of German enterprises	Small and medium enterprises; default probability; random forest; nonfinancial features; feature engineering; machine learning	TAYLOR & FRANCIS LTD	2643-7015	2024	10.1080/26437015.2023.2224108
Harmawan, Bagus Nuari; Ridho, Wahyu Fahrul	Determinants influencing SMEs in E-commerce adoption through local government facilities in Indonesia: Mixed methods approach		WILEY	1681-4835	2024	10.1002/isd2.12301
Shore, Adam; Tiwari, Manisha; Tandon, Priyanka; Foropon, Cyril	Building entrepreneurial resilience during crisis using generative AI: An empirical study on SMEs	Generative AI; Entrepreneurial orientation; Entrepreneurial resilience; Market turbulence; Dynamic capability view	ELSEVIER	0166-4972	2024	10.1016/j.technovation.2024.103063
Alexopoulos, Kosmas; Mavrothalassitis, Panagiotis; Bakopoulos, Emmanouil; Nikolakis, Nikolaos; Mourtzis, Dimitris	Deep Reinforcement Learning for Selection of Dispatch Rules for Scheduling of Production Systems	artificial intelligence; deep reinforcement learning; production scheduling; deep Q-learning; discrete event simulation	MDPI		2025	10.3390/app15010232
Felzensztein, Christian; Saridakis, George; Idris, Bochra; Elizondo, Gabriel P.	Do economic freedom, business experience, and firm size affect internationalization speed? Evidence from small firms in Chile, Colombia, and Peru	Institutional theory; Resource-based view; Economic freedom; Business experience; Firm size; Internationalization speed; SMEs; Chile; Colombia; Peru	SPRINGER	1570-7385	2022	10.1007/s10843-021-00303-w

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Takahashi, Kohei; Hashimoto, Yuki	Small grant subsidy application effects on productivity improvement: evidence from Japanese SMEs	SME; Subsidy; Productivity; Industrial policy; Entrepreneurship	SPRINGER	0921-898X	2023	10.1007/s11187-022-00663-0
Krara, Wessam; Alzubi, Ahmad; Khadem, Amir; Iyiola, Kolawole	The Nexus of Sustainability Innovation, Knowledge Application, and Entrepreneurial Success: Exploring the Role of Environmental Awareness	sustainability innovation; knowledge application; environmental awareness; entrepreneurial success; SMEs; natural resource-based view (NRBV); knowledge-based view (KBV)	MDPI		2025	10.3390/su17020716
Yang, Xingyu; Zhou, Zhengxue; Sorensen, Jonas H.; Christensen, Christoffer B.; uenalan, Mikail; Zhang, Xuping	Automation of SME production with a Cobot system powered by learning-based vision	Collaborative robot; SME production; Learning-based vision; Multi-functional gripper; Digital twin	PERGAMON-ELSEVIER SCIENCE LTD	0736-5845	2023	10.1016/j.rcim.2023.102564
McCandless, William B., Jr.; Dettwiller, Ian D.; George, Glover	Intelligent Black Box Verification, Validation, and Accreditation for Rotorcraft Performance Modeling		AMER HELICOPTER SOC INC	0002-8711	2021	10.4050/JAHS.66.032010
Wahedi, Hadid J.; Heltoft, Mads; Christophersen, Glenn J.; Severinsen, Thomas; Saha, Subrata; Nielsen, Izabela Ewa	Forecasting and Inventory Planning: An Empirical Investigation of Classical and Machine Learning Approaches for Svanehoj's Future Software Consolidation	reinforcement learning; inventory management system; machine learning; forecasting	MDPI		2023	10.3390/app13158581
Hariastuti, Ni Luh Putu; Pratikto; Santoso, Purnomo Budi; Tama, Ishardita Pambudi	Identifying Driving Factors of Technological Innovation to Create Sustainable Value in Metal Manufacturing SMEs	Technological; Innovation; Driver; Value Creation; Manufacturing; Sustainability	KOREAN INST INDUSTRIAL ENGINEERS	1598-7248	2022	10.7232/iems.2022.21.1.043
da Silva, Agostinho; Cardoso, Antonio J. Marques	Enhancing SME Competitiveness Through Coopetition Networks: A Service-Dominant Logic Approach	S-D logic; Service Science	POLSKA AKAD NAUK, POLISH ACAD SCIENCES	2080-8208	2024	10.24425/mper.2024.151493
Vitez-Durgula, Judit; Dunay, Anna; Thalmeiner, Gergo; Vajai, Balazs; Pataki, Laszlo	Financial Analysis and Survival Research of the Visegrad Countries' Health Industries	SME; V4 countries; health industry; financial analysis; survival analysis	MDPI		2023	10.3390/su151612360
Ben Ayed, Maha; Sayah, Mohamed; Ketata, Raouf; Zerhouni, Noureddine	A Smart LSTM for Industrial Part Conformity: SME Material-Data Based Decision-Making	SCODER; predictive modeling; machine learning; quality control; manufacturing optimization; raw material properties	PLEIADES PUBLISHING INC	0146-4116	2024	10.3103/S0146411624701153
Cho, Insu; Ju, Yonghan	Text mining method to identify artificial intelligence technologies for the semiconductor industry in Korea	Semiconductor; Patent; International patent classification; Network analysis; Text mining	ELSEVIER	0172-2190	2023	10.1016/j.wpi.2023.102212

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Kazakov, Sergey; Ruiz-Alba, Jose L.; Munoz, Maria M.	The impact of information and communication technology and internal market orientation blending on organisational performance in small and medium enterprises	SMEs; Job satisfaction; Market orientation; Organisational performance; Internal marketing; Internal market orientation	EMERALD GROUP PUBLISHING LTD	2444-8451	2021	10.1108/EJMBE-04-2020-0068
Das, Sibbanjan Debeeprasad; Bala, Pradip Kumar	What drives MLOps adoption? An analysis using the TOE framework	MLOps; ML operations; machine learning; artificial intelligence; ML monitoring; ML obserability; Information systems	TAYLOR & FRANCIS LTD	1246-0125	2024	10.1080/12460125.2023.2214306
Mkansi, Marcia; Nsakanda, Aaron Luntala	Mobile application e-grocery retail adoption challenges and coping strategies: a South African small and medium enterprises' perspective	Mobile applications; E-grocery retailers; E-business; SME; m-commerce	SPRINGER	1389-5753	2025	10.1007/s10660-023-09698-1
Chiu, Ming-Chuan; Huang, Yu-Jui; Wei, Chia-Jung	Enhancing SMEs digital transformation through machine learning: A framework for adaptive quality prediction	Digital transformation; Adaptability; Deep learning; Quality prediction; Small and medium enterprises (SMEs)	ELSEVIER	2467-964X	2024	10.1016/j.jii.2024.100666
Arroyabe, Marta F.; Arranz, Carlos F. A.; de Arroyabe, Juan Carlos Fernandez	The integration of circular economy and digital transformation as a catalyst for small and medium enterprise innovation	CE; digitalisation; innovation; SMEs; strategic orientation	WILEY	0964-4733	2024	10.1002/bse.3858
Vecchiato, Riccardo; Do, Hang; Pierrakis, Yannis; Blackburn, Robert	Innovation and Foresight in SMEs: Lessons From the Case of UK Digital Health Companies	Technological innovation; Uncertainty; Business; Companies; Costs; Investment; Electronic healthcare; Foresight; innovation; networking; small- and medium-sized enterprise (SME) clusters; technological change	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2024	10.1109/TEM.2023.3336732
Nicin, Vojislava; Nicin, Slobodan; Mirkov, Milovan	IMPACT OF AI TECHNOLOGIES ON OPERATIONS OF SMALL AND MEDIUM TRANSPORT BUSINESSES	artificial intelligence; small and medium enterprises; transportation; storage; logistics; perception; technology adoption	UNIV ZILINA	1335-4205	2024	10.26552/com.C.2024.038
Gatto, Fabiana; Re, Ilaria	Circular Bioeconomy Business Models to Overcome the Valley of Death. A Systematic Statistical Analysis of Studies and Projects in Emerging Bio-Based Technologies and Trends Linked to the SME Instrument Support	circular bioeconomy; circular bioeconomy business model; valley of death; SME; startup	MDPI		2021	10.3390/su13041899
Haneberg, Dag Hakon	SME managers' learning from crisis and effectual behaviour	Learning; Effectuation; COVID-19; Coronavirus; Uncertainty; Crisis	EMERALD GROUP PUBLISHING LTD	1462-6004	2021	10.1108/JSBED-01-2021-0009

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Silva, Ana Rita D.; Ferreira, Fernando A. F.; Carayannis, Elias G.; Ferreira, Joao J. M.	Measuring SMEs Propensity for Open Innovation Using Cognitive Mapping and MCDA	Technological innovation; Companies; Tools; Decision making; Collaboration; Choquet integral (CI); cognitive mapping; decision support; multiple criteria decision analysis (MCDA); open innovation (OI); organizational ambidexterity; small and medium-sized enterprise (SME)	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2021	10.1109/TEM.2019.2895276
Thompson, Isaac; Koenig, Nick; Mracek, Derek L.; Tonidandel, Scott	Deep Learning in Employee Selection: Evaluation of Algorithms to Automate the Scoring of Open-Ended Assessments	Deep learning; Machine learning; Natural language processing; Measurement	SPRINGER	0889-3268	2023	10.1007/s10869-023-09874-y
Wells, Nadya; Nguyen, Vinh-Kim; Harbarth, Stephan	Novel insights from financial analysis of the failure to commercialise plazomicin: Implications for the antibiotic investment ecosystem		SPRINGER NATURE		2024	10.1057/s41599-024-03452-0
Kisieliuskas, Justinas; Siburkis, Justas; Bakanauskas, Paulius	AUDIO BRANDING GUIDANCE MODEL IN THE CASE OF SMALL AND MEDIUM-SIZED BUSINESSES	audio brand; sonic brand; audio branding	Baltija Publishing	2256-0742	2024	10.30525/2256-0742/2024-10-4-32-43
Roy, Pranith Kumar; Shaw, Krishnendu; Ishizaka, Alessio	Developing an integrated fuzzy credit rating system for SMEs using fuzzy-BWM and fuzzy-TOPSIS-Sort-C	Credit rating system; SME; Multi-criteria decision aid; Decision support; Fuzzy best-worst method; Fuzzy-TOPSIS-Sort-C	SPRINGER	0254-5330	2023	10.1007/s10479-022-04704-5
Kong, Lingxuan; Zheng, Ge; Brintrup, Alexandra	A federated machine learning approach for order-level risk prediction in Supply Chain Financing	Federated learning; Supply Chain Financing; Privacy preserving; Machine learning; Artificial intelligence; Supply chain risk	ELSEVIER	0925-5273	2024	10.1016/j.ijpe.2023.109095
Valdes-Rodriguez, Yolanda; Hochstetter-Diez, Jorge; Dieguez-Rebolledo, Mauricio; Bustamante-Mora, Ana; Cadena-Martinez, Rodrigo	Analysis of Strategies for the Integration of Security Practices in Agile Software Development: A Sustainable SME Approach	Agile development; security practices; secure development; SMEs; sustainability	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2024	10.1109/ACCESS.2024.3372385
Bak, Sylwia; Jedynak, Piotr; Kaczmaryk, Przemyslaw	Adaptation determinants of artificial intelligence in small and medium enterprises	Artificial intelligence (AI); small and medium-sized enterprises (SMEs); adaptation of AI; conditions	UNIV WARSAW, FAC MANAGEMENT		2024	10.7172/2956-7602.103.4
Budiono, Fahrizal Lukman; Lau, Sim Kim; Tibben, William John	The Investigation of E-Marketplace Adoption by Small Medium Enterprises Using Individual-Technology-Organization-Environment (ITOE) Framework: A Case Study in Yogyakarta Province Indonesia	E-marketplace; Adoption; Small Medium Enterprises; Indonesia	ASSOC INFORMATION SYSTEMS	1943-7536	2020	10.17705/1pais.12403

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Dostatni, Ewa; Mikolajewski, Dariusz; Rojek, Izabela	The Use of Artificial Intelligence for Assessing the Pro Environmental Practices of Companies	eco-product; production; computational analysis; automatic method; neural networks	MDPI		2023	10.3390/app13010310
Tawil, Abdel-Rahman H.; Mohamed, Muhidin; Schmoor, Xavier; Vlachos, Konstantinos; Haidar, Diana	Trends and Challenges towards Effective Data-Driven Decision Making in UK Small and Medium-Sized Enterprises: Case Studies and Lessons Learnt from the Analysis of 85 Small and Medium-Sized Enterprises	big data; data analytics; digitalisation; UK small and medium-sized enterprises (SMEs); AI adoption	MDPI		2024	10.3390/bdcc8070079
Lupedia, Genoveva Da Costa; Tanascu, Constantin-Iulian; Statie, Dumitru-Alin; Costache, Robert -Andrei	Age of Economic Alliances-How SMEs Win the Market Using Alliances in Turbulent Times	Strategic alliances SMEs; Business strategy	EUROPEAN CENTER SUSTAINABLE DEVELOPMENT	2239-5938	2023	10.14207/ejsd.2023.v12n2p151
Vargas, Manuel; Mosquera, Rodolfo; Fuertes, Guillermo; Alfaro, Miguel; Vergara, Ileana Gloria Perez	Process Optimization in a Condiment SME through Improved Lean Six Sigma with a Surface Tension Neural Network	food industry; lean; six sigma; surface tension neural network; engineering design; SME	MDPI		2024	10.3390/pr12092001
Lu, Yang; Yang, Lian; Shi, Baofeng; Li, Jiaxiang; Abedin, Mohammad Zoynul	A novel framework of credit risk feature selection for SMEs during industry 4.0	Credit rating; Credit risk; Feature selection; SMEs; Binary opposite whale optimization algorithm; Kolmogorov-Smirnov statistic	SPRINGER	0254-5330	2022	10.1007/s10479-022-04849-3
Jallad, Mohammed Nawaf; Karadas, Georgiana	Entrepreneurial Orientation and Performance Outcomes in Palestinian SMEs: The Role of Absorptive Capacity and Industry Type	entrepreneurial orientation; business sustainability performance; innovation performance; knowledge management capacity; absorptive capacity	MDPI		2024	10.3390/su162310637
Sanchez-Medina, Agustin J.; Blazquez-Santana, Felix; Cervino-Cortinez, Daniel L.; Pellejero, Monica	Ensemble Methods for Bankruptcy Resolution Prediction: A New Approach	Bankruptcy; Reorganization; Prediction; Artificial intelligence; Ensemble learning; G33; G34	SPRINGER	0927-7099	2025	10.1007/s10614-024-10709-y
Rostamkalei, Anoosheh; Nitani, Miwako; Riding, Allan	Borrower discouragement: the role of informal turndowns	Discouraged borrowers; Informal turndown; Rejection; SMEs; Borrowing; Banks	SPRINGER	0921-898X	2020	10.1007/s11187-018-0086-5
Ciasullo, Maria Vincenza; Montera, Raffaella; Mercuri, Francesco; Mugova, Shame	When Digitalization Meets Omnichannel in International Markets: A Case Study from the Agri-Food Industry	digitalization; omnichannel; internationalization; Made in Italy SMEs; agri-food	MDPI		2022	10.3390/admsci12020068
Santos, Andre de Mendonca; Anna, Angelo Marcio Oliveira Sant	Industry 4.0 technologies for sustainability within small and medium enterprises: A systematic literature review and future directions	Sustainability; Small and medium enterprises; Industry 4.0; Smart manufacturing; Sustainable operations management; SME	ELSEVIER SCI LTD	0959-6526	2024	10.1016/j.jclepro.2024.143023

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Muda, Paul; Tornyeva, Kingsley; MacCarthy, John	The moderating role of environmental factors between institutional isomorphic pressures and the adoption of IFRS for SMEs: application of SEM	IFRS for SMEs; coercive pressure; normative pressure; mimetic pressure; isomorphic pressure; M40; M41; M48; Oyedele Ogundana, Nottingham Trent University, United Kingdom of Great Britain and Northern Ireland; Economics and Development; Business, Management and Accounting; Economics; Sustainable Development	TAYLOR & FRANCIS AS	2331-1975	2024	10.1080/23311975.2024.2330012
Czerwonka, Leszek; Jaworski, Jacek	Capital structure determinants of small and medium-sized enterprises: evidence from Central and Eastern Europe	Capital structure determinants; Capital structure theories; Small and medium-sized enterprises; Central and Eastern Europe; G20; G32; M20	EMERALD GROUP PUBLISHING LTD	1462-6004	2021	10.1108/JSBED-09-2020-0326
Pfeifer, Marcel Rolf	Development of a Smart Manufacturing Execution System Architecture for SMEs: A Czech Case Study	production controlling; Industry 4; 0; OPC 4; 0; machine learning; computer-aided standardisation; smart manufacturing; smart manufacturing execution system; sustainability	MDPI		2021	10.3390/su131810181
Baltazar, Juliana; Franco, Mario	The Influence of Different Leadership Styles on the Entrepreneurial Process: A Qualitative Study	leadership styles; entrepreneurial process; leader; SME; leadership	MDPI		2023	10.3390/economies11020036
Andreano, M. Simona; Benedetti, Roberto; Mazzitelli, Andrea; Piersimoni, Federica; Di Fatta, Davide	How interconnected SMEs in business cluster survive the economic crisis	Systemic thinking; Information; Bankrupt; Contextual influence	EMERALD GROUP PUBLISHING LTD	0368-492X	2021	10.1108/K-06-2018-0282
Magableh, Ihab K.; Mahrouq, Maher H.; Ta'Amnha, Mohammad A.; Riyadh, Hosam Alden	The Role of Marketing Artificial Intelligence in Enhancing Sustainable Financial Performance of Medium-Sized Enterprises Through Customer Engagement and Data-Driven Decision-Making	artificial intelligence; AI marketing; data-driven decision-making; SMEs; sustainable financial performance	MDPI		2024	10.3390/su162411279
Apostoaie, Constantin-Marius; Roman, Teodora; Maxim, Alexandru; Jijie, Dumitru-Tudor	DETERMINANTS OF AI ADOPTION INTENTION IN SMES. ROMANIAN CASE STUDY	artificial intelligence; small and medium sized enterprises; TOE framework; AI adoption behaviour; Romania; structural equation modelling	VILNIUS GEDIMINAS TECH UNIV	1611-1699	2025	10.3846/jbem.2025.23650

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Li, Xiaofan; Zhang, Long; Wang, Peiyao	Artificial Intelligence Techniques Introduced Into Evolutionary Games and Simulation Studies	Artificial intelligence; Training; Leadership; Games; Technological innovation; Costs; Stakeholders; Loss measurement; Business; Supply chains; Digital transformation; introduction of artificial intelligence (AI) technology; process optimization; tripartite evolutionary game	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2329-924X	2024	10.1109/TCSS.2024.3515085
Belwalkar, Bharati B.; Schultz, Matthew; Curnow, Christina; Setzer, J. Carl	Blending Strategic Expertise and Technology: A Case Study for Practice Analysis	certification; licensure; natural language processing; practice analysis	WILEY	0731-1745	2024	10.1111/emip.12607
Avelar, Wallace; Meirino, Marcelo; Tortorella, Guilherme Luiz	The practical relationship between continuous flow and lean construction in SMEs	SMEs; Continuous improvement; Lean tools; Lean construction; Workflow	EMERALD GROUP PUBLISHING LTD	1754-2731	2020	10.1108/TQM-05-2019-0129
Ferinha, Ines M.; Ferreira, Fernando A. F.; Ferreira, Neuza C. M. Q. F.; Garces, Edwin; Daim, Tugrul	Digital strategies and non-conventional sources of innovation: Analysis of causal relationships using interpretive structural modeling	Cognitive mapping; Digitalization; Non-conventional source of innovation; Interpretive structural modeling (ISM); Small and medium-sized enterprise (SME)	ELSEVIER SCI LTD	0160-791X	2025	10.1016/j.techsoc.2025.102940
Safari, Ashkan; Sorouri, Hoda; Oshnoei, Arman	The Regulation of Superconducting Magnetic Energy Storages with a Neural-Tuned Fractional Order PID Controller Based on Brain Emotional Learning	artificial intelligence; energy storage systems; optimal robust control; neural networks; parameter tuning; fractional order controller; SMES	MDPI		2024	10.3390/fractalfract8070365
Thathsarani, Shanika; Jianguo, Wei; Alariqi, Mona	How Do Demand, Supply, and Institutional Factors Influence SME Financial Inclusion: A Developing Country Perspective	factors; financial inclusion; index; SMEs; Sri Lanka	SAGE PUBLICATIONS INC	2158-2440	2023	10.1177/21582440231187603
Yaroson, Emilia Vann; Chowdhury, Soumyadeb; Mangla, Sachin Kumar; Dey, Prasanta Kumar	Unearthing the interplay between organisational resources, knowledge and industry 4.0 analytical decision support tools to achieve sustainability and supply chain wellbeing	Industry 4.0; Analytical decision support systems; Circular economy, sustainability; Supply chain wellbeing; Knowledge based view; Organisational information processing; Green operations	SPRINGER	0254-5330	2024	10.1007/s10479-024-05845-5
Gladysz, Bartłomiej; Matteri, Davide; Ejsmont, Krzysztof; Corti, Donatella; Bettoni, Andrea; Guerra, Rodolfo Haber	Platform-based support for AI uptake by SMEs: guidelines to design service bundles	Artificial intelligence; Small and medium-sized enterprises; AI developers; AI platform guidelines; Digital innovation hubs	EMERALD GROUP PUBLISHING LTD	2658-0845	2023	10.1108/CEMJ-08-2022-0096
Mat, Nik Hazimah Nik; Jaafar, Syuhaida Mohamed; Mohamad, Aina Syuhaila	DEALING WITH UNCERTAINTY: AN ANALYSIS OF VRIN RESOURCES FOR SME'S BUSINESS SURVIVAL	human resource management; employees performance; organizational change; uncertainty; SMEs; business adaptation; Malaysia	UNIV MALAYSIA SARAWAK, FAC ECONOMICS & BUSINESS	1511-6670	2022	10.33736/ijbs.4629.2022

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Narkhede, Ganesh; Mahajan, Sonal; Narkhede, Rupesh; Chaudhari, Tansen	Significance of Industry 4.0 technologies in major work functions of manufacturing for sustainable development of small and medium-sized enterprises	big data analytics; Industry 4.0; robotics and automation; small and medium-sized enterprises; sustainability	WILEY		2024	10.1002/bsd2.325
Cardinali, Silvio; Sharma, Piyush; Cedrola, Elena; Giovannetti, Marta; Pillai, Kishore Gopalakrishna	Buying centers and emerging developments: the SME perspective	Buying center; Digital communication; Digital technologies; Hybrid selling	EMERALD GROUP PUBLISHING LTD	0885-8624	2024	10.1108/JBIM-03-2023-0157
Kaiser, Jan; Terrazas, German; McFarlane, Duncan; de Silva, Lavindra	Towards low-cost machine learning solutions for manufacturing SMEs	Machine learning; Low cost; Small- and medium-sized enterprises; Digital manufacturing on a shoestring	SPRINGER	0951-5666	2023	10.1007/s00146-021-01332-8
Mendy, John; Rahman, Mahfuzur; Bal, P. Matthijs	Using the best-fit approach to investigate the effects of politico-economic and social barriers on SMEs' internationalization in an emerging country context: Implications and future directions	best-fit approach; developing country; HR model; internationalization; SMEs	WILEY	1096-4762	2020	10.1002/tie.22119
Pandiyan, Vigneashwara; Cui, Di; Parrilli, Annapaola; Deshpande, Pushkar; Masinelli, Giulio; Shevchik, Sergey; Wasmer, Kilian	Monitoring of Direct Energy Deposition Process Using Manifold Learning and Co-Axial Melt Pool Imaging	Directed energy deposition; Monitoring; Melt pool; Convolutional Neural Network; Manifold learning	ELSEVIER	2213-8463	2022	
Touijer, Mohamed Nouredine; Elabjani, Abdelaziz	A Delphi study on digital maturity and digital competitiveness in the context of digital transformation	Business models; Qualitative methods; Small and medium enterprises; Competitive advantage; Transition economies; Digital transformation	EMERALD GROUP PUBLISHING LTD	1750-6204	2025	10.1108/JEC-05-2024-0088
Mohammadian, Hamid Doost; Langari, Zeinab Ghasabzadeh; Kamalian, Amin Reza; Yaghoubi, Nour Mohammad; Aramesh, Hamed	Promoting sustainable global innovative smart governance through the 5th wave theory, via Fuzzy AHP for future SMEs (SME 5.0/hybrid SMEs)	organizational sustainability; culture innovativeness; the 5(th) wave theory; 7PS model; 9PSG model; implementing scenarios; applications and technologies; sustainable global innovative smart governance; KTB model; 3D Socio-Eco-Environment SMEs model; SME 5.0/Hybrid SMEs; Structural Equation Modeling (SEM); FUZZY Analytic Hierarchy Process (AHP)	AMER INST MATHEMATICAL SCIENCES-AIMS	2471-2132	2023	10.3934/geosci.2023008
Simeth, Alexej; Kumar, Atal Anil; Plapper, Peter	Flexible and robust detection for assembly automation with YOLOv5: a case study on HMLV manufacturing line	High-mix low-volume (HMLV); Assembly automation; Artificial intelligence (AI); You only look once (YOLO)	SPRINGER	0956-5515	2025	10.1007/s10845-024-02411-5

Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Bianchini, Augusto; Savini, Ivan; Andreoni, Alessandro; Morolli, Matteo; Solfrini, Valentino	Manufacturing Execution System Application within Manufacturing Small-Medium Enterprises towards Key Performance Indicators Development and Their Implementation in the Production Line	manufacturing execution system; key performance indicator; small-medium-sized enterprise; industry 4.0; big data; performance measurement	MDPI		2024	10.3390/su16072974
Hou, Liangliang; Lu, Ke; Bi, Gongbing	Predicting the credit risk of small and medium-sized enterprises in supply chain finance using machine learning algorithms		JOHN WILEY & SONS LTD	0143-6570	2024	10.1002/mde.4130
Wang, Yijie	Research on Supply Chain Financial Risk Assessment Based on Blockchain and Fuzzy Neural Networks		WILEY-HINDAWI	1530-8669	2021	10.1155/2021/5565980
Cowling, Marc; Liu, Weixi; Conway, Elaine	Ethnicity and bank lending before and during COVID-19	Financial risk; SMEs; Financing; Ethnic groups	EMERALD GROUP PUBLISHING LTD	1355-2554	2023	10.1108/IJEBR-02-2021-0157
AlKoliby, Ibraheem Saleh Mokbel; Abdullah, Haim Hilman; Suki, Norazah Mohd	Linking Knowledge Application, Digital Marketing, and Manufacturing SMEs' Sustainable Performance: The Mediating Role of Innovation	Knowledge Application; Digital Marketing; Innovation; Sustainable Performance; SMEs; Manufacturing	SPRINGER	1868-7865	2024	10.1007/s13132-023-01157-4
Singh, Shikha; Gandhi, Mohina; Kar, Arpan Kumar; Tikkiwal, Vinay Anand	How should B2B firms create image content for high social media engagement? A multimodal analysis	Social media engagement; Deep learning; Multimodal analysis; Stimulus-response model; Big data analytics; Artificial intelligence	EMERALD GROUP PUBLISHING LTD	0263-5577	2023	10.1108/IMDS-08-2022-0470
Lin, Yun-Sheng; Chen, Mingchih	Implementing TRIZ with Supply Chain Management in New Product Development for Small and Medium Enterprises	new product development; theory of inventive problem-solving; supply chain; small and medium enterprises; innovative; product modularity; sustainability	MDPI		2021	10.3390/pr9040614
Fu, Chung-Jen; Silalahi, Andri Dayarana K.; Yang, Lee-Wen; Eunike, Ixora Javanisa	Advancing SME performance: a novel application of the technological-organizational-environment framework in social media marketing adoption	Social media marketing; adoption; small and medium-sized enterprises; Technology-Organization-Environment framework; performance; Kaouther Kooli, Bournemouth University, United Kingdom of Great Britain and Northern Ireland; Marketing; Business; Internet / Digital Marketing / e-Marketing; Marketing Management; Marketing Research	TAYLOR & FRANCIS AS	2331-1975	2024	10.1080/23311975.2024.2360509
Zhang, Wen; Yan, Shaoshan; Li, Jian; Tian, Xin; Yoshida, Taketoshi	Credit risk prediction of SMEs in supply chain finance by fusing demographic and behavioral data	Supply chain finance; Credit risk prediction; DeepRisk; Multi-modal learning; Data fusion	PERGAMON-ELSEVIER SCIENCE LTD	1366-5545	2022	10.1016/j.tre.2022.102611

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Ho, Chi H. P.; Nguyen, Kiet T.; Trinh, Duc C.	Business practices of trade and service firms: Evidence from Vietnam	Business practices; Competitive Advantage; Performance; Profit; SMEs; Viet Nam	SPRINGER	1868-7865	2024	10.1007/s13132-023-01186-z
Haddad, Monther, I; Williams, Irene A.; Hammoud, Mohamad Saleh; Dwyer, Rocky J.	Strategies for implementing innovation in small and medium-sized enterprises	Resource-based view; Innovation; Small-medium enterprises; Strategy	EMERALD GROUP PUBLISHING LTD	2042-5961	2020	10.1108/WJEMSD-05-2019-0032
Adiyanto, Okka; Mohamad, Effendi; Jaafar, Rosidah; Ma'ruf, Farid; Faishal, Muhammad; Anggraeni, Anggi	Application of Nordic Body Map and Rapid Upper Limb Assessment for Assessing Work-related Musculoskeletal Disorders: A case study in Small and Medium Enterprises	Ergonomic; Rapid Upper Limb Assessment; Nordic Body Map; Musculoskeletal Disorder	UNIV TUN HUSSEIN ONN MALAYSIA	2229-838X	2022	10.30880/ijie.2022.14.04.002
Pandey, Dharen Kumar	FinTech and small and medium enterprises: current state and future directions	FinTech; Small- and medium-sized enterprises; Financial inclusion; Crowdfunding; Bibliometric analysis	EMERALD GROUP PUBLISHING LTD	1754-2731	2025	10.1108/TQM-07-2024-0259
Babic, Milica; Billey, Anna; Nager, Mike; Wuest, Thorsten	Status Quo of Smart Manufacturing Curricula offered by ABET accredited Industrial Engineering programs in the US	Industry 4.0; Smart Manufacturing; Engineering Education; Course Development; Workforce Development	ELSEVIER	2213-8463	2022	
Mora-Esquivel, Ronald; Leiva, Juan Carlos	The role of digital service innovation strategy on SME performance: an international study	Digital service innovation strategy; Degree of digitalization; Innovation; Performance; SMEs; Latin America; Spain	EMERALD GROUP PUBLISHING LTD	1741-0398	2025	10.1108/JEIM-02-2024-0099
Klimecka-Tatar, Dorota; Kapustka, Katarzyna	The Role of Artificial Intelligence in Circular Economy Strategies: Predictive Analysis for SMEs	circular economy; artificial intelligence; circular economy indicators; SMEs; circular economy predictive analysis	SCIENDO	2299-0461	2025	10.2478/mspe-2025-0020
Hamdan, Ihab K. A.; Aziguli, Wulamu; Zhang, Dezheng; Sumartiah, Eli; Usmanova, Kamila	Forecasting blockchain adoption in supply chains based on machine learning: evidence from Palestinian food SMEs	Food industry; Palestine; Adoption intention; Bayesian network; Machine learning; Blockchain; Structural equation modelling; SMEs	EMERALD GROUP PUBLISHING LTD	0007-070X	2022	10.1108/BFJ-05-2021-0535
Albinali, Ali Ahmed; Lock, Russell; Phillips, Iain	The next generation of open data platform (ODP plus): use case of Qatar	Big data; Open government data (OGD); Open data (OD); Small- and medium-sized enterprises (SMEs); Data analytics; ODP plus plus	EMERALD GROUP PUBLISHING LTD	1750-6166	2024	10.1108/TG-04-2023-0042
Bednarova, Marketa; Oklestkova, Sara	THE IMPACT OF DIGITAL STRATEGY ON E-COMMERCE SERVICES: ANALYSIS AND PERSPECTIVES IN ONLINE SMALL AND MEDIUM ENTERPRISES (SMES)	Digital strategy; e-commerce; online SMEs; artificial intelligence; personalization; sustainability; shopping behavior	MAGNANIMITAS	1804-7890	2024	
Gao, Ge; Wang, Hongxin; Gao, Pengbin	Establishing a Credit Risk Evaluation System for SMEs Using the Soft Voting Fusion Model	small and medium-sized enterprises; credit risk evaluation; machine learning; soft voting	MDPI		2021	10.3390/risks9110202

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Nagy, Adrian; Tumiwa, Johan; Arie, Fitty; Laszlo, Erdey; Alsoud, Anas Ratib; Al-Dalahmeh, Main	A meta-analysis of the impact of TOE adoption on smart agriculture SMEs performance		PUBLIC LIBRARY SCIENCE	1932-6203	2025	10.1371/journal.pone.0310105
Torrent-Sellens, Joan; Miro Perez, Albert-P	INTELLIGENCE: HUMAN, ECONOMIC AND ARTIFICIAL AGAINST THE EFFECTS OF COVID-19	Covid-19; Spain; Artificial Intelligence; public policies	UNIV AUTONOMA CARIBE-UAC	1692-8563	2020	10.15665/v18i3.2497
Lee, Kyoung Jun; Hwangbo, Yujeong; Jeong, Baek; Yoo, Jiwoong; Park, Kyung Yang	Extrapolative Collaborative Filtering Recommendation System with Word2Vec for Purchased Product for SMEs	extrapolative collaborative filtering; multi-merchant; recommendation system; Word2Vec	MDPI		2021	10.3390/su13137156
Faasolo, Malia Benedine; Sumarlia, Eli	An Artificial Neural Network Examination of the Intention to Implement Blockchain in the Supply Chains of SMEs in Tonga	Artificial Neural Network (ANN) Analysis; Blockchain; PLS-SEM; Supply Chain Management; Technology; TOE Framework	IGI GLOBAL	1040-1628	2022	10.4018/IRMJ.287907
Amjad, Tayyab; Rani, Shamsul Huda Binti Abdul; Sa'atar, Shiza Binti	Entrepreneurship development and pedagogical gaps in entrepreneurial marketing education	Entrepreneurship development; Entrepreneurship education; Entrepreneurial marketing; SME entrepreneur; Entrepreneurial failure; Pedagogy; Theory-practice gap; Business school	ELSEVIER SCI LTD	1472-8117	2020	10.1016/j.ijme.2020.100379
Altman, Edward I.; Balzano, Marco; Giannozzi, Alessandro; Srhoj, Stjepan	The Omega Score: An improved tool for SME default predictions	Omega Score; default prediction modeling; small and medium-sized enterprises; machine-learning techniques	TAYLOR & FRANCIS LTD	2643-7015	2023	10.1080/26437015.2023.2186284
Degregori, Ginevra; Brescia, Valerio; Calandra, Davide; Secinaro, Silvana	Evaluating sustainability reporting in SMEs: insights from an ethical cooperative bank's approach	Sustainability reporting; SMEs; Digital technologies; Sustainable development;; Digital transformation; Artificial intelligence	EMERALD GROUP PUBLISHING LTD	2041-2568	2025	10.1108/JGR-10-2024-0197
Samadi, Behrang; KavehJamali, Seyed; Najafzadeh, Reza; Altarawneh, Jaafer Y.	THE HETEROGENEITY OF FAMILY FIRMS IN ELECTRONIC COMMERCE DEPLOYMENT(A RESEARCH ON SUCCESSION IN FAMILY SMES)	Family members companies; Iranian loved ones SMEs; EC Use; Intergenerational Transmission	ANADOLU UNIV	1308-5581	2022	10.9756/INT-JECSE/V14I3.788
Al Koliby, Ibraheem Saleh; Suki, Norazah Mohd; Abdullah, Haim Hilman	Linking knowledge acquisition, knowledge dissemination, and manufacturing SMEs' sustainable performance: the mediating role of knowledge application	Knowledge application; Knowledge management; Knowledge acquisition; Knowledge dissemination; Sustainable performance; Manufacturing SMEs	EMERALD GROUP PUBLISHING LTD	0888-045X	2022	10.1108/BL-12-2021-0123
Declich, Andrea; Quinti, Gabriele; Signore, Paolo	SME's, energy efficiency, innovation: a reflection on materials and energy transition emerging from a research on SMEs and the practice of Energy Audit	SME; energy efficiency; circular economy; materials; social innovation	EDP SCIENCES S A	0032-6895	2021	10.1051/mattech/2020036

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Sanjeetha, Mohamed B. Fathima; Ali, Ghassan Ahmed; Nawaz, Samsudeen Sabraz; Almawgani, Abdulkarem H. M.; Ali, Yahya Ali Abdelrahman	Development of an Alignment Model for the Implementation of DevOps in SMEs: An Exploratory Study	Software engineering; Cloud computing; Business; Automation; Information technology; Information exchange; Information sharing; Knowledge based systems; Enterprise resource planning; DevOps; alignment model; knowledge sharing; continuous integration; strategic IT alignment; strategic subunit alignment; PLS-SEM; subunit size; SME; Sri Lanka	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2023	10.1109/ACCESS.2023.3344040
Navarro-Galera, Andres; Lara-Rubio, Juan; Novoa-Hernandez, Pavel; Corona, Carlos A. Cruz	Using Decision Trees to Predict Insolvency in Spanish SMEs: Is Early Warning Possible?	Insolvency prediction; SME; Decision trees; Binary classification	SPRINGER	0927-7099	2025	10.1007/s10614-024-10586-5
Muhammad, Syed Sardar; Dey, Bidit Lal; Kamal, Muhammad Mustafa; Samuel, Lalnunpuia; Alzeiby, Ebtessam Abdullah	Digital transformation or digital divide? Smes' use of AI during global crisis☆	Digital transformation; Digital divide; SMEs; Artificial intelligence; COVID-19	ELSEVIER SCIENCE INC	0040-1625	2025	10.1016/j.techfore.2025.124184
Morrow, Destinee; Zamora-Resendiz, Rafael; Beckham, Jean C.; Kimbrel, Nathan A.; Oslin, David W.; Tamang, Suzanne; Crivelli, Silvia	A case for developing domain-specific vocabularies for extracting suicide factors from healthcare notes	Natural language processing; Machine learning; Electronic health records; Social determinants of health; Suicide prevention; Predictive modeling	PERGAMON-ELSEVIER SCIENCE LTD	0022-3956	2022	10.1016/j.jpsychires.2022.04.009
Maroufkhani, Parisa; Iranmanesh, Mohammad; Ghobakhloo, Morteza	Determinants of big data analytics adoption in small and medium-sized enterprises (SMEs)	TOE model; Big data analytics; Technology adoption; Environmental factors; Top management support; Small and medium enterprises	EMERALD GROUP PUBLISHING LTD	0263-5577	2023	10.1108/IMDS-11-2021-0695
Correa, Alexander	Predicting Business Bankruptcy in Colombian SMEs: A Machine Learning Approach	Business bankruptcy; small and medium-sized enterprises; machine learning	WORLD SCIENTIFIC PUBL CO PTE LTD	1793-9933	2023	10.1142/S1793993323500278
Khrais, Laith T.; Alghamdi, Abdullah M.	Factors That Affect Digital Innovation Sustainability among SMEs in the Middle East Region	digital innovation sustainability; digital platforms; IoT; digital orientation; digital economy; SMEs	MDPI		2022	10.3390/su14148585
Sundstrom, Agneta; Hyder, Akmal S.; Chowdhury, Ehsanul Huda	Market-oriented business model for SMEs' disruptive innovations internationalization	Market orientation; SMEs; Business model; Disruptive innovation; Internationalization; Buyer chains	EMERALD GROUP PUBLISHING LTD	0263-4503	2021	10.1108/MIP-10-2019-0527
de Arroyabe, Juan Carlos Fernandez; Arroyabe, Marta F.; Fernandez, Ignacio; Arranz, Carlos F. A.	Cybersecurity Resilience in SMEs. A Machine Learning Approach	Cybersecurity; resilience; SMEs; cybersecurity incidents; cybersecurity impacts; cybersecurity systems	TAYLOR & FRANCIS INC	0887-4417	2024	10.1080/08874417.2023.2248925

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Chatterjee, Sheshadri; Chaudhuri, Ranjan; Vrontis, Demetris; Basile, Gianpaolo	Digital transformation and entrepreneurship process in SMEs of India: a moderating role of adoption of AI-CRM capability and strategic planning	Digital transformation; AI; Strategic planning; CRM; Entrepreneurship; SME; Digital technology	EMERALD GROUP PUBLISHING LTD	1755-425X	2022	10.1108/JSMA-02-2021-0049
Wijaya, Putu Yudy; Suasih, Ni Nyoman Reni	The effect of knowledge management on competitive advantage and business performance: A study of silver craft SMEs	business performance; competitive advantage; knowledge management; SEM analysis; SMEs	CRACOW UNIV ECONOMICS	2353-883X	2020	10.15678/EBER.2020.080406
Kumar, Ravinder; Singh, Rajesh Kr.; Dwivedi, Yogesh Kr.	Application of industry 4.0 technologies in SMEs for ethical and sustainable operations: Analysis of challenges	Industry 4.0; SMEs; Challenges; DEMATEL; Ethical and sustainable business; Circular economy	ELSEVIER SCI LTD	0959-6526	2020	10.1016/j.jclepro.2020.124063
Faqihi, Ali; Miah, Shah Jahan	Artificial Intelligence-Driven Talent Management System: Exploring the Risks and Options for Constructing a Theoretical Foundation	risk management; talent management; AI; design artefact; SMEs; design research	MDPI	1911-8066	2023	10.3390/jrfm16010031
Daoud, Yomna; Kammoun, Aida	Analyzing and Forecasting E-Commerce Adoption Drivers Among SMEs: A Machine Learning Approach	E-commerce adoption; machine learning; small- and medium-sized enterprises; technology; Tunisia	WILEY		2024	10.1155/2024/7747136
Gavrila Gavrila, Sorin; de Lucas Ancillo, Antonio	Spanish SMEs' digitalization enablers: E-Receipt applications to the offline retail market	Spanish SMEs' innovation; Spanish SMEs' digitalization; E-receipts Customer analytics; Cloud technologies; Offline retail	ELSEVIER SCIENCE INC	0040-1625	2021	10.1016/j.techfore.2020.120381
Vitale, Gianluca; Cupertino, Sebastiano; Riccaboni, Angelo	Big data and management control systems change: the case of an agricultural SME	Big data; Formal/informal management control change; Ostensive versus performative routines; DSS; SME	SPRINGER	2191-4761	2020	10.1007/s00187-020-00298-w
Kumar, Jitender; Rani, Garima; Rani, Manju; Rani, Vinki	Big Data Analytics Adoption and Its Impact on SME Market and Financial Performance: An Analysis Using the Technology-Organisation-Environment (TOE) Framework	big data analytics; financial performance; market performance; SMEs; TOE framework	WILEY	0963-1690	2025	10.1111/caim.12666
Shan, Biaoan; Liu, Xiaoju; Gao, Yang; Lu, Xifeng	Big Data in Entrepreneurship	Bibliometric Analysis; Big Data; Digital Technology; Entrepreneurship	IGI GLOBAL	1546-2234	2022	10.4018/JOEUC.310551
Chiu, Chui-Yu; Chen, Chun-Liang; Chen, Shi	Broadband Mobile Applications' Adoption by SMEs in Taiwan-A Multi-Perspective Study of Determinants	broadband mobile application; SME; determinants of adoption; TOE; internal users' perspective	MDPI		2022	10.3390/app12147002
Muhammad, Sarfaraz Ghulam	Cloud computing for SMEs, servitisation through contracts	cloud computing; servitisation; SMEs; cloud service provision; IT governance; cloud governance	INDERSCIENCE ENTERPRISES LTD	1740-0589	2020	
Polisetty, Aruna; Chakraborty, Debarun; Sowmya, G.; Kar, Arpan Kumar; Pahari, Subhajit	What Determines AI Adoption in Companies? Mixed-Method Evidence	Small and medium enterprises; AI readiness; AI ethics; mixed method	TAYLOR & FRANCIS INC	0887-4417	2024	10.1080/08874417.2023.2219668

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Dong, P. T.; Hong Nham, N. T.; Hoa, V. D.	THE APPLICATION OF LOGISTIC MODEL IN IDENTIFYING FACTORS AFFECTING CAPITAL ACCESS OF SMALL AND MEDIUM ENTERPRISES IN VIETNAM	SMEs; access to capital; credit; institutions; Vietnam	PUSHPA PUBLISHING HOUSE	0972-3617	2020	10.17654/AS061010019
Ragazou, Konstantina; Passas, Ioannis; Sklavos, Georgios	Investigating the Strategic Role of Digital Transformation Path of SMEs in the Era of COVID-19: A Bibliometric Analysis Using R	digital transformation; COVID-19; SMEs; eco-effectiveness; technology-organization-environment framework; strategic path; emerging technologies	MDPI		2022	10.3390/su141811295
Xia, Yu; Xu, Ta; Wei, Ming-Xia; Wei, Zhen-Ke; Tang, Lian-Jie	Predicting Chain's Manufacturing SME Credit Risk in Supply Chain Finance Based on Machine Learning Methods	manufacturing; supply chain finance; risk assessment; random forest; PDP	MDPI		2023	10.3390/su15021087
Fan, Hua-Tzu; Xiao, Guoxian; Arinez, Jorge; Coulthard, Mike	A Case Study on First Time Quality Feature Investigation for an Automotive Paint Shop	Machine learning; artificial intelligence; feature investigation; manufacturing; automotive paint shop	ELSEVIER	2213-8463	2022	
Wong, Lai-Wan; Tan, Garry Wei-Han; Ooi, Keng-Boon; Lin, Binshan; Dwivedi, Yogesh K.	Artificial intelligence-driven risk management for enhancing supply chain agility: A deep-learning-based dual-stage PLS-SEM-ANN analysis	Supply chain agility; re-engineering capabilities; risk management; artificial intelligence; ANN; PLS-SEM	TAYLOR & FRANCIS LTD	0020-7543	2024	10.1080/00207543.2022.2063089
Muto, Valerio; Luongo, Simone; Percuoco, Martina; Tani, Mario	Artificial Intelligence and the Great Reset: Impacts and Perspectives for Italian SMEs Business Model Innovation	artificial intelligence; great reset; system theory; business model innovation; PLS-SEM; survey; technology adoption	MDPI		2024	10.3390/systems12090330
Zeng, Xueyun; Xu, Xuening; Wu, Yenchun Jim	Learning Social Media Content Optimization: How Can SMEs Draw the Users' Attention on Official WeChat Accounts?	content optimization strategy; psychological need; social media visibility; self-determination theory; SMEs	FRONTIERS MEDIA SA	1664-1078	2022	10.3389/fpsyg.2021.783151
Gruenbichler, Rudolf; Klucka, Jozef; Haviernikova, Katarina; Strelcova, Stanislava	Business Performance Management in Small and Medium-Sized Enterprises in the Slovak Republic: An Integrated Three-Phase-Framework for Implementation	business performance management; competitiveness; implementation; framework; indicators; digitalization; information system	UNIV TOMASE BATI & ZLINE, FAK MANAGEMENTU EKONOMIKY	1804-171X	2021	10.7441/joc.2021.01.03

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Troumpoukis, Antonis; Klampanos, Iraklis; Pantazi, Despina-Athanasia; Albughdadi, Mohanad; Baousis, Vasileios; Barrilero, Omar; Bojor, Alexandra; Branco, Pedro; Bruzzzone, Lorenzo; Chietera, Andreina; Fournand, Philippe; Hall, Richard; Lazzarini, Michele; Luna, Adrian; Nousias, Alexandros; Perentis, Christos; Petrakis, George; Punjani, Dharmen; Robl, David; Stamoulis, George; Tsalapati, Eleni; Urbanaviciute, Indre; Weikmann, Giulio; Ziouvelou, Xenia; Ziolkowski, Marcin; Koubarakis, Manolis; Karkaletsis, Vangelis	European AI and EO convergence via a novel community-driven framework for data-intensive innovation	Artificial Intelligence; Earth observation; DIAS; Applications; Case-study; Methodology; Platform	ELSEVIER	0167-739X	2024	10.1016/j.future.2024.06.013
Belas, Jaroslav; Gavurova, Beata; Cepel, Martin; Kubak, Matus	Evaluation of economic potential of business environment development by comparing sector differences: perspective of SMEs in the Czech Republic and Slovakia	business environment; business risks; business support; correspondence analysis; sector analysis	INST BADAN GOSPODARCZYCH	2083-1277	2020	10.24136/oc.2020.006
Hwang, Bang Ning; Jitanugoon, Siriprapha; Puntha, Pittinun	AI integration in service delivery: enhancing business and sustainability performance amid challenges	Artificial intelligence; Service delivery; Sustainability; Business performance	EMERALD GROUP PUBLISHING LTD	0887-6045	2025	10.1108/JSM-10-2024-0511
Aydogmus, Ufuk; Aydogmus, Hacer Y. U. M. U. R. T. A. C., I; Karaman, Davut; Yildiz, Ali; Can, Melih	APPLICATION OF INTERVAL TYPE 2 FUZZY AHP METHOD IN BANK SELECTION PROCESS OF AN SME	ME; Bank Selection; Multi-Criteria Decision Making; Fuzzy Logic; Type 2 Fuzzy AHP	MEHMET AKIF ERSOY UNIV	2149-1658	2023	10.30798/makuiibf.1097780
Rahmat, Dana Azizah; Rumanti, Augustina Asih; Pulungan, Muhammad Almaududi; Rizaldi, Artamevia Salsabila; Amelia, Mia	Evaluating the Role of Open Innovation and Circular Economy in Enhancing Organizational Performance: Insights from Batik Small and Medium Enterprises in Banyuwangi, Indonesia	open innovation; circular economy; organizational performance; batik SMEs	MDPI		2024	10.3390/su162411194
Putra, Panca O. Hadi; Santoso, Harry B.	Contextual factors and performance impact of e-business use in Indonesian small and medium enterprises (SMEs)	SMEs; e-business; Use; Impact; Framework; Information systems; Information science; Information systems management; Information technology; Information management; Business; Management	ELSEVIER SCI LTD		2020	10.1016/j.heliyon.2020.e03568

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Wahab, Mohamad Deeb Abdul; Radmehr, Mehrshad	The impact of AI assimilation on firm performance in small and medium-sized enterprises: A moderated multi-mediation model	Artificial intelligence; Firm performance; SMEs; Lebanon	CELL PRESS		2024	10.1016/j.heliyon.2024.e29580
Dey, Prasanta Kumar; Chowdhury, Soumyadeb; Abadie, Amelie; Vann Yaroson, Emilia; Sarkar, Sobhan	Artificial intelligence-driven supply chain resilience in Vietnamese manufacturing small- and medium-sized enterprises	Artificial intelligence; supply chain resilience; organisational factors; circular economy; agility; risk management	TAYLOR & FRANCIS LTD	0020-7543	2024	10.1080/00207543.2023.2179859
Sharabati, Abdel-Aziz Ahmad; Ali, Ahmad Ali Atieh; Allahham, Mahmoud Izzat; Abu Hussein, Alhareth; Alheet, Ahmad Fathi; Mohammad, Abdelaziz Saleh	The Impact of Digital Marketing on the Performance of SMEs: An Analytical Study in Light of Modern Digital Transformations	digital marketing; digital transformations; customer engagement; performance; SMEs	MDPI		2024	10.3390/su16198667
Tominc, Polona; Oreski, Dijana; Cancer, Vesna; Rozman, Maja	Statistically Significant Differences in AI Support Levels for Project Management between SMEs and Large Enterprises	enterprises; project management; leadership; artificial intelligence	MDPI		2024	10.3390/ai5010008
Bousdekis, Alexandros; Apostolou, Dimitris; Mentzas, Gregoris	A human cyber physical system framework for operator 4.0 - artificial intelligence symbiosis	Industry 4.0; Digital twin; Asset administration shell; Explainable AI; Human-machine symbiosis	ELSEVIER	2213-8463	2020	10.1016/j.mfglet.2020.06.001
Ilca, Lucian Florin; Lucian, Ogrutan Petre; Balan, Titus Constantin	Enhancing Cyber-Resilience for Small and Medium-Sized Organizations with Prescriptive Malware Analysis, Detection and Response	polymorphic malware; zero-day exploits; rootkits; botnets; ransomware; APTs; fileless malware; sandbox evasion; obfuscation; C & C; memory-based attacks; MaaS; exploit kits; AETs; advanced malware analysis; prescriptive; SMEs	MDPI		2023	10.3390/s23156757
Yao, Xin; Li, Xiyang; Mangla, Sachin Kumar; Song, Malin	Roles of AI: Financing selection for regretful SMEs in e-commerce supply chains	AI; Regret bias; Financing strategy; E-commerce supply chain	PERGAMON-ELSEVIER SCIENCE LTD	1366-5545	2024	10.1016/j.tre.2024.103649
Fu, Hsin-Pin; Chang, Tien-Hsiang; Lin, Sheng-Wei; Teng, Ying-Hua; Huang, Ying-Zi	Evaluation and adoption of artificial intelligence in the retail industry	Retail industry; Artificial intelligence (AI); Critical factors (CFs); Technology-organisation-environment (TOE) framework; Analytic network process (ANP); Vlse Kriterijumska Optimizacija Kompromisno Resenje (VIKOR) method	EMERALD GROUP PUBLISHING LTD	0959-0552	2023	10.1108/IJRD-12-2021-0610
Wyrzykowska, Barbara; Szczepaniuk, Hubert; Szczepaniuk, Edyta Karolina; Rytko, Anna; Kacprzak, Marzena	Intelligent Energy Management Systems in Industry 5.0: Cybersecurity Applications in Examples	intelligent energy management systems; Industry 5.0; cybersecurity; attack vectors; artificial intelligence algorithms	MDPI		2024	10.3390/en17235871

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McMinn, David; Grant, Tom; DeFord-Watts, Laura; Porkess, Veronica; Lens, Margarita; Rapier, Christopher; Joe, Wilson Q.; Becker, Timothy A.; Bender, Walter	Using artificial intelligence to expedite and enhance plain language summary abstract writing of scientific content	artificial intelligence (AI); health communication; health literacy; plain language summary (PLS)	OXFORD UNIV PRESS		2025	10.1093/jamiaopen/ooaf023
Cozzolino, Alessandra; Calabrese, Mario; Bosco, Gerardo; Signori, Paola; Massaroni, Enrico	Horizontal network collaboration by entrepreneurial ventures: a supply chain finance perspective	Small and medium enterprises; SME; Supply chain finance; SCF; Horizontal network collaboration; Entrepreneurial ventures; Action research	EMERALD GROUP PUBLISHING LTD	1462-6004	2023	10.1108/JSBED-08-2022-0341
Wang, Liukai; Jia, Fu; Chen, Lujie; Xu, Qifa	Forecasting SMEs' credit risk in supply chain finance with a sampling strategy based on machine learning techniques	Credit risk forecasting; Supply chain finance; Key variable selection; Imbalanced sampling strategy; Partial dependency analysis	SPRINGER	0254-5330	2023	10.1007/s10479-022-04518-5
Kumar, Prashant; Kushwaha, Amit Kumar; Kar, Arpan Kumar; Dwivedi, Yogesh K.; Rana, Nripendra P.	Managing buyer experience in a buyer-supplier relationship in MSMEs and SMEs	Buyer experience; Buyer-supplier relationship; Big data analytics; Small and medium enterprises; Social media; Machine learning; Text mining	SPRINGER	0254-5330	2022	10.1007/s10479-022-04954-3
Lee, Jay; Siahpour, Shahin; Jia, Xiaodong; Brown, Patrick	Introduction to resilient manufacturing systems	Resilient manufacturing systems; Industrial artificial intelligence; Cyber-physical systems; Industry 4.0	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.02.002
Al Derei, Saif Khalifa; Fam, Soo-Fen	The impact of business intelligence, knowledge sharing and SMEs innovation on innovative work behavior: A proposed framework for SMEs	Business intelligence; Knowledge sharing; SMEs innovation; Innovative work behavior	SOC ROMANA PENTRU ASIGURAREA CALITATII	1582-2559	2023	10.47750/QAS/24.195.12
Lo, Fang-Yi; Chien, Yu-Yun	DIGITAL INTERNATIONALIZATION OF SMALL AND MEDIUM SIZED ENTERPRISES: ONLINE COMMENTS AND RATINGS ON AMAZON PLATFORM	Digital Internationalization; SMEs; Amazon; Hedonic Product; Utilitarian Product; international markets	UNIV TOMASE BATI & ZLINE, FAK MANAGEMENTU EKONOMIKY	1804-171X	2024	10.7441/joc.2024.01.09
Damioli, Giacomo; Van Roy, Vincent; Vertesy, Daniel	The impact of artificial intelligence on labor productivity	Artificial intelligence; Patents; Labor productivity; GMM-SYS	SPRINGER HEIDELBERG	1309-4297	2021	10.1007/s40821-020-00172-8
Le, Thi Thu; Pham, Xuan Lam; Nguyen, Thanh Huong	Tailored Expert Finding Systems for Vietnamese SMEs: A Five-step Framework	Expert Finding System (EFS); Small and Medium-sized Enterprises (SMEs); experts; Vietnamese expert resources; business expertise identification	SCIENCE & INFORMATION SAI ORGANIZATION LTD	2158-107X	2023	
Yanuarni, Erma; Iqbal, Mohammad; Astuti, Endang Siti; Mawardi, Mukhammad Kholid; Alfisyahr, Rizal	Determinants of business recovery: The role of government support as moderator (a study on tourism SMEs affected by Lombok earthquake, Indonesia)	Knowledge management; disaster mitigation strategy; small business adaptability; business recovery; disaster management	IOS PRESS	0167-2533	2024	10.3233/HSM-220171

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Bergmann, Jan-Peter; Amin, Miriam; Campbell, Yuri; Trela, Karl	How to find similar companies using websites?	Natural language processing; Partner selection; Semantic web; Web mining; BERT	ELSEVIER	0172-2190	2023	10.1016/j.wpi.2023.102172
Hui, Liu; Luo, Zhongqing; Liu, Kunxin; Swathi, A.	Impact of pollution prevention practices and green environmental practices on sustainable performance: Empirical evidence from Chinese SMEs	Environmental practices; Green environment; Environmental pollution; Governance; China SMEs; Artificial intelligence	ACADEMIC PRESS INC ELSEVIER SCIENCE	0013-9351	2024	10.1016/j.envres.2024.118991
von Linde, H.; Riedel, O.	A methodology for evaluating feature selection and clustering methods with project-specific requirements	Machine learning; feature selection; hierarchical clustering; user requirements; AHP; TOPSIS	TAYLOR & FRANCIS LTD	0020-7543	2025	10.1080/00207543.2024.2384597
Zong, Zupan; Anwar, Muhammad Azfar; Khan, Sana; Asmi, Fahad; Hussain, Nazim	Big-data AI analytics in value-chain innovation and international marketing strategy: insights from SMEs in cultural and creative industries	Big-data-based AI analytics; Digital affordances; Digital marketing capabilities; Value-chain innovation; International market strategy; Cultural and creative industries	EMERALD GROUP PUBLISHING LTD	0265-1335	2025	10.1108/IMR-02-2024-0049
Lopez, Maria del Carmen Perez; Diaz, Ana Maria Plata; Salvador, Manuel Martin; Perez, German Lopez	A machine learning approach to classifying sustainability practices in hotel management	Sustainability; machine learning; hotels; SMEs; booking travel sustainable	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0966-9582	2024	10.1080/09669582.2024.2397645
Scime, Luke; Singh, Alka; Paquit, Vincent	A scalable digital platform for the use of digital twins in additive manufacturing	Additive manufacturing; Digital twin; Artificial intelligence; Instance-qualified; Cyberphysical infrastructure	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2021.05.007
Ghungrad, Suyog; Gould, Benjamin; Soltanalian, Mojtaba; Wolff, Sarah Jeannette; Haghighi, Azadeh	Model-based deep learning for additive manufacturing: New frontiers and applications	Additive manufacturing; Model-based deep learning; Artificial intelligence; Data scarcity; Process and material variability	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.07.008
Gourinchas, Pierre-Olivier; Kalemli-Ozcan, Sebnem; Penciakova, Veronika; Sander, Nick	Sme Failures Under Large Liquidity Shocks: an Application to the Covid-19 Crisis		OXFORD UNIV PRESS	1542-4766	2025	10.1093/jeea/jvae041
Malik, Garima; Sharma, Piyush; Kingshott, Russel; Leung, Tak Yan; Abdolrazagh, Dianoush	Technological sensing and response capabilities as drivers for radical innovation in the context of apocalyptic uncertainty		WILEY	0033-6807	2024	10.1111/radm.12658
Solaimani, Sam; Swaak, Lucas	Critical Success Factors in a multi-stage adoption of Artificial Intelligence: A Necessary Condition Analysis	Artificial Intelligence; Technology adoption; Critical Success Factors; Necessary Condition Analysis	ELSEVIER	0923-4748	2023	10.1016/j.jengtecman.2023.101760
Xu, Xueguo; Yuan, Hetong	The impact of AI capability on breakthrough technological innovation in China: a perspective of value co-creation within innovation ecosystems	Artificial intelligence; AI capability; breakthrough technological innovation; China; innovation ecosystem; value co-creation	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1360-2381	2025	10.1080/13602381.2025.2496511

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Wang, Shaofeng; Esperanca, Jose Paulo	Can digital transformation improve market and ESG performance? Evidence from Chinese SMEs	Digital transformation; ESG; Firm competitiveness; Firm market performance; PLS-SEM; fsQCA	ELSEVIER SCI LTD	0959-6526	2023	10.1016/j.jclepro.2023.137980
Buzohera, Mohamed Issa	The Dynamics of Tax Compliance: How Attitudes, Social Influence, and Peer Effects Shape SME's Compliance Behavior in Tanzania	entrepreneurial tax compliance; tax attitudes; tax compliance; social forces; SMEs	URAL FEDERAL UNIV	2412-8872	2025	10.15826/jtr.2025.11.1.198
Isensee, Carmen; Teuteberg, Frank; Gries, Kai Michael	Success factors of organizational resilience: a qualitative investigation of four types of sustainable digital entrepreneurs	Entrepreneur typology; Sustainable entrepreneurship; Digital entrepreneurship; SME resilience; Grounded theory	EMERALD GROUP PUBLISHING LTD	0025-1747	2023	10.1108/MD-03-2022-0326
Ozbugday, Fatih Cemil; Ozgur, Onder; Findik, Derya	Drivers of energy efficiency for manufacturing SMEs in Eurasian countries: a profiling analysis using machine learning techniques	Energy efficiency; Eurasian economies; Machine learning; Small and medium-sized enterprises; Manufacturing sector	SPRINGER	1570-646X	2022	10.1007/s12053-022-10060-x
Tanina, Anna; Orel, Alexander; Zaborovskaia, Olga; Tanin, Evgenii	Integral Indicator Assessment of Municipalities Sustainability in the Leningrad Region	Medium-sized enterprises (SME); Municipal territories; Region; Sustainability indicator; Sustainable development	UNIV INDONESIA, FAC ENGINEERING	2086-9614	2023	10.14716/ijtech.v14i8.6835
von Joerg, Garrel; Carlos, Jahn	Design Framework for the Implementation of AI-based (Service) Business Models for Small and Medium-sized Manufacturing Enterprises	Business model; Business model design; Artificial intelligence; Small and medium-sized manufacturing enterprises (manufacturing SME); Socio-technical design framework	SPRINGER	1868-7865	2023	10.1007/s13132-022-01003-z
Hamal, Serhan; Senvar, Ozlem	Comparing performances and effectiveness of machine learning classifiers in detecting financial accounting fraud for Turkish SMEs	Financial accounting fraud; SMEs; Machine learning classifiers; Sampling methods; SMOTE; Feature selection	SPRINGER NATURE	1875-6891	2021	10.2991/ijcis.d.210203.007
Jiang, Lianxin	RETRACTED: Design of enterprise employee pension platform based on complex embedded system (Retracted article. See vol. 106, 2024)	Enterprise Systems (ESs); Small and Medium-Sized Enterprises (SMEs); Pension management	ELSEVIER	0141-9331	2021	10.1016/j.micpro.2020.103783
Krchova, Hana; Hoesova, Katarina Svejnova	THE IMPACT OF MODERN COMMUNICATION MARKETING TOOLS TO INCREASE THE INNOVATIVENESS OF BUSINESS	marketing communication; internalization; SME; traditional marketing; modern marketing; online marketing	SUMY STATE UNIV, DEPT MARKETING & MANAGEMENT INNOVATIVE ACTIVITY	2218-4511	2021	10.21272/mmi.2021.3-10

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Rayat, Ruchi; Nagpal, Manuha; Chaudhary, Deepika; Panwar, Sudha	Compassionate entrepreneurship and cognitive workaholism: mediating role of artificial intelligence adoption	compassionate entrepreneurship; artificial intelligence; cognitive workaholism; PLS-SEM; MSME and small scale industries	INDERSCIENCE ENTERPRISES LTD	1476-1297	2025	10.1504/IJESB.2025.145254
Valsecchi, Raffaella; Anderson, Neil; Balta, Maria Elisavet; Harrison, John	Managing Health and Well-Being in SMEs through an Adviceline: A Typology of Managerial Behaviours	business case; health adviceline; health and well-being at work; occupational health; small and medium-sized enterprises; social model of health and well-being	SAGE PUBLICATIONS LTD	0950-0170	2023	10.1177/09500170211015113
Huyen, Tram-Nguyen Thi; Anh, Tuan-Le; Phan-Gia, Anh-Vu; Thanh, Tinh-Pham	Factors affecting the implementation of strategic management accounting system in small and medium enterprises in the manufacturing sector in Vietnam	strategic management accounting; institutional factors; contingency factors SMEs; Vietnam	SOC ROMANA PENTRU ASIGURAREA CALITATII	1582-2559	2024	10.47750/QAS/25.198.06
Semenenko, Oleh; Tolok, Polina; Potetiueva, Maryna; Petrenko, Stanislav; Yarmolchik, Mariia	Attracting finance and investment in small and medium-sized enterprises in the context of a green and defense economy and using alternative energy sources	renewable energy; sustainable development; economic model; balance sheet; accounting verification	POLSKA AKAD NAUK, POLISH ACAD SCIENCES, MINER & ENERGY ECON RES INST PAS	1429-6675	2024	10.33223/epj/178251
Vorosmarty, Gyongyi; Dobos, Imre	Green purchasing frameworks considering firm size: a multicollinearity analysis using variance inflation factor	Green purchasing; SME; supply chain; multivariate statistics; variance inflation factor (VIF)	TAYLOR & FRANCIS LTD	1625-8312	2020	10.1080/16258312.2020.1776090
De Arroyabe, Ignacio Fernandez; de Arroyabe, Juan Carlos Fernandez	The severity and effects of Cyber-breaches in SMEs: a machine learning approach	Cyber breaches; smes; severity; effects; artificial neural network	TAYLOR & FRANCIS LTD	1751-7575	2023	10.1080/17517575.2021.1942997
Kukanja, Marko	Examining the Impact of Entrepreneurial Orientation, Self-Efficacy, and Perceived Business Performance on Managers' Attitudes Towards AI and Its Adoption in Hospitality SMEs	artificial intelligence; entrepreneurial orientation; self-efficacy; hospitality; SMEs; perceived business performance	MDPI		2024	10.3390/systems12120526
Jun, Seung-Pyo; Yoo, Hyoung Sun; Hwang, Jeena	A hybrid recommendation model for successful R&D collaboration: Mixing machine learning and discriminant analysis	Recommendation model; Discriminant analysis; Decision tree analysis; Machine learning; Small and medium enterprises; R&D collaboration	ELSEVIER SCIENCE INC	0040-1625	2021	10.1016/j.techfore.2021.120871
Fonseka, Kapila; Jaharadak, Adam Amril; Raman, Murali	Impact of E-commerce adoption on business performance of SMEs in Sri Lanka; moderating role of artificial intelligence	E-commerce; E-business; Performance; Business strategy; Artificial intelligence	EMERALD GROUP PUBLISHING LTD	0306-8293	2022	10.1108/IJSE-12-2021-0752

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Menzies, Jane; Zheng, Connie; McDonnell, Anthony	The application of HRM systems to enhance the innovation activities of foreign SMEs	HRM systems; Internationalization; SMEs; Innovation; China; Australia	ELSEVIER	0969-5931	2025	10.1016/j.ibusrev.2023.102249
Le, Thanh Tiep; Behl, Abhishek	Linking Artificial Intelligence and Supply Chain Resilience: Roles of Dynamic Capabilities Mediator and Open Innovation Moderator	Artificial intelligence (AI); dynamic capabilities (DCs); open innovation (OI); supply chain resilience (SCRe)	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2024	10.1109/TEM.2023.3348274
Fraille-Rojas, Belen; De-Pablos-Heredero, Carmen; Mendez-Suarez, Mariano	Female perspectives on algorithmic bias: implications for AI researchers and practitioners	Intersectional feminism; AI gender bias; AI ethics; Societal biases; Social opinion mining	EMERALD GROUP PUBLISHING LTD	0025-1747	2025	10.1108/MD-04-2024-0884
Zhang, Wen; Yan, Shaoshan; Li, Jian; Peng, Rui; Tian, Xin	Deep reinforcement learning imbalanced credit risk of SMEs in supply chain finance	Imbalanced credit risk prediction; Financial loss; DRL-risk; Deep reinforcement learning; Instance-based reward	SPRINGER	0254-5330	2024	10.1007/s10479-024-05921-w
Rosulj, Dragana; Petrovic, Dejan C.; Arsic, Sinisa M.	Knowledge Management in Serbian SMEs: Key Factors of Influence on Internal and External Business Performances	knowledge management; factors; SMEs; business; organization; performance	MDPI		2024	10.3390/su16020797
Croquet, Melanie; Cultrera, Loredana; Laroutis, Dimitri; Pozniak, Laetitia; Vermeylen, Guillaume	Exploring the Role of Global Value Chain Position in Economic Models for Bankruptcy Forecasting	financial econometrics; artificial intelligence; forecasting; GVC	MDPI		2024	10.3390/econometrics12040031
Rahman, Muhammad Sabbir; AbdelFattah, Fadi AbdelMuniem; Bag, Surajit; Gani, Mohammad Osman	Survival strategies of SMEs amidst the COVID-19 pandemic: application of SEM and fsQCA	SMEs; SEM; fsQCA; Pandemic; COVID-19; Survival strategy	EMERALD GROUP PUBLISHING LTD	0885-8624	2022	10.1108/JBIM-12-2020-0564
Xu, Gan; Qiu, Yue; Qi, Jingyu	Artificial intelligence and labor demand: An empirical analysis of Chinese small and micro enterprises	AI inputs; SMEs; Labor demand; Substitution effect; Creation effect	CELL PRESS		2024	10.1016/j.heliyon.2024.e33893
Lu, Huie; Shaharudin, Muhammad Shabir	Role of digital transformation for sustainable competitive advantage of SMEs: a systematic literature review	Small and medium enterprises (SMEs); Sustainable competitive advantage; Digital transformation; Digital strategy; Systematic literature review	TAYLOR & FRANCIS LTD	2331-1975	2024	10.1080/23311975.2024.2419489
Yamin, Mohammad Ali; Almuteri, Sultan Dakhilallah; Bogari, Khaled Jamil; Ashi, Abdulrahim Khaled	The Influence of Strategic Human Resource Management and Artificial Intelligence in Determining Supply Chain Agility and Supply Chain Resilience	strategic HR management; artificial intelligence; human capital development; competitive intensity; organizational flexibility; supply chain agility; supply chain resilience	MDPI		2024	10.3390/su16072688

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Shah, Shahban Ali; Url, Philipp; Vorraber, Wolfgang; Janics, Thomas; Katschnig, Matthias	Transformation towards Sustainable Business Models in Production: A Case Study of a 3D Printer Manufacturer	3D printing; business model; production; SME; sustainability	UNIV NORTH	1846-6168	2020	10.31803/tg-20200525204041
Petzolt, Sophie; Hoelzle, Katharina; Kullik, Oliver; Gergeleit, Wiebke; Radunski, Anne	ORGANISATIONAL DIGITAL TRANSFORMATION OF SMEs-DEVELOPMENT AND APPLICATION OF A DIGITAL TRANSFORMATION MATURITY MODEL FOR BUSINESS MODEL TRANSFORMATION	Organisational Digital Transformation; German Mittelstand; SMEs; Maturity Model; Business Model Transformation; Organizational Change	WORLD SCIENTIFIC PUBL CO PTE LTD	1363-9196	2022	10.1142/S1363919622400175
Parrilli, Mario Davide; Radicic, Dragana	STI and DUI innovation modes in micro-, small-, medium- and large-sized firms: distinctive patterns across Europe and the US	Innovation; STI and DUI innovation modes; SMEs; Europe; U; S	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0965-4313	2021	10.1080/09654313.2020.1754343
Gaviria-Marin, Magaly; Cruz-Cazares, Claudio	Ranking web as indicator of knowledge diffusion: an application for SMEs	Knowledge management; Internet; SMEs; GIKA-LATAM-2019; Web 2; 0 applications; Web ranking	EMERALD GROUP PUBLISHING LTD	1012-8255	2020	10.1108/ARLA-02-2019-0056
Bautista-Rodriguez, Sandra Cecilia; Guarin, Guillermo Pena; Perez, Amable Jose	METHODOLOGICAL APPROACH TO THE IMPLEMENTATION OF INTEGRATED MANAGEMENT SYSTEMS FOR SMALL AND MEDIUM-SIZED ENTERPRISES	management system; strategic approach; integrated management system; SMEs	Fac Engineering, Univ Kragujevac	1800-6450	2024	10.24874/IJQR18.02-15
Thapliyal, Shivraman; Mishra, Akshansh	Machine learning classification-based approach for mechanical properties of friction stir welding of copper	Machine learning; Friction stir welding; Neural network; Pearson coefficient	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.05.010
Arshi, Tahseen Anwer; Rao, Venkoba; Begum, Vazeerjan; Capar, Nejat	Early internationalisation of entrepreneurial firms: the role of artificial intelligence enhanced business models	internationalisation; entrepreneurial firms; emerging economies; business model; artificial intelligence; entrepreneurial capability; financial performance	INDERSCIENCE ENTERPRISES LTD	1549-9324	2022	10.1504/IJBED.2022.130387
Liu, Wei; Suzuki, Yoshihisa; Du, Shuyi	Forecasting the Stock Price of Listed Innovative SMEs Using Machine Learning Methods Based on Bayesian optimization: Evidence from China	Innovative SMEs; Stock price; Bayesian optimization; Machine learning; K-fold method	SPRINGER	0927-7099	2024	10.1007/s10614-023-10393-4
Bahta, Dawit; Yun, Jiang; Islam, Md Rashidul; Bikanyi, Kuyon Joseph	How does CSR enhance the financial performance of SMEs? The mediating role of firm reputation	Corporate social responsibility; developing country; financial performance; firm reputation; small and medium enterprises (SMEs)	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1331-677X	2021	10.1080/1331677X.2020.1828130

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Afum, Ebenezer; Gao, Yuan; Agyabeng-Mensah, Yaw; Sun, Zhuo	Nexus between lean operations, eco-product innovativeness, social, green and business performances: an empirical evidence from Ghanaian manufacturing SMEs	Lean operations; Eco-product innovativeness; Social performance; Green performance; Business performance	EMERALD GROUP PUBLISHING LTD	1741-038X	2021	10.1108/JMTM-09-2020-0352
Wang, Jianfei; Jiang, Cuiqing; Zhou, Lina; Wang, Zhao	Assessing financial distress of SMEs through event propagation: An adaptive interpretable graph contrastive learning model	Financial distress assessment; Propagation influence of events; Graph neural network; SMEs	ELSEVIER	0167-9236	2024	10.1016/j.dss.2024.114195
Hruby, Vojtech	Exploring AI Adoption Dynamics and Entrepreneurial Orientation in Czech Chemical SMEs: A Pilot Study Perspective	Artificial Intelligence Adoption; Entrepreneurial Orientation; Czech Chemical SMEs; Pilot Study Methodology; Measurement Instrument Development	Univ Pardubice, Fac Economics Adm	1211-555X	2024	10.46585/sp32011718
Alvarado, Marco; Mora-Esquivel, Ronald	FINANCIAL BOOTSTRAPPING AMONG COSTA RICAN SMALL BUSINESSES: AN EXPLORATORY STUDY	Financial bootstrapping; small business finance; Costa Rica	INST TECNOLÓGICO COSTA RICA	1659-2395	2020	
Pizzi, Simone; Corbo, Leonardo; Caputo, Andrea	Fintech and SMEs sustainable business models: Reflections and considerations for a circular economy	Sustainable business model; Business model canvas; Circular economy; Fintech; ReSOLVE	ELSEVIER SCI LTD	0959-6526	2021	10.1016/j.jclepro.2020.125217
Ibrahim Nnindini, Sayibu; Zakari, Bukari; Akolaa, Andrews Adugodaa; Kantanka, Akwasi Sarfo	Trading salespersons for social media tools; a critical examination of social media tools deployment in the sales process of SMEs in Ghana	Social media; competitive intelligence; customer relationship quality; SMEs; cross/up selling; Business, Management and Accounting; Internet & Multimedia - Computing & IT; Industry & Industrial Studies	TAYLOR & FRANCIS LTD	2331-1975	2025	10.1080/23311975.2024.2438944
Vuta, Daniela Roxana; Nichifor, Eliza; Tiorean, Ovidiu Mircea; Zamfirache, Alexandra; Chitu, Ioana Bianca; Foris, Tiberiu; Bratucu, Gabriel	Extending the Frontiers of Electronic Commerce Knowledge through Cybersecurity	electronic commerce; cybersecurity; digital resilience	MDPI	2079-9292	2022	10.3390/electronic11142223
Kour, Verasis; Lehana, Parveen Kumar	GMM Based Fault Signature Estimation of Electromechanical Machines for Small and Medium-Sized Enterprises in IoT Environment	Gaussian mixture model (GMM); Industrial Internet of Things (IIoT); low cost IoT devices; machine health monitoring; Mahalanobis distance; small and medium-sized enterprises (SMEs)	PLEIADES PUBLISHING INC	0146-4116	2024	10.3103/S014641162470113X
Ahmad, Md Faizal; Fauzi, Muhammad Ashraf; Mustapha, Mohamad Reeduan; Tamyaz, Puteri Fadzlina Muhamad; Sadun, Amirul Syafiq; So, Idris Gautama; Gui, Anderes	Industry 4.0 in small and medium enterprises: a state-of-the-art science mapping review	IR 4.0; Small and medium enterprise; Multinational companies; Digital transformation; Web of Science; Bibliometric analysis	EMERALD GROUP PUBLISHING LTD	0143-991X	2025	10.1108/IR-03-2024-0115

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Aftab, Junaid; Stan, Maria Rucsandra; Srivastava, Mohit; Wei, Feng; Abid, Nabila	The Impact of Digital Leadership on Performance: Examining the Roles of Big Data Analytical Capabilities, Green Innovation, and AI Change Readiness in Italian SMEs	artificial intelligence; big data; digital leadership; green innovation; sustainable performance	WILEY	0964-4733	2025	10.1002/bse.4322
Abid, Kousay; Alsarhan, Fadi	Decoding informal networks in small and medium-sized enterprises: the dynamics of wasta	Wasta; Informal networks; Small and medium-sized enterprises (SMEs); Institutional theory; Tunisian context; Digital-wasta	EMERALD GROUP PUBLISHING LTD	0142-5455	2025	10.1108/ER-09-2024-0552
Zhai, Silong; Tan, Yahong; Zhu, Cheng; Zhang, Chengyun; Gao, Yan; Mao, Qingyi; Zhang, Youming; Duan, Hongliang; Yin, Yizhen	PepExplainer: An explainable deep learning model for selection-based macrocyclic peptide bioactivity prediction and optimization	Macrocyclic peptide; Machine learning (ML); Graph neural network (GNN); Bioactivity prediction; Structure-activity relationship (SAR); Optimization	ELSEVIER FRANCE-EDITIONS SCIENTIFIQUES MEDICALES ELSEVIER	0223-5234	2024	10.1016/j.ejmech.2024.116628
Hossain, Md Khalid; Srivastava, Aashish; Oliver, Gillian Christina; Islam, Md Ekramul; Jahan, Nayma Akther; Karim, Ridoan; Kanij, Tanjila; Mahdi, Tanjheel Hasan	Adoption of artificial intelligence and big data analytics: an organizational readiness perspective of the textile and garment industry in Bangladesh	Artificial intelligence; Big data analytics; Organizational readiness; Textile and garment industry; Bangladesh	EMERALD GROUP PUBLISHING LTD	1463-7154	2024	10.1108/BPMJ-11-2023-0914
Putnik, Goran D.; Manupati, Vijaya Kumar; Pabba, Sai Krishna; Varela, Leonilde; Ferreira, Francisco	Semi-Double-loop machine learning based CPS approach for predictive maintenance in manufacturing system based on machine status indications	Manufacturing system; Maintenance; Predictive maintenance	ELSEVIER	0007-8506	2021	10.1016/j.cirp.2021.04.046
Meiners, Moritz; Kuhn, Marlene; Franke, Joerg	Manufacturing process curve monitoring with deep learning	Process curve monitoring; Machine learning; Mechanical joining; Assembly; One-dimensional convolutional neural network	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.09.006
Sharma, Ankita; Sharma, Swati	Adoption of digital marketing in tourism SMEs: a review and research agenda	Technology adoption; Digital marketing; SMEs; Literature review; Tourism; DOI; Institutional perspective theory; Marketing management	EMERALD GROUP PUBLISHING LTD	2040-8269	2024	10.1108/MRR-08-2021-0597
Justino, Mateus Vicente; Tengeh, Robertson Khan; Twum-Darko, Michael	A Revised Technology-Organisation-Environment Framework for Brick-and-Mortar Retailers Adopting M-Commerce	brick-and-mortar retailer; mobile commerce (m-commerce); mobile technology; retailer; retailing; Small and Medium Enterprises (SMEs); Technology-Organisation-Environment (TOE); Angola; Luanda	MDPI	1911-8066	2022	10.3390/jrfm15070289
Chaudhuri, Ranjan; Chatterjee, Sheshadri; Vrontis, Demetris; Chaudhuri, Sumana	Innovation in SMEs, AI Dynamism, and Sustainability: The Current Situation and Way Forward	AI deployment; sustainability; SMEs; innovation; production and manufacturing firms; AI dynamism	MDPI		2022	10.3390/su141912760

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Lamola, Kingston X. T.	Employees' aptitudes and trepidations for the adoption of enterprise application architecture for supply chain management in small and medium enterprises: A case of Capricorn District Municipality	coding and programming; employees' aptitudes and trepidations; enterprise application architecture; information technology; motivation; perceptions; small and medium enterprises; supply chain management; technologically accepted models	AOSIS	2310-8789	2022	10.4102/jtscm.v16i0.708
Despoudi, Stella; Sivarajah, Uthayasankar; Spanaki, Konstantina; Charles, Vincent; Durai, Vel Kandhan	Industry 4.0 and circular economy for emerging markets: evidence from small and medium-sized enterprises (SMEs) in the Indian food sector	Circular economy; Industry 4.0; SMEs; Emerging markets; Food industry; Thematic analysis; Sentiment analysis; Cluster analysis	SPRINGER	0254-5330	2023	10.1007/s10479-023-05404-4
Fanani, Zaenal; Rahayu, Angesthy Puji; Erlando, Angga	Determining factors to implementing IFRS for SMES: a study in International Accounting Standards Board countries	IFRS for SMEs; neo-institutional theory; institutional isomorphism; mimetic isomorphism and coercive pressure; Business, Management and Accounting; Accounting; International Business; Accounting Education	TAYLOR & FRANCIS LTD	2331-1975	2024	10.1080/23311975.2024.2420767
Saleem, Irfan; Hoque, Shah Md. Safiul; Tashfeen, Rubeena; Weller, Manuela	The Interplay of AI Adoption, IoT Edge, and Adaptive Resilience to Explain Digital Innovation: Evidence from German Family-Owned SMEs	Edge Internet of Things; diffusion of innovations; effectuation theory; family-owned SMEs; Germany	MDPI	0718-1876	2023	10.3390/jtaer18030071
Konur, Savas; Lan, Yang; Thakker, Dhavalkumar; Morkyani, Geev; Polovina, Nereida; Sharp, James	Towards design and implementation of Industry 4.0 for food manufacturing	Industry 4; 0; Smart manufacturing; Food manufacturing; Internet of things; Artificial intelligence; Machine learning; Big data	SPRINGER LONDON LTD	0941-0643	2021	10.1007/s00521-021-05726-z
Fauzi, Muhammad Ashraf; Saad, Zuria Akmal; Fauzi, Muhammad Zorif; Ahmad, Md Faizal	Investigating the emerging and future trends of knowledge management in small and medium enterprises: a science mapping approach	Small and medium enterprises (SMEs); Knowledge management; Knowledge sharing; Digital transformation; Bibliometric analysis	EMERALD GROUP PUBLISHING LTD	0969-6474	2024	10.1108/TLO-06-2023-0091
Zighan, Saad M.; Dwaikat, Nidal Y.	Exploring organisational agility in SMEs	SMEs; agility; innovation; flexibility; responsive; adaptability; resilience	INDERSCIENCE ENTERPRISES LTD	1476-1297	2023	10.1504/IJESB.2023.132854
Hudakova, Maria; Kardos, Peter; Dvorsky, Jan; Afful, Charles Randy; Kloudova, Jitka	Management of Operational Risk in the Context of Financial Performance of SMEs	financial performance; management; operational risk; SMEs; Visegrad group countries	MDPI		2023	10.3390/systems11080408
Liu, Cheng; Shi, Yi; Xie, Wenjing; Bao, Xinzhong	A novel approach to screening patents for securitization: a machine learning-based predictive analysis of high-quality basic asset	Patent securitization; Machine learning; High-value patents; Enterprise credit; Underlying assets	EMERALD GROUP PUBLISHING LTD	0368-492X	2024	10.1108/K-06-2023-1107

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Bui, Tuyen Quang; Do, Anh Vu Phuong	Does technological inclusion reduce financial constraints on small and medium sized enterprises? The case of Vietnam	Technological inclusion; SMEs; Financial constraints; Labour productivity; E-business	ACADEMIC PRESS INC ELSEVIER SCIENCE	1544-6123	2022	10.1016/j.frl.2021.102534
Scarton, Giorgio; Formentini, Marco; Romano, Pietro	Automating quality control through an expert system	Automation; Artificial intelligence; Quality control; Expert system; Digital supply chain; Industry 4.0; O300	SPRINGER HEIDELBERG	1019-6781	2025	10.1007/s12525-025-00766-y
Sun, Mingchen; Calabrese, Raffaella; Girardone, Claudia	What affects bank debt rejections? Bank lending conditions for UK SMEs	Small and medium-sized enterprises; access to finance; overdrafts; term loans	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1351-847X	2021	10.1080/1351847X.2020.1799834
Korcsmaros, Eniko; Csinger, Bence	Sustainable Competitiveness in the Case of SMEs- Opportunities Provided by Social Media in an International Comparison	social media; SME sector; corporate challenges; international research; Hungary; Slovakia	MDPI		2022	10.3390/su141912505
Tsinganos, Nikolaos; Fouliras, Panagiotis; Mavridis, Ioannis	Applying BERT for Early-Stage Recognition of Persistence in Chat-Based Social Engineering Attacks	cybersecurity; sensitive data; chat-based social engineering attack; persistence; deep learning; natural language processing; transfer learning; BERT	MDPI		2022	10.3390/app122312353
Belas, Jaroslav; Smrcka, Lubos; Palcak, Lubomir; Khan, Khurram Ajaz	THE INFLUENCE OF CSR ON SIGNIFICANT FACTORS OF SMES HUMAN RESOURCE MANAGEMENT IN V4 COUNTRIES	small and medium enterprises; CSR; human resources; personnel management; management style; V4 countries	VILNIUS UNIV	1648-4460	2023	
Le, Thanh Tiep; Huan, Ngo Quang; Hong, Tran Thi Thuy; Tran, Dang Khoa	The contribution of corporate social responsibility on SMEs performance in emerging country	Corporate social responsibility (CSR); Customer retention; Business continuity; Small and medium enterprises (SMEs); SMEs performance; Firm performance	ELSEVIER SCI LTD	0959-6526	2021	10.1016/j.jclepro.2021.129103
Li, Jizhen; Liu, Zixu; Zhou, Jianghua	How to become the chosen one in the artificial intelligence market: the evidence from China	artificial intelligence market; small and medium-sized enterprises; SMEs; innovation performance; social investment; institutional intermediaries; public funding; Innofund; signalling effects; China	INDERSCIENCE ENTERPRISES LTD	0267-5730	2020	
Tanasic, Z.; Janjic, G.; Sokovic, M.; Kusar, J.	IMPLEMENTATION OF THE LEAN CONCEPT AND SIMULATIONS IN SMES - A CASE STUDY	Lean Concept; Lean Methods and Tools; SMEs; VSM; Simulation; Wastes of Assembly Line	DAAAM INTERNATIONAL VIENNA	1726-4529	2022	10.2507/IJISIMM21-1-589
Elwakeel, Abdelrahman; Ertekin, Ercan; Elshiekh, Mariam; Iftikhar, Muhammad; Yuan, Weijia; Zhang, Min	Protection System Architecture for All-Electric Aircraft	Index Terms-Cryogenic; Discrete wavelet transform; Hybrid dc breaker; IGBT; Machine learning; protection; SMES; SFCL; SVM	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	1051-8223	2023	10.1109/TASC.2023.3248529

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Bagodi, Virupaxi; Thimmappa Venkatesh, Sreenath; Sinha, Deepankar	A study of performance measures and quality management system in small and medium enterprises in India	Small and medium enterprises (SMEs); Quality management system (QMS); Performance measures; Quality implementation index; India	EMERALD GROUP PUBLISHING LTD	1463-5771	2021	10.1108/BIJ-08-2020-0444
Rikhardsson, Pall; Thorisson, Kristinn R.; Bergthorsson, Gudmundur; Batt, Catherine	Artificial intelligence and auditing in small- and medium-sized firms: Expectations and applications		AMER ASSOC ARTIFICIAL INTELL	0738-4602	2022	10.1002/aaai.12066
Toker, Kerem; Gorener, Ali	Evaluation of circular economy business models for SMEs using spherical fuzzy TOPSIS: an application from a developing countries' perspective	Circular economy business models; Small and medium enterprises; Developing countries; Spherical fuzzy TOPSIS	SPRINGER	1387-585X	2023	10.1007/s10668-022-02119-7
Beynon, Malcolm J.; Munday, Max; Roche, Neil	ICT resources and use: examining differences in pathways to improved small firm performance	Policy; Business development; Regions; Clusters; Information communication technology	EMERALD GROUP PUBLISHING LTD	1355-2554	2021	10.1108/IJEBR-12-2020-0847
Nagy, Marek; Lazaroiu, George; Valaskova, Katarina	Machine Intelligence and Autonomous Robotic Technologies in the Corporate Context of SMEs: Deep Learning and Virtual Simulation Algorithms, Cyber-Physical Production Networks, and Industry 4.0-Based Manufacturing Systems	industry 4; 0; SMEs; digitization; financial barriers; financial resources	MDPI		2023	10.3390/app13031681
Kumar, Mukesh; Raut, Rakesh D.; Mangla, Sachin Kumar; Ferraris, Alberto; Choubey, Vikas Kumar	The adoption of artificial intelligence powered workforce management for effective revenue growth of micro, small, and medium scale enterprises (MSMEs)	Artificial intelligence; business intelligence; risk intelligence; intelligent information sharing; micro small and medium scale enterprises (MSMEs)	TAYLOR & FRANCIS LTD	0953-7287	2024	10.1080/09537287.2022.2131620
Nguyen, My Thi Tra; Hoang, Hung Trong; Tran, Tri Duc; Tran, Anh Thi Nhat; Hoang, Hien La Phuong	How does strategic orientation influence the business performance of small and medium-sized enterprises during the COVID-19 pandemic?	Strategic orientation; business performance; small and medium-sized enterprises; crisis	CRACOW UNIV ECONOMICS	2353-883X	2025	10.15678/EBER.2025.130102
Pandya, Darshan; Kumar, Gopal	Applying Industry 4.0 technologies for the sustainability of small service enterprises	Industry 4; 0; Sustainability; Service MSMEs	SPRINGER HEIDELBERG	1862-8516	2023	10.1007/s11628-022-00507-7
Zhao, Zichao; Li, Dexuan; Dai, Wensheng	Machine-learning-enabled intelligence computing for crisis management in small and medium-sized enterprises (SMEs)	Machine learning; Intelligent computing; Small and medium enterprises; Data-driven; Neural networks; Financial crisis early warning	ELSEVIER SCIENCE INC	0040-1625	2023	10.1016/j.techfore.2023.122492
Balu, Aditya; Sarkar, Soumik; Ganapathysubramanian, Baskar; Krishnamurthy, Adarsh	Physics-aware machine learning surrogates for real-time manufacturing digital twin	Real-time digital twin; Physics-aware machine learning; Additive manufacturing; Real-time control	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.08.013

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Barontini, Roberto; Taglialatela, Jonathan	Patents and small business risk: longitudinal evidence from the global financial crisis	Global financial crisis; Patents; SMEs credit ratings; SMEs risk	EMERALD GROUP PUBLISHING LTD	1462-6004	2022	10.1108/JSBED-05-2021-0203
Serbaya, Suhail H.	RETRACTED: Analyzing the Role of Emotional Intelligence on the Performance of Small and Medium Enterprises (SMEs) Using AI-Based Convolutional Neural Networks (CNNs) (Retracted Article)		WILEY-HINDAWI	1939-0114	2022	10.1155/2022/7951676
Gilani, Sayed Abdul Majid; Copiaco, Abigail; Gernal, Liza; Yasin, Naveed; Nair, Gayatri; Anwar, Imran	Savior or Distraction for Survival: Examining the Applicability of Machine Learning for Rural Family Farms in the United Arab Emirates	machine learning; artificial intelligence; innovation; family businesses; farms; UAE; rural	MDPI		2023	10.3390/su15043720
Rozman, Maja; Tominc, Polona	Navigating Gender Nuances: Assessing the Impact of AI on Employee Engagement in Slovenian Entrepreneurship	entrepreneurship; artificial intelligence; AI-supported entrepreneurial culture; AI-enhanced leadership; adopting AI to reduce employee workload; incorporating AI tools into work processes; employee engagement	MDPI		2024	10.3390/systems12050145
Natrajan, Nidhi Shridhar; Sanjeev, Rinku; Jain, Rishabh Upendra	Sustainability in small and medium enterprises: A circular economy approach using cloud computing	circular economy; cloud computing; institutional isomorphism; SMEs; sustainability; sustainable development goals; TOE framework	WILEY		2024	10.1002/bsd2.370
Kumar, Maneesh; Harris, Irina	Enterprise-wide diagnostic in the UK SME: focus beyond tools and techniques	SME; enterprise-wide; diagnostic; case study; framework	TAYLOR & FRANCIS LTD	0953-7287	2021	10.1080/09537287.2020.1758822
Gourene, Grakolet; Schwidrowski, Zuzana Brixiova; Balcar, Jiri; Filipova, Lenka Johnson	How credit constrained are family-owned SMEs in Arab countries?	Family-owned SMEs; Access to bank credit; Firm governance; Arab countries	ELSEVIER	1566-0141	2025	10.1016/j.ememar.2024.101249
Lazar, Ede; Madaras, Szilard	ERP adoption of SMEs in Romania: An IT innovation step or a business transactional necessity?	information management; information systems; ERP adoption; TOE model; Romania; M15; M19; O33	AKADEMIAI KIADO ZRT	0001-6373	2024	10.1556/032.2024.00026
Zhang, Yun; Xu, Xiaojie	Machine learning cutting force, surface roughness, and tool life in high speed turning processes	Cutting parameters; Turning; Machining; Gaussian process regression; Machine learning	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.07.005
Mehdiyev, Nijat; Mayer, Lea; Lahann, Johannes; Fettke, Peter	Deep learning-based clustering of processes and their visual exploration: An industry 4.0 use case for small, medium-sized enterprises	deep learning; industry 4; 0; one-of-a-kind production; process clustering; visual and statistical knowledge discovery	WILEY	0266-4720	2024	10.1111/exsy.13139

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Thanh Tiep Le; Van Kha Nguyen	The impact of corporate governance on firms' value in an emerging country: The mediating role of corporate social responsibility and organisational identification	Corporate governance; corporate social responsibility; firm's value; organisational identification; SMEs; emerging country	TAYLOR & FRANCIS AS	2331-1975	2022	10.1080/23311975.2021.2018907
Haneberg, Dag Hakon	How combinations of network participation, firm age and firm size explain SMEs' responses to COVID-19	COVID-19; fuzzy-set qualitative analysis (fsQCA); responses; social networks; crisis; small- and medium-sized enterprises (SMEs)	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1321-5906	2021	10.1080/13215906.2021.1989626
Rubio-Andres, Mercedes; del Mar Ramos-Gonzalez, Ma; Gutierrez-Broncano, Santiago; Angel Sastre-Castillo, Miguel	Creating Financial and Social Value by Improving Employee Well-Being: A PLS-SEM Application in SMEs	well-being; financial value; social value; reputation; HPWS; SMEs	MDPI		2022	10.3390/math10234456
Xin, Yongrong; Khan, Rizwan Ullah; Dagar, Vishal; Qian, Fang	Do international resources configure SMEs' sustainable performance in the digital era? Evidence from Pakistan	Artificial intelligence; Internationalization; Financial and technological resources; Green entrepreneurial orientation; Sustainable performance; Hybrid approach	ELSEVIER SCI LTD	0301-4207	2023	10.1016/j.resourp.2022.103169
Diaz, Gabriel Marin; Salvador, Jose Luis Galdon	Group Decision-Making Model Based on 2-Tuple Fuzzy Linguistic Model and AHP Applied to Measuring Digital Maturity Level of Organizations	group decision making; digital transformation; fuzzy logic; digital maturity level; SME	MDPI		2023	10.3390/systems11070341
Rodriguez, Otto Suarez; de la Eze, Shirley Tatiana Antepara	PRACTICE OF CORPORATE SOCIAL RESPONSIBILITY IN SMES OF THE MA-NUFACTURING SECTOR OF GUAYAQUIL	Corporate Social Responsibility; SMEs; manufacturing; strategic plan	UNIV CIENFUEGOS	2218-3620	2023	
Taherizadeh, Amir; Beaudry, Catherine	An emergent grounded theory of AI-driven digital transformation: Canadian SMEs' perspectives	Artificial intelligence; digital transformation; dynamic capability; grounded theory; industry 4.0; technological innovation; C80; D20; L60; O30	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1366-2716	2023	10.1080/13662716.2023.2242285
Santolin, Rodrigo Bruno; Bin Hameed, Hameem; Urbinati, Andrea; Lazzarotti, Valentina	Exploiting circular economy enablers for SMEs to advance towards a more sustainable development: An empirical study in the post COVID-19 era	Circular economy; Enablers; SMEs; COVID-19; Sustainability	ELSEVIER	2667-3789	2023	10.1016/j.rcradv.2023.200164
Fajardo, Ofelia Palencia; Lemus, Martha Yaneth Cortes; Parra, Oscar Andres Benavides	Social responsibility, business growth and the environment in SMEs in La Plata, Huila (Colombia)	Social responsibility; private enterprise; sustainable development; social welfare	CEIPA BUSINESS SCH	2389-8186	2022	10.16967/23898186.797

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Thai, Hong-Danh; Seo, Yeong-Seok; Huh, Jun-Ho	Enhanced Efficiency in SMEs Attendance Monitoring: Low Cost Artificial Intelligence Facial Recognition Mobile Application	Face recognition; Monitoring; Artificial intelligence; Organizations; Real-time systems; Mobile applications; Oceans; Smart phones; Resource management; Personnel; SMEs attendance monitoring; artificial intelligence; facial recognition; mobile application; cloud computing	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2024	10.1109/ACCESS.2024.3504858
Limpeeticharoenchot, Santisook; Cooharojananone, Nagul; Chavarnakul, Thira; Charoenruk, Nuttirudee; Atchariyachanvanich, Kanokwan	Adaptive big data maturity model using latent class analysis for small and medium businesses in Thailand	Big data; Latent class analysis; Maturity model; Model development; Small and medium-sized enterprises	PERGAMON-ELSEVIER SCIENCE LTD	0957-4174	2022	10.1016/j.eswa.2022.117965
Cleeman, Jeremy; Agrawala, Kian; Malhotra, Rajiv	Accelerated and inexpensive Machine Learning for manufacturing processes with incomplete mechanistic knowledge	Machine Learning; Transfer learning; Data generation cost; Manufacturing processes; Fused Filament Fabrication	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.07.017
Khan, Syed Abdul Rehman; Sheikh, Adnan Ahmed; Al Shamsi, Ibrahim Rashid; Yu, Zhang	The Implications of Artificial Intelligence for Small and Medium-Sized Enterprises' Sustainable Development in the Areas of Blockchain Technology, Supply Chain Resilience, and Closed-Loop Supply Chains	artificial intelligence; metaverse; blockchain technology; closed-loop supply chain; supply chain resilience; adaptive capabilities; sustainable business performance	MDPI		2025	10.3390/su17010334
Marx, Hendrik; Forin, Silvia; Finkbeiner, Matthias	Organizational Life Cycle Assessment of a Service Providing SME for Renewable Energy Projects (PV and Wind) in the United Kingdom	organizational life cycle assessment; service provider; supply chain management; photovoltaic; wind energy; SME	MDPI		2020	10.3390/su12114475
Arora, Sanjay K.; Kelley, Sarah; Madhavan, Sarvothaman	Building a Sample Frame of SMEs Using Patent, Search Engine, and Website Data	Sample frame; administrative and big data; machine learning; bias; small and medium-sized enterprises	SAGE PUBLICATIONS INC	0282-423X	2021	10.2478/JOS-2021-0001
Papadouli, Vassiliki; Houstis, Elias; Vavalis, Manolis	Bankruptcy Prediction of Greek Small and Medium-Sized Enterprises Using Imbalance Data	bankruptcy prediction; statistical models; hazard models; supervised machine learning; self-training; semi-supervised; transfer learning	ENGINEERING & TECHNOLOGY PUBLISHING	1798-2340	2024	10.12720/jait.15.8.956-964
Lee, Jieon; Won, Jong-ho; Lee, Daeho; Kwak, Kyu Tae	Customer shopping experience in a South Korea's Government-run home shopping channel for small and medium enterprises based on critical incident technique and unsupervised machine learning analysis	Customer shopping experience; Government-run television home shopping; Small; and medium-sized enterprises; Unsupervised machine learning analysis	ELSEVIER	0736-5853	2022	10.1016/j.tele.2022.101777
Salvioni, Daniela M.; Bosetti, Luisa; Fornasari, Tommaso	Implementing and Monitoring Circular Business Models: An Analysis of Italian SMEs	circular economy; sustainability; SMEs; survey; awareness; benefits; barriers; circular economy-related KPIs; reporting on circular economy	MDPI		2022	10.3390/su14010270

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Gonzalez, Diego Aguirre; Sanchez, Mayra Tigre	MANAGEMENT INFORMATION SYSTEMS FOR DECISION MAKING IN TOURISM SMEs OF THE TRONCAL CITY	SMEs; Management Information System; Tourism Sector; Information Technologies; Decision Making	UNIV CIENFUEGOS	2218-3620	2023	
Kim, Seok-Soo	RESEARCH ON THE EFFECT FACTORS OF TECHNICAL PERFORMANCE ON SMEs BY INDUSTRIAL SECTORS	entrepreneurial performance; entrepreneurial competency; SMEs; technical performance; effect factor; technology commercialization	ENTERPRENEURSHIP & SUSTAINABILITY CENTER	2345-0282	2020	10.9770/jesi.2020.8.2(67)
Brendzel-Skowera, Katarzyna	Circular Economy Business Models in the SME Sector	circular economy; circular business models; SME sector; enterprises	MDPI		2021	10.3390/su13137059
Wang, Xiao-Ling; Lei, Ni; Hou, Yun-Zhang	How does human resource department's client relationship management affect sustainable enterprise performance - in the context of artificial intelligence?	HRDCRM; sustainable enterprise performance; SEP; artificial intelligence; relational capital	INDERSCIENCE ENTERPRISES LTD	0267-5730	2020	
Choudrie, Jyoti; Manandhar, Nuga; Castro, Carolina; Obuekwe, Chikelue	Hey Siri, Google! Can you help me? A qualitative case study of smartphones AI functions in SMEs	Smartphones; Artificial intelligence; VPAs; Job crafting; Qualitative research; Digital divide; SMEs; Technostress; Techno Eustress	ELSEVIER SCIENCE INC	0040-1625	2023	10.1016/j.techfore.2023.122375
Huyen Thi Dieu Le; Men Thi Bui; Giang Thi Cam Nguyen	Factors Affecting Electronic Tax Compliance of Small and Medium Enterprises in Vietnam	Electronic Tax; Tax Compliance; SMEs; Vietnam Tax Law	KOREA DISTRIBUTION SCIENCE ASSOC	2288-4637	2021	10.13106/jafeb.2021.vol8.no1.823
Shabbir, Muhammad Qasim; Gardezi, Syed Babar Waheed	Application of big data analytics and organizational performance: the mediating role of knowledge management practices	Application of big data analytics; Knowledge management practices; Organizational performance; SMEs	SPRINGER NATURE		2020	10.1186/s40537-020-00317-6
Du, Jiaxing; Cai, Han; Jin, Xiu	Exploring the Association Between Artificial Intelligence Management and Green Innovation: Expanding the Research Field for Sustainable Outcomes	management systems; business innovation; green innovation; innovative culture; artificial intelligence management; moderated mediation model	MDPI		2024	10.3390/su16219315
Banhidi, Zoltan; Dobos, Imre	An entropy-based digital maturity index for small and medium enterprises in Hungary	Digital maturity; Entropy; SME; Hungary; ANOVA	SPRINGER	1435-246X	2025	10.1007/s10100-025-00985-w
Wong, Lai-Wan; Leong, Lai-Ying; Hew, Jun-Jie; Tan, Garry Wei-Han; Ooi, Keng-Boon	Time to seize the digital evolution: Adoption of blockchain in operations and supply chain management among Malaysian SMEs	Blockchain Operations and Supply Chain Management (OSCM); Partial Least Squares Structural Equation Modelling (PLS-SEM); Artificial Neural Network analysis (ANN); Technology, Organisation and Environment Framework (TOE)	ELSEVIER SCI LTD	0268-4012	2020	10.1016/j.ijinfomgt.2019.08.005

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Dang, Jr-Fong	The deep learning-based equipment health monitoring model adopting subject matter expert	Deep learning; equipment health monitoring; sliding window; autocorrelation function (ACF); partial autocorrelation function (PACF); subject matter expert (SME)	TAYLOR & FRANCIS LTD	0951-192X	2024	10.1080/0951192X.2023.2257665
Jarray, Nouredidine; Ben Abbes, Ali; Farah, Imed Riadh	A Novel Teacher-Student Framework for Soil Moisture Retrieval by Combining Sentinel-1 and Sentinel-2: Application in Arid Regions	Arid regions; machine learning (ML); Sentinel 1 and 2 A; soil moisture (SM); teacher-student (TS) framework; Tunisia	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	1545-598X	2022	10.1109/LGRS.2022.3168982
Liu, Paul C. Y.; Wang, Weisha; Wang, Zi; Yang, Ying	Will artificial intelligence undermine the effects of guanxi on relationship performance? Evidence from China's banking industry	Artificial intelligence; Guanxi; B2B engagement; Relationship performance; Perceived ease of use; Perceived usefulness	ELSEVIER SCIENCE INC	0019-8501	2024	10.1016/j.indmarman.2023.11.007
Ibiwoye, Ade; Mojekwu, Joseph; Dansu, Francis	ENTERPRISE RISK MANAGEMENT PRACTICES AND SURVIVAL OF SMALL AND MEDIUM SCALE ENTERPRISES IN NIGERIA	Enterprise risk management; small and medium scale enterprises; survival	SCIENDO	1842-4120	2020	10.2478/sbe-2020-0007
Mishra, Akshansh; Morisetty, Rakesh	Determination of the Ultimate Tensile Strength (UTS) of friction stir welded similar AA6061 joints by using supervised machine learning based algorithms	Machine learning; Friction stir welding; Supervised learning; Ultimate tensile strength; Python computing	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.04.003
Jung, Woo-Kyun; Kim, Dong-Ryul; Lee, Hyunsu; Lee, Tae-Hun; Yang, Insoon; Youn, Byeng D.; Zontar, Daniel; Brockmann, Matthias; Brecher, Christian; Ahn, Sung-Hoon	Appropriate Smart Factory for SMEs: Concept, Application and Perspective	Appropriate smart factory; Small and medium-sized enterprises; Interoperable; Sensor; Edge computing; Artificial intelligence; Internet of Things	KOREAN SOC PRECISION ENG	2234-7593	2021	10.1007/s12541-020-00445-2
Kamariotou, Maria; Kitsios, Fotis	Information systems and strategy-as-practice in the digital era: an artificial neural network model for SMEs	Artificial neural network; Strategy-as-practice; SMEs; Success; Digital transformation	SPRINGER HEIDELBERG	1109-2858	2024	10.1007/s12351-024-00842-9
Coates, Graham; Alharbi, Meshal; Li, Chunhui; Ahilan, Sangaralingam; Wright, Nigel	Evaluating the operational resilience of small and medium-sized enterprises to flooding using a computational modelling and simulation approach: a case study of the 2007 flood in Tewkesbury	small and medium-sized enterprises; resilience; flood modelling; agent-based modelling	ROYAL SOC	1364-503X	2020	10.1098/rsta.2019.0210
Zaki, Karam; Alhomaïd, Abrar; Ghareb, Ashraf; Shared, Hany; Raslan, Alaa; Khalifa, Gamal S. A.; Elnagar, Ahmed K.	Digital Synergy and Strategic Vision: Unlocking Sustainability-Oriented Innovation in Saudi SMEs	digital transformation; innovation; SMEs; sustainability; strategic alignment; machine learning; green innovations; strategic orientation; PLS-SEM	MDPI		2025	10.3390/admsci15020059

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Rodriguez Oconitrillo, Luis Raul; Jose Vargas, Juan; Camacho, Arturo; Burgos, Alvaro; Manuel Corchado, Juan	RYEL: An Experimental Study in the Behavioral Response of Judges Using a Novel Technique for Acquiring Higher-Order Thinking Based on Explainable Artificial Intelligence and Case-Based Reasoning	interpretation-assessment; assessment-interpretation (IA-AI); hybrid artificial intelligence system; mixture of experts (MOE); explainable case-based reasoning (XCBR); explainable artificial intelligence (XAI); semantic networks (SN)	MDPI		2021	10.3390/electronics10121500
Siimon, Oie Renata; Lukason, Oliver	A Decision Support System for Corporate Tax Arrears Prediction	tax arrears; SMEs; time series classification; machine learning; predictive models	MDPI		2021	10.3390/su13158363
Wang, Shaofeng; Gao, Mengjia; Zhang, Hao	Enhancing Creativity and Sustainable Competitive Advantage Through Data-Driven Decision-Making and Digital Leadership	Digital transformation; Creativity; Decision making; Leadership; Technological innovation; Government; Collaboration; Artificial intelligence; Training; Mathematical models; Data-driven decision-making; digital integration; organizational creativity; SMEs digital transformation; sustainable competitive advantage (SCA); technology-organization-environment (TOE)	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2025	10.1109/TEM.2025.3551331
Verma, Ankur; Oh, Seog-Chan; Arinez, Jorge; Kumara, Soundar	Hierarchical energy signatures using machine learning for operational visibility and diagnostics in automotive manufacturing	Energy signatures; Sustainability; Machine learning; Automotive manufacturing	ELSEVIER	2213-8463	2024	10.1016/j.mfglet.2024.03.004
Quaye, Wilhelmina; Akon-Yamga, Gordon; Akuffo-Bea-Essilfie, Mavis; Onumah, Justina Adwoa	Technology adoption, competitiveness and new market access among SMEs in Ghana: What are the limiting factors?	technology; adoption; Small and Medium Scale Enterprises (SMEs); market access; Ghana	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	2042-1338	2024	10.1080/20421338.2024.2414949
Roffia, Paolo; Benavides, Maria Mar; Carrilero, Augustin	Cost accounting practices in SMEs: liability of age and other factors that hinder or burst its implementation in turbulent years	Cost accounting; SMEs; Management accounting; Contingency theory; M49; M19; C29	SPRINGER	1554-7191	2024	10.1007/s11365-023-00938-2
Rosas, Jose Gonzalo Ramirez; Gonzalez, Miguel Angel Torres; Carranco, Araceli Ortiz; Diaz, Salvador Antonio Arroyo	Software development that determines IMSS quotas for SMEs	SMEs; software; innovation; social security; administrative obligations	INT JOURNAL COMBINATORIAL OPTIMIZATION PROBLEMS & INFORMATICS	2007-1558	2024	10.61467/2007.1558.2024.v15i1.436
Jiang, Lixia; Cao, Xiaojing; Wang, Zeyu; Zhan, Yun; Zhang, Jiali; Chen, Shuai	Promoting energy saving and emission reduction benefits in small and medium-sized enterprises supply chains through green finance - Evidence based on artificial intelligence intervention	Supply chain finance; Financial intelligence; Intelligent robot; Green financial enterprise	ELSEVIER SCIENCE INC	1057-5219	2025	10.1016/j.irfa.2025.104112

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Armutcu, Baris; Majeed, Muhammad Ussama; Hussain, Zahid; Aslam, Sumaira	The impact of digital voice of customer and product lifecycle management on Quality 4.0: moderating role of AI in SMEs	Artificial intelligence; Product lifecycle management; Quality 4.0; Manufacturing industry; Digital voice of customer	EMERALD GROUP PUBLISHING LTD	1741-038X	2025	10.1108/JMTM-12-2024-0660
Berne Manero, Maria del Carmen; Moretta Tartaglione, Andrea; Cavacece, Ylenia; Maggiore, Giulio	The impact of dynamic capabilities on innovation during internationalization: a study on Italian SMEs	Dynamic capabilities; Innovation management; SMEs; Internationalization; Qualitative research; Real impact article	EMERALD GROUP PUBLISHING LTD	1460-1060	2025	10.1108/EJIM-09-2024-0988
Seung-Pyo, Jun; Jae-Seong, Lee; Juyeon, Lee	Method of improving the performance of public-private innovation networks by linking heterogeneous DBs: Prediction using ensemble and PPDM models	Public-private innovation network; National innovation system; Small and medium enterprises; Generalized linear models; Machine learning ensemble model; Privacy-preserving data mining	ELSEVIER SCIENCE INC	0040-1625	2020	10.1016/j.techfore.2020.120258
Tan, Consilz; Lee, Su Zy	Adoption of enterprise risk management (ERM) in small and medium-sized enterprises: evidence from Malaysia	Risk mitigation; Small and medium-sized enterprises (SMEs); Enterprise risk management; Decision-making; Risk governance; RIMS risk maturity model	EMERALD GROUP PUBLISHING LTD	1832-5912	2022	10.1108/JAOC-11-2020-0181
Uygunil-Erdogan, Selen; Sahin, Yasar; Sokmen-Alaca, Askin Inci; Oktaysoy, Onur; Altintas, Mustafa; Topcuoglu, Vurgun	Assessing the Effect of Artificial Intelligence Anxiety on Turnover Intention: The Mediating Role of Quiet Quitting in Turkish Small and Medium Enterprises	artificial intelligence; quiet quitting; turnover intention; management of turnover; SMEs	MDPI		2025	10.3390/bs15030249
Met, Ilker; Erkoc, Ayfer; Seker, Sadi Evren; Erturk, Mehmet Ali; Ulug, Baha	Product Recommendation System With Machine Learning Algorithms for SME Banking	data analysis; machine learning; product recommendation system	WILEY	0884-8173	2024	10.1155/2024/5585575
Islam, Faisal; Wanigasekara, Chathura; Rajan, Ginu; Swain, Akshya; Prusty, B. Gangadhara	An approach for process optimisation of the Automated Fibre Placement (AFP) based thermoplastic composites manufacturing using Machine Learning, photonic sensing and thermo-mechanics modelling	Automated Fibre Placement (AFP); Machine Learning; Virtual Sample Generation (VSG)	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.01.002
Yan, Xiaoliang; Melkote, Shreyes	Generative Modeling of the Shape Transformation Capability of Machining Processes	Generative Machine Learning; Machining Process Capability; Computer Aided Process Planning; Machining Feature Recognition	ELSEVIER	2213-8463	2022	
Sun, Yunpeng; Shahzad, Mohsin; Ali, Azhar; Razzaq, Asif	Synergistic effect of green knowledge sharing and green creative climate for circular economy practices: role of artificial intelligence information quality	Green knowledge sharing; Sustainable development; Circular economy practices; Green creative climate; Artificial intelligence	EMERALD GROUP PUBLISHING LTD	1741-038X	2025	10.1108/JMTM-09-2024-0503
Chen, Ying; Giudici, Paolo; Liu, Kailiang; Raffinetti, Emanuela	Measuring fairness in credit ratings	Credit ratings; Explainability; Fairness; Shapley values; Shapley-Lorenz values	PERGAMON-ELSEVIER SCIENCE LTD	0957-4174	2024	10.1016/j.eswa.2024.125184

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Ragab, Amira; Osama, Aya; Ramzy, Amna	Simulation of the Environmental Impact of Industries in Smart Cities	Life Cycle Assessment; Material and Energy Flow Analysis; Small and medium-sized enterprises; Sustainable industries	ELSEVIER	2090-4479	2023	10.1016/j.asej.2022.102103
He, Lili; Yousaf, Zahid; Palazzo, Maria	Synergetic legacy of organizational innovativeness, knowledge sharing, artificial intelligence adoption and big data analytic capability in human resource management	Artificial intelligence adoption (AIA); organizational innovativeness; knowledge sharing; big data analytic capabilities (BDACs); small medium enterprises (SMEs)	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0958-5192	2025	10.1080/09585192.2025.2510546
Al-Okaily, Manaf	The antecedents and outcomes of accounting information systems usage: the indirect effect of IT knowledge	Accounting systems; Information systems; IT knowledge; Technological innovation; Digital transformation; AIS usage; Decision-making quality	SPRINGER LONDON LTD	0219-1377	2025	10.1007/s10115-024-02306-0
Srimulyani, Veronika Agustini; Hermanto, Yustinus Budi; Rustiyaningsih, Sri; Waloyo, Laurensius Anang Setiyo	Internal factors of entrepreneurial and business performance of small and medium enterprises (SMEs) in East Java, Indonesia	Business performance; Entrepreneurial internal factors; Innovative behavior	CELL PRESS		2023	10.1016/j.heliyon.2023.e21637
Chen, Shenglong; Cai, Jiannan; Bogatyreva, Karina; Quansah, Ewuradjoa	Digital transformation of SMEs in times of uncertainty: effectuation perspective	Small- and medium-sized enterprises (SMEs); China; Digitalization; Effectuation; Environmental uncertainty	EMERALD GROUP PUBLISHING LTD	2053-4604	2025	10.1108/JEEE-11-2023-0490
Li, Qiuxia	Research on the Impact Mechanism and Application of Financial Digitization and Optimization on Small- and Medium-Sized Enterprises		HINDAWI LTD	1058-9244	2021	10.1155/2021/9534976
Shaik, Aqueeb Sohail; Alshibani, Safiya; Jain, Girish; Gupta, Bhumika; Mehrotra, Ankit	Artificial intelligence (AI)-driven strategic business model innovations in small- and medium-sized enterprises. Insights on technological and strategic enablers for carbon neutral businesses	AI-driven business model innovation; green innovation capability; green technology innovation; strategic architecture & carbon neutral businesses; strategic intent	WILEY	0964-4733	2024	10.1002/bse.3617
Jibril, Abdul Bashiru; Amoah, John; Panigrahi, Rashmi Ranjan; Gochhait, Saikat	Digital transformation in emerging markets: the role of technology adoption and innovative marketing strategies among SMEs in the post - pandemic era	COVID-19; Post-pandemic; Digital transformation; Innovation; Sustainable marketing strategies; Ghana	EMERALD GROUP PUBLISHING LTD	1934-8835	2024	10.1108/IJOA-05-2024-4509
Mutingi, Michael; Chakraborty, Ayon	Quality Management Practices in Namibian SMEs: An Empirical Investigation	Quality management; SMEs; tools and techniques; quality initiatives; Namibia	SAGE PUBLICATIONS LTD	0972-1509	2021	10.1177/0972150918811706

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Anser, Muhammad Khalid; Shahzad, Muhammad Farrukh; Xu, Shuo	Exploring the nexuses between international entrepreneurship and sustainable development of organizational goals: mediating role of artificial intelligence technologies	Artificial intelligence technologies; Entrepreneurial innovation; Entrepreneurial orientation; Sustainable development goals; PLS-SEM	SPRINGER	1387-585X	2024	10.1007/s10668-024-05580-8
Scime, Luke; Goldsby, Desarae; Paquit, Vincent	Methods for rapid identification of anomalous layers in laser powder bed fusion	Additive manufacturing; Data exploration; Machine learning	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.01.003
Skouloudis, Antonis; Leal Filho, Walter; Vouras, Panagiotis; Evangelinos, Konstantinos; Nikolaou, Ioannis; Deligiannakis, Georgios; Tsalis, Thomas	Assessing Greek small and medium-sized enterprises' flood resilience capacity: Index development and application	floods; Greece; index development; organisational resilience capacity; small and medium-sized enterprises	WILEY	1753-318X	2023	10.1111/jfr3.12858
Etogo, Gabriel; Manga Engama, Etgard; Nomo, Theophile Serge	Gender identities and corporate social responsibility practices: a biographical approach of managerial recompositions in SMEs context	SMEs; Gender identities; Management; Corporate social responsibility; Business ethics	EMERALD GROUP PUBLISHING LTD	1747-1117	2022	10.1108/SRJ-04-2020-0117
Bekteshi, Xhelil; Alshiqi, Sevdie; Ramushi, Arbana Sahiti	THE IMPACT OF CORPORATE SOCIAL RESPONSIBILITY AND WORKING CAPITAL MANAGEMENT ON SMES PERFORMANCE DURING A PANDEMIC	corporate social responsibilities; working capital management practices; the performance of SMEs; employee behavior	BALTIC JOURNAL ECONOMIC STUDIES	2256-0742	2021	10.30525/2256-0742/2021-7-5-18-28
Govindan, Kannan; Shankar, K. Madan; Kannan, Devika	Achieving sustainable development goals through identifying and analyzing barriers to industrial sharing economy: A framework development	Industrial sharing economy; Best worst method; DEMATEL; Barriers; SDG's	ELSEVIER	0925-5273	2020	10.1016/j.ijpe.2019.107575
Zimmermann, Nico; Mayr, Josef; Wegener, Konrad	An action-oriented teaching approach for intelligent and energy efficient precision manufacturing	Action-oriented teaching; machine tools; energy efficiency; thermal errors; compensation	ELSEVIER	2213-8463	2022	
Herce, Carlos; Biele, Enrico; Martini, Chiara; Salvio, Marcello; Toro, Claudia; Brandl, Gabriele; Lackner, Petra; Reuter, Stefan	A methodology to characterize energy consumption in small and medium-sized enterprises at national level in European countries	Energy efficiency; Energy audits; Small and medium enterprises (SMEs); Energy characterization; Energy efficiency directive; Energy policy	SPRINGER	1618-954X	2024	10.1007/s10098-023-02606-z
Papulova, Zuzana; Gazova, Andrea; Slenker, Maros; Papula, Jan	Performance Measurement System: Implementation Process in SMEs	performance; performance measurement systems (PMS); process of PMS implementation; key success factors (KSF); small and medium-sized enterprises (SMEs)	MDPI		2021	10.3390/su13094794

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Rosas, Jose Gonzalo Ramirez; Neri-Suarez, Martin; Gonzalez, Miguel angel Torres	Automation of Fiscal Auditing in SMEs through a Sequential Algorithm for Extracting Tax Receipts: A Focus on the Digital Economy Author(s) Name(s)	Tax audit automation; Digital Tax Receipts; SMEs compliance; digital economy	INT JOURNAL COMBINATORIAL OPTIMIZATION PROBLEMS & INFORMATICS	2007-1558	2024	10.61467/2007.1558.2024.v15i5.565
Erazo, Edwin Joselito Vasquez; Gavilanes, Juan Edmundo alvarez; Parraga, Dayana Yasmin Murillo; Alvarez, Juan Carlos Erazo	EDUCATION AND SOCIAL IDENTITY OF ENTREPRENEURSHIP: FACTORS OF SUSTAINABILITY OF PYMES IN ECUADOR	Education; management; entrepreneurship; SMEs; sustainability	UNIV CIENFUEGOS	1990-8644	2023	
Abualsauod, Emad Hashiem	Quality improvement in retail-distribution of Saudi thobe using six-sigma	Six Sigma; DMAIC; Production line; Arena; Factor rating method; DPMO; Quality control; Artificial intelligence; Optimization	EMERALD GROUP PUBLISHING LTD	0959-0552	2025	10.1108/IJRDM-02-2023-0091
Balaskas, George; Papadopoulos, Homer; Pappa, Dimitra; Loisel, Quentin; Chastin, Sebastien	A Framework for Domain-Specific Dataset Creation and Adaptation of Large Language Models	dataset creation; model adaptation; model fine-tuning; deep learning; large language models	MDPI	2073-431X	2025	10.3390/computer s14050172
Moskova, Erika; Brutovsky, Michal; Furiak, Kristian; Buganova, Katarina	BUSINESS INTERRUPTION MANAGEMENT IN THE CONTEXT OF THE COVID-19 PANDEMIC FOR SMALL AND MEDIUM-SIZED ENTERPRISES IN SLOVAKIA	business continuity management (BCM); COVID-19; crisis management; enterprise; resilience; risk management	ENTERPRENEURS HIP & SUSTAINABILITY CENTER	2345-0282	2023	10.9770/jesi.2023.10.3(4)
Hakaki, Amir; Nikabadi, Mohsen Shafiei; Heidartoo, Mahnaz Ali	An optimized model for open innovation success in manufacturing SMES	Open Innovation; Fuzzy DEMATEL; optimization; Ant Colony; Artificial Intelligence	EDP SCIENCES S A	0399-0559	2021	10.1051/ro/2021161
Marosi, Attila Csaba; Emodi, Mark; Hajnal, Akos; Lovas, Robert; Kiss, Tamas; Poser, Valerie; Antony, Jibinraj; Bergweiler, Simon; Hamzeh, Hamed; Deslauriers, James; Kovacs, Jozsef	Interoperable Data Analytics Reference Architectures Empowering Digital-Twin-Aided Manufacturing	IoT; digital twin; reference architecture; microservice; algorithm; analytics	MDPI		2022	10.3390/fi14040114
Ignacio Igartua-Lopez, Juan; Retegi-Albisua, Jabier; Ruiz, Maria; Mindegia, Maitane	Evaluation of a Strategy-Oriented Method to Identify and Prioritise Knowledge Management Initiatives in SMEs	knowledge management; strategic management; management tools; SMEs	OMNIASCIENCE	2013-8423	2021	10.3926/jiem.3277
Kamariotou, Maria; Kitsios, Fotis; Madas, Michael	E-Business Strategy for Logistics Companies: Achieving Success through Information Systems Planning	e-business strategy; strategic information systems planning; SMEs; information systems planning success; IT strategy; logistics	MDPI		2021	10.3390/logistics5040073
Liu, Jingyan; Nie, Kang; Liu, Jiaman; Wu, Jialin (Snow)	Demystifying Symbiotic Rationality in Tourism SMEs: Conceptualization and Scale Development	symbiotic rationality; instrumental and value rationality; scale development; long-term orientation; tourism SMEs	SAGE PUBLICATIONS INC	0047-2875	2024	10.1177/00472875241307567

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Li, Yan; Zhang, Ying; Luo, Fei; Zou, Wei; Zhang, Yu; Zhou, Kaijun	Customer tiered purchase forecast by mobile edge computing based on Pareto/NBD and SVR	Predictive models; Mathematical models; Electronic commerce; Solid modeling; Multi-access edge computing; Industries; Data models; e-commerce; customer behavior; Pareto; NBD model; SVR model; ARIMA model; mobile edge computing	CHINA INST COMMUNICATION S	1673-5447	2021	10.23919/JCC.2021.11.001
Engelmann, Bastian; Schmitt, Simon; Miller, Eddi; Braeutigam, Volker; Schmitt, Jan	Advances in Machine Learning Detecting Changeover Processes in Cyber Physical Production Systems	OEE; machine learning; machine set-up; CPPS; Industry 4; 0; smart factory	MDPI		2020	10.3390/jmmp4040108
Lextrait, Bastien	Scaling up SMEs' credit scoring scope with LightGBM	Credit scoring; SMEs; machine learning; gradient boosting; interpretability	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0003-6846	2023	10.1080/00036846.2022.2095340
Jiang, Ji; Chen, Jin	Framework of Blockchain-Supported E-Commerce Platform for Small and Medium Enterprises	blockchain technology; small and medium enterprises; e-commerce platform	MDPI		2021	10.3390/su13158158
Pinuer, Francisco Villegas; Valenzuela-Fernandez, Leslier; Andreu, Joan Llonch; Belbeze, Pilar Lopez	Environmental sustainability and their factors in SMEs: A multiple case study of Spain and Chile	Environmental sustainability; customer orientation; corporate social responsibility; entrepreneurial orientation; SMEs	UNIV PAIS VASCO, INST ECONOMIA APLICADA EMPRESA	1131-6837	2022	10.5295/cdg.211370fv
Figueiredo, Ronnie	Spinner Innovation: Integrated Model for the Development and Prediction of Innovation	Spinner Innovation; Model; Economic Sectors; Management; Business	SCIENDO	1842-4120	2025	10.2478/sbe-2025-0003
Singh, Jagmeet; Singh, Amandeep; Singh, Harwinder; Doyon-Poulin, Philippe	Implementation and evaluation of a smart machine monitoring system under industry 4.0 concept	Smart machine monitoring system; Production planning and control; Small and medium-sized enterprise; Industry 4.0; Internet of things; Artificial intelligence	ELSEVIER	2467-964X	2025	10.1016/j.jii.2024.100746
Nguyen, Hang Thu; Nguyen, Hiep Manh; Troege, Michael; Nguyen, Anh T. H.	Debt aversion, education, and credit self-rationing in SMEs	Borrower discouragement; Debt aversion; Education; Financial constraints; SMEs	SPRINGER	0921-898X	2021	10.1007/s11187-020-00329-9
Navarro Perez, Paula Andrea	Financing Decisions for Creative and Cultural SMEs in Bogota, Colombia	Capital structure; Financing decisions; Cultural and creative SMEs; Financing for SMEs	UNIV VALLE	0120-4645	2020	10.25100/cdea.v36i66.8426
Jood, Pankaj; Aggarwal, Sanjeev Kumar; Chopra, Vikram	Adaptive Neuro-Fuzzy Based Load Frequency Control in Presence of Energy Storage Devices	Artificial intelligence; energy storage; frequency response; renewable integration; system simulation	TECH SCIENCE PRESS	1079-8587	2022	10.32604/iasc.2022.025217

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Rehman, Shafique Ur; Jabeen, Fauzia; Shahzad, Khuram; Riaz, Adil; Bhatti, Anam	Industry 4.0 technologies and international performance of SMEs: mediated-moderated perspectives	Industry 4.0 technologies; Ambidextrous dynamic capabilities; Environmental dynamism; Environmental competitiveness; SMEs international performance	SPRINGER	1554-7191	2025	10.1007/s11365-024-01048-3
Ode, Egena; Awolowo, Ifedapo Francis; Nana, Rabake; Olawoyin, Femi Stephen	Social Capital and Artificial Intelligence Readiness: The Mediating Role of Cyber Resilience and Value Construction of Smes in Resource-Constrained Environments	Social capital; Cyber resilience; AI readiness; Value construction	SPRINGER	1387-3326	2025	10.1007/s10796-025-10608-z
Delladio, Silvia; Caputo, Andrea; Magrini, Alessandro; Pellegrini, Massimiliano Matteo	Italian entrepreneurial decision-making under lockdown: the path to resilience	Entrepreneurial decision-making; Resilience; Covid-19; Hospitality; SMEs	EMERALD GROUP PUBLISHING LTD	0025-1747	2023	10.1108/MD-12-2022-1746
Li, Chen; Bhatta, Kshitij; Xiao, Guoxian; Fan, Hua-tzu; Arinez, Jorge; Chang, Qing	Filling Missing Surface Roughness Data for Grinding Process Using Physics-Guided Neural Network	Missing data filling; Smart manufacturing; Machine learning; Big data analytics; Integration of intelligent manufacturing processes with smart systems	ELSEVIER	2213-8463	2022	
Al-Hattami, Hamood Mohammed	Impact of AIS success on decision-making effectiveness among SMEs in less developed countries	Accounting information system; decision-making; SMEs; DeLone and McLean model; LDCs; Yemen	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0268-1102	2024	10.1080/02681102.2022.2073325
Zeng, Juying; Li, Jiehui; Yang, Qianqian	Policy involvement and policy consistency identification of supportive policies for SMEs	SMEs; Supportive policies; Multi-hierarchy governments; Policy effect; Policy consistency	SPRINGER	1554-7191	2024	10.1007/s11365-024-00987-1
Wang, Shaofeng; Gao, Mengjia; Zhang, Hao	Strengthening SMEs competitiveness and performance via industrial internet: Technological, organizational, and environmental pathways		SPRINGER NATURE		2024	10.1057/s41599-024-03903-8
Alnajim, Rishaa Abdulaziz; Fakieh, Bahjat	A Tourist-Based Framework for Developing Digital Marketing for Small and Medium-Sized Enterprises in the Tourism Sector in Saudi Arabia	digital marketing; machine learning; Saudi tourism; SMEs; travel planning	MDPI		2023	10.3390/data8120179
Srisuchinnawong, Arthicha; Manoonpong, Poramate	An Interpretable Neural Control Network With Adaptable Online Learning for Sample Efficient Robot Locomotion Learning	Robots; Legged locomotion; Neurons; Motors; Training; Neural networks; Reinforcement learning; Interference; Network architecture; Encoding; Explainable artificial intelligence; locomotion learning; neural control; neural network; reinforcement learning	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2162-237X	2025	10.1109/TNNLS.2025.3552793

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Nasir, Wahid; Dibaji, Sina; Alaswad, Kareem; Cool, Julie	Tool wear monitoring by ensemble learning and sensor fusion using power, sound, vibration, and AE signals	Tool condition monitoring; Wood machining; Extreme cutting conditions; Tool wear classification; Sensor fusion; Ensemble learning	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.10.002
Neupane, Subash; Mitra, Shaswata; Mittal, Sudip; Gaur, Manas; Golilarz, Noorbakhsh Amiri; Rahimi, Shahram; Amirlatif, Amin	MEDINSIGHT: A Multi-Source Context Augmentation Framework for Generating Patient-Centric Medical Responses Using Large Language Models	Large Language Model (LLM); Context augmentation; Retrieval Augmented Generation; Healthcare; Patient; Caregiver	ASSOC COMPUTING MACHINERY	2691-1957	2025	10.1145/3709365
Ferry; Evans, Christopher Charles; Binh Tran-Nam	PRESUMPTIVE INCOME TAXES AND TAX COMPLIANCE COSTS: POLICY IMPLICATIONS FOR SMALL AND MEDIUM-SIZED ENTERPRISES IN EMERGING ECONOMIES	Tax Compliance Costs; Presumptive Taxes; Small and Medium-Sized Enterprises; Mediating Effects; Opportunity Costs; Psychological Costs	UNIV EXETER BUSINESS SCH	2059-190X	2023	
Eze, Sunday C.; Chinedu-Eze, Vera C.; Bello, Adenike O.	Some antecedent factors that shape SMEs adoption of social media marketing applications: a hybrid approach	SMEs; Adoption; Social media; Antecedent factors; Hybrid approach; Marketing applications	EMERALD GROUP PUBLISHING LTD	2053-4620	2021	10.1108/JSTPM-06-2019-0063
Erdmann, Anett; Yazdani, Morteza; Mas Iglesias, Jose Manuel; Marin Palacios, Cristina	Pricing Powered by Artificial Intelligence: An Assessment Model for the Sustainable Implementation of AI Supported Price Functions	price management; artificial intelligence; human-AI interactions; sustainable AI; multiple attribute decision model	INST MATHEMATICS & INFORMATICS	0868-4952	2024	10.15388/24-INFOR559
Montgomery, Sean; Li, Forrest; Funk, Christopher; Peethumangsin, Erica; Morris, Michael; Anderson, Jess T.; Hersh, Andrew M.; Aylward, Stephen	Detection of pneumothorax on ultrasound using artificial intelligence	Ultrasound; pneumothorax; artificial intelligence	LIPPINCOTT WILLIAMS & WILKINS	2163-0755	2023	10.1097/TA.0000000000003845
Ateeq, Ali; Milhem, Marwan; Alzoraiki, Mohammed; Dawwas, Mohammed I. F.; Ali, Shafeeq Ahmed; Al Astal, Ahmad Yahia	The impact of AI as a mediator on effective communication: enhancing interaction in the digital age	communication methods; artificial intelligence; communication effectiveness; quantitative research; mediation analysis; partial least squares	FRONTIERS MEDIA SA		2024	10.3389/fhumd.2024.1467384
Vuorio, Anna; Torkkeli, Lasse	Dynamic managerial capability portfolios in early internationalising firms	Early internationalisation; SME internationalisation; Dynamic managerial capabilities; Cognition; Decision-making logic; Effectuation; Bricolage; Network capability	ELSEVIER	0969-5931	2023	10.1016/j.ibusrev.2022.102049
Islam, Muhaiminul; Al Mamun, Abdullah; Afrin, Samina; Quaasar, G. M. Azmal Ali; Uddin, Md Aftab	Technology Adoption and Human Resource Management Practices: The Use of Artificial Intelligence for Recruitment in Bangladesh	Actual use; artificial intelligence; Bangladesh; human resource professionals; intention to use; recruiting talents; UTAUT; SEM-PLS	SAGE PUBLICATIONS INDIA PVT LTD	2322-0937	2022	10.1177/23220937221122329

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Decker, Nathan; Huang, Qiang	Intelligent accuracy control service system for small-scale additive manufacturing	3D printing (3DP); Cyber-physical systems (CPS); Geometric and dimensional accuracy control; Geometric deviation modeling; Machine learning	ELSEVIER	2213-8463	2020	10.1016/j.mfglet.2020.09.009
Stentoft, Jan; Adsboll Wickstrom, Kent; Philipsen, Kristian; Haug, Anders	Drivers and barriers for Industry 4.0 readiness and practice: empirical evidence from small and medium-sized manufacturers	Industry 4; 0; drivers; barriers; readiness; mixed method	TAYLOR & FRANCIS LTD	0953-7287	2021	10.1080/09537287.2020.1768318
Chatterjee, Sheshadri; Chaudhari, Ranjan; Shams, Riad	Applications of Industry 4.0 for Pandemic Responses and Business Continuity: A TOE-DCV Integrated Approach	Index Terms-Business continuity; corporate governance (COG); dynamic capability view (DCV); industry 4.0; pandemic; sustainability; technology-organization-environment (TOE)	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2024	10.1109/TEM.2023.3250587
Chi, Guotai; Uddin, Mohammad; Habib, Tabassum; Zhou, Ying; Islam, Md Rashidul; Chowdhury, Md Asad	A hybrid model for credit risk assessment: empirical validation by real-world credit data	statistical methods; artificial intelligent; hybrid classifier; credit risk; multilayer perceptron	INCISIVE MEDIA	1753-9579	2020	10.21314/JRMV.2020.228
Crosato, Lisa; Liberati, Caterina; Repetto, Marco	Lost in a black-box? Interpretable machine learning for assessing Italian SMEs default	accumulated local effects; default prediction; interpretability; machine learning; small and medium sized enterprises	WILEY	1524-1904	2023	10.1002/asmb.2803
Volberda, Hidde	Crises, Creditors and Cramdowns: An evaluation of the protection of minority creditors under the WHOA in light of Directive (EU) 2019/1023	Restructuring Directive; WHOA; SMEs; insolvency; corporate rescue; Covid-19	UTRECHT UNIV LIBRARY OPEN ACCESS JOURNALS	1871-515X	2021	10.36633/ultr.638
Almeida, Fernando; Wasim, Jahangir	The Role of Data-Driven Solutions for SMES in Responding to COVID-19	Entrepreneurship; innovation; COVID-19; data-driven innovation	WORLD SCIENTIFIC PUBL CO PTE LTD	0219-8770	2023	10.1142/S0219877023500013
Kang, Min-Jeoung; Dykes, Patricia C.; Korach, Tom Z.; Zhou, Li; Schnock, Kumiko O.; Thate, Jennifer; Whalen, Kimberly; Jia, Haomiao; Schwartz, Jessica; Garcia, Jose P.; Knaplund, Christopher; Cato, Kenrick D.; Rossetti, Sarah Collins	Identifying nurses' concern concepts about patient deterioration using a standard nursing terminology	Standardized nursing terminology; Expression of concern; Information storage and retrieval	ELSEVIER IRELAND LTD	1386-5056	2020	10.1016/j.ijmedinf.2019.104016
Li, Jingwei; Li, Shouwei; Zhang, Yonghong; Tang, Xiaoyu	Evolutionary game analysis of rent seeking in inventory financing based on blockchain technology		JOHN WILEY & SONS LTD	0143-6570	2023	10.1002/mde.3948

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Deja, Marek; Huvila, Isto; Widen, Gunilla; Ahmad, Farhan	Seeking innovation: The research protocol for SMEs' networking	Innovation; Knowledge sharing; Natural language processing; Networking; Open innovation; Small- to medium-sized enterprises	CELL PRESS		2023	10.1016/j.heliyon.2023.e14689
Ha, Shiaw Tong; Lo, May Chiun; Suaidi, Mohamad Kadim; Mohamad, Abang Azlan; Bin Razak, Zaidi	Knowledge Management Process, Entrepreneurial Orientation, and Performance in SMEs: Evidence from an Emerging Economy	knowledge management (KM); knowledge acquisition; knowledge conversion; knowledge application; knowledge protection; entrepreneurial orientation (EO)	MDPI		2021	10.3390/su13179791
Panigrahi, Rashmi Ranjan; Shrivastava, Avinash K.; Qureshi, Karishma M.; Mewada, Bhavesh G.; Alghamdi, Saleh Yahya; Almakayeel, Naif; Almuflih, Ali Saeed; Qureshi, Mohamed Rafik N.	AI Chatbot Adoption in SMEs for Sustainable Manufacturing Supply Chain Performance: A Mediatonal Research in an Emerging Country	artificial intelligence chatbot; emerging country; innovative capability; small and medium enterprises; supply chain visibility; sustainable supply chain performances; manufacturing sustainability	MDPI		2023	10.3390/su151813743
Dvorakova, Lilia; Horak, Jakub; Caha, Zdenek; Machova, Veronika; Haskova, Simona; Rowland, Zuzana; Krulicy, Tomas	Adaptation of small and medium-sized enterprises in the service sector to the conditions of Industry 4.0 and Society 4.0: evidence from the Czech Republic	Industry 4.0; Society 4.0; Small and Medium-sized Enterprises (SMEs); Methodology of Adaptation of Small and Medium-sized Enterprises; Knowledge Intensive Services	INST SOC TRANSFORMATIO N	1728-6220	2021	10.21003/ea.V191-06
Etemad, Hamid	The need for strategic redirection and business model change: The impact of evolving influential forces of change on international entrepreneurship environment	Climatic change; ESG requirements; Change in iSMEs' technological eco-systems and environments; Resilience and sustainability; Managing the unfolding global warming crises; Technological contribution to iSMEs' global competitiveness and growth	SPRINGER	1570-7385	2023	10.1007/s10843-024-00348-7
Horr, Amir M.	Optimization of manufacturing processes using ML-assisted hybrid technique	Manufacturing processes; Machine Learning; Hybrid method; Process optimization; ML-assisted technique	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2021.10.001
Zhou, Yimeng; Pacala, Anca	Empowering Manufacturing SMEs: Financial Accessibility and Sustainable Practices in the Age of Digitalization	financial capital; triple bottom line; sustainable development goals; digitalization; SMEs; Industry 5.0	MDPI		2025	10.3390/su17083571
Schetakis, Nikolaos; Aghamalyan, Davit; Boguslavsky, Michael; Rees, Agnieszka; Rakotomalala, Marc; Griffin, Paul Robert	Quantum Machine Learning for Credit Scoring	quantum machine learning; quantum classifiers; quantum credit scoring; quantum algorithms	MDPI		2024	10.3390/math12091391
Wen, Peihan; Zhao, Yiming; Liu, Jin	A systematic knowledge graph-based smart management method for operations: A case study of standardized management	Knowledge graph; Operation management; Quality management system; Knowledge management	CELL PRESS		2023	10.1016/j.heliyon.2023.e20390

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Mladinic, Anamarija; Vukic, Zdravko; Roncevic, Ante	GDPR COMPLIANCE CHALLENGES IN CROATIAN MICRO, SMALL AND MEDIUM SIZED ENTERPRISES	compliance; Croatian SMEs; data protection authorities; General Data Protection Regulation (GDPR); personal data protection	PRAVNI FAKULTET SVEUCILISTA JOSIPA JURJA STROSSMAYERA & OSIJEKU	0352-5317	2023	10.25234/pv/23972
Kim, Sehoon	Strategic orientation, innovation, and the effects of entrepreneurial support mechanism in SMEs in South Korea: an application of subject-mechanism-performance congruence model	Change management; congruence model; entrepreneurial support mechanism innovation; strategic orientation; subject-mechanism-performance	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1360-2381	2024	10.1080/13602381.2022.2134966
Zonouzi, Mehran Kamali; Hoseyni, Mahdi; Khoramshahi, Mohammad	Political factors affecting the survival of SMEs case study: An empirical study in Tehran Grand Bazaar	SMEs; Logit model; Political factors; Iran	ELSEVIER TAIWAN	1029-3132	2021	10.1016/j.apmr.2020.07.002
Christen, Tatjana; Hess, Manuel; Grichnik, Dietmar; Wincent, Joakim	Value-based pricing in digital platforms: A machine learning approach to signaling beyond core product attributes in cross-platform settings	Value-based pricing; Cross-platform; Signaling theory; Accommodation industry	ELSEVIER SCIENCE INC	0148-2963	2022	10.1016/j.jbusres.2022.07.042
Lee, Kyoung Jun; Kwon, Jun Woo; Min, Soohong; Yoon, Jungho	Deploying an Artificial Intelligence-based defect finder for manufacturing quality management		AMER ASSOC ARTIFICIAL INTELL	0738-4602	2021	10.1609/aimag.v42i2.15094
Duan, Weichang; Hu, Hanzhou; Zhang, Yuting	What determines the performance of small and medium-sized enterprises supply chain financing? A qualitative comparative analysis of fuzzy sets based on the technology-organization-environment framework	supply chain financing; TOE; fsQCA; medium-sized and small enterprises; environmental competitiveness	FRONTIERS MEDIA SA	1664-1078	2022	10.3389/fpsyg.2022.976218
Gao, Jiayue; Wang, Lei; Li, Kuan	A Bibliometric Review on Eco-Innovation in SMEs: Current Status, Development and Future Directions	eco-innovation; SMEs; bibliometric; knowledge structure; research evolution	HARD	1230-1485	2025	10.15244/pjoes/187125
Pujari, Purvi; Arora, Monika; Kumar, Anuj; Pandey, Anoop	Understanding factors influencing technical inertia in family-run SMEs : A study on technology adoption challenges	Technology; Inertia; Adoption; Family business; Conservative leadership	TARU PUBLICATIONS	0972-0510	2024	10.47974/JSMS-1208
Santarsiero, Francesco; Carlucci, Daniela; Schiuma, Giovanni	Driving digital transformation and business model innovation in tourism through innovation labs: An empirical study	Innovation labs; Digital transformation; Business model innovation; Empirical study; Tourism	ELSEVIER	0923-4748	2024	10.1016/j.jengtecman.2024.101841

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Dvorsky, Jan; Kubalek, Jan; Barinova, Dagmar; Androniceanu, Armenia; Khan, Khurram Ajaz	SELECTED FACTORS INFLUENCING THE SOCIAL AND ENVIRONMENTAL ASPECTS OF SUSTAINABILITY OF SMES	SMEs sustainability attitudes; Social and environmental responsibility; Human Resource Management (HRM); Corporate Social Responsibility (CSR); Financial performance and management	VILNIUS UNIV PRESS	1648-4460	2024	
Janusz, Andrzej; Slezak, Dominik; Stawicki, Sebastian; Stencel, Krzysztof	A practical study of methods for deriving insightful attribute importance rankings using decision bireducts	Attribute importance rankings; XGBoost and ensembles of decision trees; Ensembles of decision bireducts; Recruitment support systems	ELSEVIER SCIENCE INC	0020-0255	2023	10.1016/j.ins.2023.119354
Balogh, Gabor; Sipos, Norbert; Rideg, Andras	An empirical study of the internal factors influencing the application of compensation incentives in SMEs	Innovation; Small business; Competitiveness; Global competitiveness project; Compensation incentives; HR cycle	EMERALD GROUP PUBLISHING LTD	1059-5422	2021	10.1108/CR-01-2020-0016
Ma, Zongguo; Wang, Xu; Hao, Yan	Development and application of a hybrid forecasting framework based on improved extreme learning machine for enterprise financing risk	Financing risk; Forecasting; Hybrid forecasting; Machine learning; Optimization	PERGAMON-ELSEVIER SCIENCE LTD	0957-4174	2023	10.1016/j.eswa.2022.119373
Pillai, Rajasshrie; Sivathanu, Brijesh	Adoption of artificial intelligence (AI) for talent acquisition in IT/ITeS organizations	Artificial intelligence; TOE; TTF; Talent acquisition; Adoption; IT; ITeS; PLS-SEM	EMERALD GROUP PUBLISHING LTD	1463-5771	2020	10.1108/BIJ-04-2020-0186
Heusser, Andrew C.; DeLoss, Denton J.; Canadas, Elena; Alailima, Titiimaea	Leveraging machine learning to examine engagement with a digital therapeutic	digital therapeutics; engagement; machine learning; cognition; brain health	FRONTIERS MEDIA SA		2023	10.3389/fdgth.2023.1063165
Merhi, Mohammad I.; Harfouche, Antoine	Enablers of artificial intelligence adoption and implementation in production systems	Artificial intelligence; AI implementation; TOE; analytical hierarchy process; production systems	TAYLOR & FRANCIS LTD	0020-7543	2024	10.1080/00207543.2023.2167014
Bergin, A.; Chapman, S. C.; Gjerloev, J. W.	AE, DST, and Their SuperMAG Counterparts: The Effect of Improved Spatial Resolution in Geomagnetic Indices	SuperMAG; geomagnetic indices; space weather; solar cycle; ground-based magnetometer	AMER GEOPHYSICAL UNION	2169-9380	2020	10.1029/2020JA027828
Le, Thanh Tiep	How do corporate social responsibility and green innovation transform corporate green strategy into sustainable firm performance?	Green strategy; Corporate social responsibility; Green innovation; Sustainable firm performance	ELSEVIER SCI LTD	0959-6526	2022	10.1016/j.jclepro.2022.132228
Sala, Siva Teja; Koerner, Richard; Huber, Norbert; Kashaev, Nikolai	On the use of machine learning and genetic algorithm to predict the region processed by laser peen forming	Laser peen forming; Machine learning; Cellular automata neural network; Genetic algorithm	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.09.006

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Garcia-Perez, Ana Maria; Yanes-Estevez, Vanessa	Longitudinal study of perceived environmental uncertainty. An application of Rasch methodology to SMES	SMES; Environment; Uncertainty; Rasch; Longitudinal	EMERALD GROUP PUBLISHING LTD	0972-7981	2022	10.1108/JAMR-02-2022-0033
Lu, Qiang; Zhou, Yihang; Luan, Zhenzeng; Song, Hua	The effect of SMEs' ambidextrous innovations on supply chain financing performance: balancing effect and moderating effect	SMEs; Ambidextrous innovations; Supply chain financing performance; Digital technology deployment	EMERALD GROUP PUBLISHING LTD	0144-3577	2024	10.1108/IJOPM-10-2022-0684
Snieska, Vytautas; Navickas, Valentinas; Haviernikova, Katarina; Okreglicka, Malgorzata; Gajda, Waldemar	TECHNICAL, INFORMATION AND INNOVATION RISKS OF INDUSTRY 4.0 IN SMALL AND MEDIUM-SIZED ENTERPRISES - CASE OF SLOVAKIA AND POLAND	technical risk; information risk; innovation risk; risk management; Poland; Slovakia	VILNIUS GEDIMINAS TECH UNIV	1611-1699	2020	10.3846/jbem.2020.12279
Abdullah, Salma; Ampauleng, Ampauleng	The Micro-Influencers Effect on the Business Sustainability of Small Medium Enterprise: The Marketing Strategy Approach	business sustainability; organizational performance; digital marketing; SMEs; tourism development; social media quality	SOC ROMANA PENTRU ASIGURAREA CALITATII	1582-2559	2024	10.47750/QAS/25.199.35
Jaitan, Chalerm; Li, Zhaohua; Gan, Christopher	An Empirical Analysis of Private SMEs' Insolvency in Thailand Using Machine Learning	SMEs; insolvency; financial ratios; LASSO; Thailand	KASERSART UNIV, FAC ECONOMICS		2024	
Greis, Noel P.	From self-aware to self-healing for perpetual manufacturing	Self-healing; Machine tools; Metals and metal matrix materials; Complex event processing; TinyML	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.08.015
Zhang, Yu; Zhu, Kunpeng	Tool wear estimation with a data-driven physics coupling approach	Tool wear; Data -driven physics coupling; Machine learning; Generalization	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.09.005
Urban, Maria; Koblasa, Frantisek; Mendricky, Radomir	Machine Learning in Small and Medium-Sized Enterprises, Methodology for the Estimation of the Production Time	data mining; machine learning; production time estimation methods; standard time; predictive analytics; small and medium-sized enterprises; modeling evaluation	MDPI		2024	10.3390/app14198608
Alkhoraiif, Abdullah Abdulaziz	A Systematic Review of Financial Factors Affecting Implementation of Lean Principle in Small and Medium Enterprises of Saudi Arabia	Lean implementation (LI); Small and Medium Enterprise (SMEs); Literature review; Financial aspects; Critical successful factors (CSFs)	SCIENDO	2299-0461	2024	10.2478/mspe-2024-0026
Karandikar, Jaydeep; Chaudhuri, Anirban; Smith, Scott; Schmitz, Tony; Willcox, Karen	Process window estimation in manufacturing through Entropy-Sigma active learning	Contour location; Boundary identification; Machining; Additive manufacturing; Stability boundary	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.09.001
Baldegger, Rico; Caon, Maurizio; Sadiku, Kreshnik	Correlation between Entrepreneurial Orientation and implementation of AI in Human Resource Management (HRM)	Artificial Intelligence (AI); Human Resource Management (HRM); Entrepreneurial Orientation (EO)	CARLETON UNIV GRAPHIC SERVICES	1927-0321	2020	10.22215/timreview/1348

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Reite, Endre Jo; Karlsen, Johan; Westgaard, Elias Grefstad	Improving client risk classification with machine learning to increase anti-money laundering detection efficiency	Money laundering; Machine learning; XGBoost; Supervised learning; Client risk classification	EMERALD GROUP PUBLISHING LTD	1758-7808	2025	10.1108/JMLC-03-2024-0040
Thuan, Pham Quoc; Khuong, Nguyen Vinh; Anh, Nguyen Duong Cam; Hanh, Nguyen Thi Xuan; Thi, Vo Huynh Anh; Tram, Tieu Ngoc Bao; Han, Chu Gia	The Determinants of the Usage of Accounting Information Systems toward Operational Efficiency in Industrial Revolution 4.0: Evidence from an Emerging Economy	accounting information systems (AIS); AIS effectiveness; AIS usage; COVID-19	MDPI		2022	10.3390/economies10040083
Wynn, Mathew; Oster, Logan; Chase, Griffin; Salviato, Marco; Zobeiry, Navid	Assessment of the effect of processing parameters on peel failure of laser-assisted automated fiber placed thermoplastic composites	Thermoplastic composites; Automated fiber placement; Wedge Peel; Machine learning	ELSEVIER	2213-8463	2024	10.1016/j.mfglet.2024.03.014
Yao, Gang; Hu, Xiaojian; Xu, Liangcheng; Wu, Zhening	Using social media information to predict the credit risk of listed enterprises in the supply chain	Social media information; Sentiment analysis; Opinion mining; Enterprise credit risk prediction; Supply chain; Machine learning	EMERALD GROUP PUBLISHING LTD	0368-492X	2023	10.1108/K-12-2021-1376
Kondoh, Shinsuke; Furukawa, Yoshiyuki; Kishita, Yusuke	A method for redesigning business workflow for cyber- physical production system	Cyber-physical production system (CPPS); Business workflow; Representation scheme; Redesign method; Die machining	JAPAN SOC MECHANICAL ENGINEERS	1881-3054	2021	10.1299/jamdsm.2021jamdsm0063
Rapaccini, Mario; Adrodegari, Federico; Pezzotta, Giuditta; Saccani, Nicola	Overcoming the knowledge gaps in early-stage servitization journey: A guide for small and medium enterprises	customer services; manufacturing industries; small-to-medium enterprises	WILEY		2024	10.1049/cim2.12106
Zhang, Xiaoming; Yu, Lean; Yin, Hang	Domain adaptation-based multistage ensemble learning paradigm for credit risk evaluation	Joint distribution adaptation; Ensemble learning; Supply chain finance; Small and medium-sized enterprises; Credit risk evaluation	SPRINGER		2025	10.1186/s40854-024-00695-3
Dongul, Esra Sipahi; Artantas, Erkin	Exploring the link between social work, entrepreneurial leadership, social embeddedness, social entrepreneurship and firm performance: a case of SMES owned by Chinese ethnic community in Turkey	Social entrepreneurship; Social embeddedness; Turkey perspectives; SME; Social work; Leadership; Social capital theory; Instrumental stakeholder theory	EMERALD GROUP PUBLISHING LTD	1750-6204	2023	10.1108/JEC-11-2021-0162
Grigoras, Gheorghe; Neagu, Bogdan-Constantin	An Advanced Decision Support Platform in Energy Management to Increase Energy Efficiency for Small and Medium Enterprises	energy management; energy efficiency; small and medium enterprises; artificial intelligence techniques; decision support platform	MDPI		2020	10.3390/app10103505

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Vanneste, Bart S.; Gulati, Ranjay	Generalized Trust, External Sourcing, and Firm Performance in Economic Downturns	generalized trust; trust; interorganizational relationships; strategic alliances; partnerships; external sourcing; economic downturn; Great Financial Crisis; small- and medium-sized enterprises (SMEs); regional studies; machine learning	INFORMS	1047-7039	2022	10.1287/orsc.2021.1500
Pang, Shaonan; Du, Lixia	Deep learning: an study on financial crisis forewarning in small and medium-sized listed enterprises	Deep learning; small and medium-sized listed enterprise; financial crisis; whale optimisation algorithm	TAYLOR & FRANCIS LTD	2330-7706	2025	10.1080/23307706.2024.2331546
Xie, Rui; Wu, Dazhong	Optimal transport-based transfer learning for smart manufacturing: Tool wear prediction using out-of-domain data	Smart manufacturing; Tool wear; Optimal transport; Transfer learning; Domain adaptation	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.08.004
Shohan, Shohanuzzaman; Hasan, Mahmud; Starly, Binil; Shirwaiker, Rohan	Investigating Autoregressive and Machine Learning-based Time Series Modeling with Dielectric Spectroscopy for Predicting Quality of Biofabricated Constructs	Time Series Analysis; Machine Learning; Non-destructive Quality Monitoring; Dielectric Spectroscopy; Tissue Engineering	ELSEVIER	2213-8463	2022	
Kondic, V; Maglic, L.; Runje, L.; Maric, D.	Ranking dominant losses in small and medium-sized enterprises (SMEs) in the context of the lean concept application	Manufacturing; Small and medium-sized enterprises (SMEs); Lean manufacturing; Dominant losses; Ranking; Analysis of losses; Elimination of losses	UNIV MARIBOR, FAC MECHANICAL ENGINEERING	1854-6250	2023	10.14743/apem2023.2.467
Adrodegari, Federico; Saccani, Nicola	A maturity model for the servitization of product-centric companies	Servitization; Case studies; Service operations; SMEs; Maturity model	EMERALD GROUP PUBLISHING LTD	1741-038X	2020	10.1108/JMTM-07-2019-0255
Findik, Derya; Tirgil, Abdullah; Ozbugday, Fatih Cemil	Industry 4.0 as an enabler of circular economy practices: Evidence from European SMEs	Industry 4; 0; Circular economy; SMEs; EU	ELSEVIER SCI LTD	0959-6526	2023	10.1016/j.jclepro.2023.137281
Hu, Chunjia; Din, Qaiser Mohi Ud; Tahir, Aqsa	Artificial Intelligence Symbolic Leadership in Small and Medium-Sized Enterprises: Enhancing Employee Flexibility and Technology Adoption	emerging technologies; artificial intelligence; change readiness; leadership challenges; perceived threat; organizational systems	MDPI		2025	10.3390/systems13040216
Lu, Xuefei; Calabrese, Raffaella	The Cohort Shapley value to measure fairness in financing small and medium enterprises in the UK	Explainable AI; Shapley value; Fairness; Small and medium enterprises	ACADEMIC PRESS INC ELSEVIER SCIENCE	1544-6123	2023	10.1016/j.frl.2023.104542

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Li, Honglei; Yang, Ziyu; Jin, Chunhua; Wang, Jinxia	How an industrial internet platform empowers the digital transformation of SMEs: theoretical mechanism and business model	Industrial internet; SMEs; Knowledge empowerment; Digital transformation; Knowledge-driven supply chain; Knowledge integration; Knowledge sharing	EMERALD GROUP PUBLISHING LTD	1367-3270	2023	10.1108/JKM-09-2022-0757
Fhima, Fredj; Nouira, Ridha; Adair, Philippe	Lending relationship, small businesses and NPLs in Tunisia	Banks; credit risk; NPLs; PMG estimator; SMEs; threshold model	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1793-8120	2022	10.1080/17938120.2022.2146347
Tikkanen, Jukka; Takala, Tuomo; Jarvela, Marja-Liisa; Kurttila, Mikko; Vanhanen, Henri	Challenges and Solutions for Non-Timber Forest Product Businesses in FINLAND-An Application of the SODA Analysis	cognitive mapping; 635 group-work; SODA; non-timber forest products	MDPI		2020	10.3390/f11070753
Lestari, Setyani Dwi; Leon, Farah Margaretha; Widyastuti, Sri; Brabo, Nora Andira; Putra, Aditya Halim Perdana Kusuma	Antecedents and Consequences of Innovation and Business Strategy on Performance and Competitive Advantage of SMEs	Innovation; Strategic Business Management; Competitive advantage; Resource-Based View; Technology Acceptance Model	KOREA DISTRIBUTION SCIENCE ASSOC	2288-4637	2020	10.13106/jafeb.2020.vol7.no6.365
Bunclark, Lisa; Barcellos-Paula, Luciano	Sustainability reporting for sustainable supply chain management in Peru	Sustainability reporting; Sustainable supply chain; Corporate sustainability; Competitive business; SMEs	ELSEVIER	2352-5509	2021	10.1016/j.spc.2021.03.013
Avila Bohorquez, John Henry; Gil-Herrera, Richard de Jesus	Proposal and Validation of an Industry 4.0 Maturity Model for SMEs	industry 4.0; maturity models; manufacturing; Small and Medium Enterprises (SMEs)	OMNIASCIENCE	2013-8423	2022	10.3926/jiem.3673
Bakken, Magnus	maplib: Interactive, Literal RDF Model Mapping for Industry	Knowledge graph construction; knowledge graph mapping; RDF mapping	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2023	10.1109/ACCESS.2023.3269093
Audretsch, David Bruce; Belitski, Maksim	Knowledge complexity and firm performance: evidence from the European SMEs	SMEs; Resilience; Inter-organizational collaboration; Firm performance; Knowledge complexity	EMERALD GROUP PUBLISHING LTD	1367-3270	2021	10.1108/JKM-03-2020-0178
Iquebal, Ashif Sikandar; Botcha, Bhaskar; Bukkapatnam, Satish	Towards rapid, in situ characterization for materials-on-demand manufacturing	Hybrid manufacturing; Machining dynamics; Microstructure characterization; High-resolution sensing; Machine learning	ELSEVIER	2213-8463	2020	10.1016/j.mfglet.2019.11.002
Fotovvati, Behzad; Chou, Kevin	Build surface study of single-layer raster scanning in selective laser melting: Surface roughness prediction using deep learning	Selective laser melting; Surface roughness; Machine learning; Artificial neural network; Titanium alloy	ELSEVIER	2213-8463	2022	

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Yap, Edwin	Machine Learning Methods for Predicting the Outcome of Safety Culture Attributes	Safety Culture; Predictive Analytics; Measurement Tool; Neural Network; Learning Algorithms	KOREAN INST INDUSTRIAL ENGINEERS	1598-7248	2024	10.7232/iems.2024.23.1.080
Ma, Mason; Ren, Alisa; Tyler, Christopher; Karandikar, Jaydeep; Gomez, Michael; Shi, Tony; Schmitz, Tony	Integration of discrete-event dynamics and machining dynamics for machine tool: modeling, analysis and algorithms	Machine tool; machining dynamics; discrete-event dynamics; mathematical optimization; operational excellence	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.08.096
Ha, Hyeonjong; Jeong, Jongpil	CNN-Based Defect Inspection for Injection Molding Using Edge Computing and Industrial IoT Systems	defect detection; edge computing; smart factory; CNN; injection molding	MDPI		2021	10.3390/app11146378
Nurjannah, Nurjannah; Yunus, Muh Haekal; Nurimansjah, Ris Akiril; Erwina, Erwina	Total Quality Management and Productivity Performance of SMEs: The Moderating Effect of Marketing Strategy	total quality management; marketing strategy; productivity performance; SME	SOC ROMANA PENTRU ASIGURAREA CALITATII	1582-2559	2024	10.47750/QAS/25.199.30
Muthukumaran, Kavitha; Hariharanath, K.	Deep Learning Enabled Financial Crisis Prediction Model for Small-Medium Sized Industries	Small medium-sized enterprises; deep learning; FCP; financial sector; prediction; metaheuristics; sailfish optimization	TECH SCIENCE PRESS	1079-8587	2023	10.32604/iasc.2023.025968
Arroyabe, Marta F.; Arranz, Carlos F. A.; de Arroyabe, Ignacio Fernandez; de Arroyabe, Juan Carlos Fernandez	The effect of IT security issues on the implementation of industry 4.0 in SMEs: Barriers and challenges	Industry 4.0; Digitalisation; IT security issues; Barriers; Challenges; Industrial internet of things; ANN-MLP	ELSEVIER SCIENCE INC	0040-1625	2024	10.1016/j.techfore.2023.123051
Bencsik, Andrea	Challenges of Management in the Digital Economy	Digitalization; Industry 4.0; Leadership; Managerial competencies; SMEs contra multinational companies	UNIV INDONESIA, FAC ENGINEERING	2086-9614	2020	10.14716/ijtech.v11i6.4461
Holzinger, Jonas; Nagl, Anna; Bozem, Karlheinz; Lecon, Carsten; Ensinger, Andreas; Roessler, Jannik; Neufeld, Christina	Business Case for a Regional AI-Based Marketplace for Renewable Energies	decentralized energy systems; renewable energy integration; AI-assisted marketplace; dynamic pricing; energy transition; small- and medium-sized enterprises (SMEs); grid stability; sustainability in energy	MDPI		2025	10.3390/su17041739
Klar, Matthias; Glatt, Moritz; Aurich, Jan C.	An implementation of a reinforcement learning based algorithm for factory layout planning	Reinforcement learning; Machine learning; Layout planning; Factory planning; Optimization	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.08.003
Li, Yixuan; Stasinakis, Charalampos; Yeo, Wee Meng	A Hybrid XGBoost-MLP Model for Credit Risk Assessment on Digital Supply Chain Finance	supply chain finance; credit risk assessment; machine learning; XGBoost-MLP	MDPI		2022	10.3390/forecast4010011
Hasan, Syed M.; Khan, M. Raza Mustafa; Arif, Verda	Willingness of women-led businesses in Pakistan to join formal e-commerce platforms	e-commerce; field experiment; information treatment; Pakistan; women-led businesses	WILEY	2050-2680	2022	10.1002/app5.363

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AL-Dosari, Khalifa; Fetais, Noora	Risk-Management Framework and Information-Security Systems for Small and Medium Enterprises (SMEs): A Meta-Analysis Approach	cybersecurity; information security; risk management; risk assessment	MDPI	2079-9292	2023	10.3390/electronics12173629
Mukhamedova, Farzona; Tyukin, Ivan	Machine learning analysis of the effects of COVID-19 on migration patterns		NATURE PORTFOLIO	2045-2322	2024	10.1038/s41598-024-80841-0
Escandon-Barbosa, Diana; Estrada Ochoa, Adriana	Success Factors in the Internalisation of Export Companies in Colombia	export success; export assistance programmes; networks; SMEs; developing country; external resources; export commitment; international experience; export strategy; sector innovation; sector size	RUSSIAN ACAD SCIENCES, URAL BRANCH, INST ECONOMICS	2072-6414	2021	10.17059/ekon.reg.2021-2-15
Donald, David C.	Smart Precision Finance for Small Businesses Funding	Fintech; Corporate finance; SME finance; Small business finance; Data analytics	SPRINGER HEIDELBERG	1566-7529	2020	10.1007/s40804-020-00180-1
Pollak, Frantisek; Markovic, Peter	Size of Business Unit as a Factor Influencing Adoption of Digital Marketing: Empirical Analysis of SMEs Operating in the Central European Market	innovations; competitiveness; small and mid-size enterprises; family businesses; internet; online marketing; electronic marketing; e-marketing	MDPI		2021	10.3390/admsci11030071
Elizabeth Riosvelasco-Monroy, Georgina; Carlos Perez-Olguin, Ivan Juan; Asuncion Perez-Dominguez, Luis; Carlos Mendez-Gonzalez, Luis; Noriega-Morales, Salvador	Application of the COHRV Conceptual Framework to Enhance Sustainable Manufacturing	manufacturing sustainability; Industry 4.0; horizontal collaboration; manufacturing SMEs	MDPI		2022	10.3390/su142416804
Lee, Jay; Gore, Prayag; Jia, Xiaodong; Siahpour, Shahin; Kundu, Pradeep; Sun, Keyi	Stream-of-Quality methodology for industrial Internet-based manufacturing system	Stream-of-QualityTM (SoQ); Industry 4; 0; Blockchain; Machine Learning; Industrial Internet; Multi-Stage Manufacturing System	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.09.004
Lee, Jay; Ji, Dai-Yan; Hsu, Yuan-Ming	Novel topological machine learning methodology for stream-of-quality modeling in smart manufacturing	Topological Data Analysis (TDA); Cyber-Physical Systems (CPS); Stream-of-quality; Data visualization; Machine learning	ELSEVIER	2213-8463	2025	10.1016/j.mfglet.2024.12.002
Wang, Chenyuan	Construction of Value Chain E-Commerce Model Based on Stationary Wavelet Domain Deep Residual Convolutional Neural Network		WILEY-HINDAWI	1076-2787	2020	10.1155/2020/6611325
Chen, Yantai; Li, Jing; Zhang, Jingwen	Digitalisation, data-driven dynamic capabilities and responsible innovation: An empirical study of SMEs in China	Responsible innovation in emerging markets; Data-driven dynamic capabilities; Platform ecosystem; Sustainable development performance; Institutional pressure	SPRINGER	0217-4561	2022	10.1007/s10490-022-09845-6
Hou, Liangliang; Bi, Gongbing; Guo, Qianqian	An improved sparrow search algorithm optimized LightGBM approach for credit risk prediction of SMEs in supply chain finance	Small and medium-sized enterprises; Supply chain finance; Credit risk prediction; LightGBM; Improved sparrow search algorithm	ELSEVIER	0377-0427	2024	10.1016/j.cam.2024.116197

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Anghelache, Florian; Goga, Nicolae; Marian, Constantin viorel; Mitrea, Dan alexandru; Scurtu, Diana	HISTORICAL VEHICLE TRACK VALIDATION IN AN ADAPTIVE ROUTE OPTIMIZATION SOLUTION	Route optimization; Machine-learning classification; Adaptive algorithm; Historical tracks	EDITURA ACAD ROMANE	0035-4066	2025	10.59277/RRST-EE.2025.1.22
Karacsony, Peter; Metzker, Zdenko; Vasic, Tihana; Koltai, Judit Petra	EMPLOYEE ATTITUDE TO ORGANISATIONAL CHANGE IN SMALL AND MEDIUM-SIZED ENTERPRISES	Employees; organisational change; SMEs; HR management; Hungary	TECHNICAL UNIV LIBEREC	1212-3609	2023	10.15240/tul/001/2023-1-006
Dang, Jr-Fong	The multisensor information fusion-based deep learning model for equipment health monitor integrating subject matter expert knowledge	Deep learning; Subject matter expert; Convolutional neural network; Equipment health monitoring	SPRINGER	0956-5515	2024	10.1007/s10845-024-02338-x
Guo, Rui; Tafti, Ali; Subramanyam, Ramanath	Internal IT modularity, firm size, and adoption of cloud computing	Modularity; Cloud computing; Service-oriented; Transaction cost economics; Outsourcing; Firm size	SPRINGER	1389-5753	2025	10.1007/s10660-023-09691-8
Liu, Xinhui; Zhang, Chuo	DIGITALIZATION FOR ENTREPRENEURIAL EMPOWERMENT AND SMALL BUSINESS SUCCESS	Entrepreneurial empowerment; SMEs; digital transformation; individual internet user; mobile phone user; developing economies; CSARDL approach; CSDL robustness analysis	WORLD SCIENTIFIC PUBL CO PTE LTD	0217-5908	2025	10.1142/S0217590825490025
Dobrovic, Jan; Cabinova, Veronika; Gallo, Peter; Partlova, Petra; Vachal, Jan; Balogova, Beata; Orgonas, Jozef	Application of the DEA Model in Tourism SMEs: An Empirical Study from Slovakia in the Context of Business Sustainability	data envelopment analysis; business sustainability; SMEs; efficiency; benchmarking; spa enterprises	MDPI		2021	10.3390/su13137422
Park, Suhyeon; Ruas, Roberto Lima; Ouros, Leticia Oliveira	INSIGHTS SOBRE A RELACAO ENTRE INOVACAO ABERTA E AQUISICAO DE CONHECIMENTO EXTERNO EM PMES SUL-COREANAS DE BASE TECNOLÓGICA	Open innovation; acquisition of external knowledge; SMEs; technology-based companies; and South Korea.	UNIV NOVE JULHO	2318-9975	2023	10.5585/2023.25375
Bieberich, Andrew A.; Rajwa, Bartek; Irvine, Allison; Fatig, Raymond O.; Fekete, Alexander; Jin, Hong; Kutlina, Elena; Urban, Laszlo	Acute cell stress screen with supervised machine learning predicts cytotoxicity of excipients	Cell-based; Cytotoxicity; Excipients; High-content; Machine learning; Methods; Phenotypic; Preclinical; Off-target; In vitro profiling	ELSEVIER SCIENCE INC	1056-8719	2021	10.1016/j.vascn.2021.107088
Cunningham, James A.; Damij, Nadja; Modic, Dolores	An exploratory study of high-performance computing technology adoption over the stages of entrepreneurship	entrepreneurship; technology adoption; HPC; high-performance computing; SMEs; late-stage entrepreneurship; emergent entrepreneurship	INDERSCIENCE ENTERPRISES LTD	1742-5360	2022	10.1504/IJEV.2022.127444
Li, Gushuo; Yin, Menglin	RETRACTED: Research on the Risk Measurement Algorithm of Supply Chain Order Financing Based on Insurance Actuarial (Retracted Article)		WILEY	2314-4629	2021	10.1155/2021/5344205

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Cini, Federico; Ferrari, Annalisa	Towards the estimation of ESG ratings: A machine learning approach using balance sheet ratios	Machine learning; ESG risks; Firm performance risks; Investment strategy; Forecasting	ELSEVIER	0275-5319	2025	10.1016/j.ribaf.2024.102653
Qu, Guimin; Bai, Jingkun	How to achieve the high-quality development of SRDI enterprises? Evidence from machine learning		JOHN WILEY & SONS LTD	0143-6570	2024	10.1002/mde.4114
Alshahrani, Reem; Rizwan, Ali; Alomar, Madani Abdu; Fotis, Georgios	IoT-Based Sustainable Energy Solutions for Small and Medium Enterprises (SMEs)	Python; renewable energy technologies; sustainable energy solutions; small and medium enterprises; long short-term memory model; sustainability	MDPI		2024	10.3390/en17164144
Wyrobek, Joanna Maria; Oleksy, Pawel; Niescior, Bartosz	Navigating Reversed Valuation Dilemmas: SME Enterprises Nationalized in 1950s Poland- A Case Study	company valuation,; nationalization,; loss calculation	UNIV ZIELONA GORA PRESS	1429-9321	2024	10.58691/man/189841
Quttainah, Majdi A.; Haque, Shamima; Panda, Debadrita; Rana, Sudhir	Industrial circular ecosystem entrant: examining small firms	Circular economy; SMEs/startups; Ecosystem; Positive organizational scholarship	EMERALD GROUP PUBLISHING LTD	0025-1747	2025	10.1108/MD-02-2024-0346
Marie Failing, Johanna; Abellan-Nebot, Jose V.; Benavent Nacher, Sergio; Rosado Castellano, Pedro; Romero Subiron, Fernando	A Tool Condition Monitoring System Based on Low-Cost Sensors and an IoT Platform for Rapid Deployment	tool condition monitoring; industrial internet of things; logistic regression; IoT platform; modeling	MDPI		2023	10.3390/pr11030668
Hmede, Rodayna; Chapelle, Frederic; Lapusta, Yuri	Modeling the butterfly behavior of SMA actuators using neural networks	Neural networks; Shape memory alloys; Shape memory effect; Superelastic effect; Hysteresis behavior; Antagonistic systems	ACAD SCIENCES	1631-0721	2022	10.5802/crmeca.108
Shu, Chang; Chen, Yuling; Tan, Chaoyue; Luo, Yun; Dou, Hui	Enhancing trust transfer in supply chain finance: a blockchain-based transitive trust model	Blockchain; Supply chain finance; Transitive signature; Trust evaluation	SPRINGER		2024	10.1186/s13677-023-00557-w
Abubakar, Mustapha; Ahearn, Thomas U.; Duggan, Maire A.; Lawrence, Scott; Adjei, Ernest K.; Clegg-Lampsey, Joe-Nat; Yarney, Joel; Wiafe-Addai, Beatrice; Awuah, Baffour; Wiafe, Seth; Nyarko, Kofi; Aitpillah, Francis S.; Ansong, Daniel; Hewitt, Stephen M.; Brinton, Louise A.; Figueroa, Jonine D.; Garcia-Closas, Montserrat; Edusei, Lawrence; Titiloye, Nicolas	Contribution of Prediagnostic Host Factors to Shaping the Stromal Microenvironment of Breast Cancer among Sub-Saharan African Women		AMER ASSOC CANCER RESEARCH	1055-9965	2025	10.1158/1055-9965.EPI-24-0390

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Zedda, Stefano	Credit scoring: Does XGboost outperform logistic regression?A test on Italian SMEs	Credit scoring; Logistic regression; XGBoost; Bank lending; SMEs	ELSEVIER	0275-5319	2024	10.1016/j.ribaf.2024.102397
Fouiteh, Imane; Santelices, Jose Daniel Cabrera; Susini, Alberto; Patel, Martin K.	Operationalising building-related energy sufficiency measures in SMEs	buildings; business strategies; decarbonisation; energy efficiency; small and medium-sized enterprises (SMEs); sufficiency; Switzerland	UBIQUITY PRESS LTD	2632-6655	2024	10.5334/bc.446
Scuotto, Veronica; Magni, Domitilla; Palladino, Rosa; Nicotra, Melita	Triggering disruptive technology absorptive capacity by CIOs. Explorative research on a micro-foundation lens	Disruptive technologies; Micro-foundation theory; Micro and meso level; Chief information officer; Technology absorptive capacity	ELSEVIER SCIENCE INC	0040-1625	2022	10.1016/j.techfore.2021.121234
Gupta, Minisha; Rana, Shikha	Exploring the Determinants of Digital Innovation Adoption in Indian Family-Owned Enterprises: A Case-Based Study	case study; digital innovation; e-commerce; entrepreneurship; family-based entrepreneurial ventures	WILEY	1681-4835	2025	10.1002/isd2.70012
Adler, Aaron; Bader, Joel S.; Basnight, Brian; Booth, Benjamin W.; Cai, Jitong; Cho, Elizabeth; Collins, Joseph H.; Ge, Yuchen; Grothendieck, John; Keating, Kevin; Marshall, Tyler; Persikov, Anton; Scott, Helen; Siegelmann, Roy; Singh, Mona; Taggart, Allison; Toll, Benjamin; Wan, Kenneth H.; Wyschogrod, Daniel; Yaman, Fusun; Young, Eric M.; Celniker, Susan E.; Roehner, Nicholas	Ensemble Detection of DNA Engineering Signatures	artificial intelligence; bioinformatics; biosecurity; engineering detection; machinelearning	AMER CHEMICAL SOC	2161-5063	2024	10.1021/acssynbio.3c00398
Hazzan, Kafayat Eniola; Pacella, Manuela	A novel laser machining strategy for cutting tool repair	Laser reconditioning; Cutting tools; Computer vision; Deep learning; Sustainable manufacturing	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.04.005
Shao, Jing; Aneye, Cedric; Kharitonova, Alyona; Fang, Wei	Essential innovation capability of producer-service enterprises towards circular business model: Motivators and barriers	circular business model; fuzzy Delphi method; grey-based DEMATEL; innovation capability; producer-service enterprises	WILEY	0964-4733	2023	10.1002/bse.3380
Gumieri, Leandro; Pinto, Anderson Rogerio Faia; Achcar, Jorge Alberto; Hermosilla, Luis Garcia; Faia Pinto, Rafael Henrique	Management factors analysis associated with the financial performance of Micro and Small Businesses in Barretos (SP)	management factors; micro and small business; management maturity; excellence in management model	UNIV NOVE de JULHO-UNINOVE	2318-9975	2025	10.5585/2025.26464
Heinbach, Benjamin; Burggraef, Peter; Wagner, Johannes	Deep reinforcement learning for layout planning - An MDP-based approach for the facility layout problem	Reinforcement learning; Markov decision process; Facility layout problem; Machine learning; Optimization	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.09.007

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Garcia, Alvaro; Bregon, Anibal; Martinez-Prieto, MiguelA.	Digital Twin Learning Ecosystem: A cyber-physical framework to integrate human-machine knowledge in traditional manufacturing	Digital Twin; Manufacturing; Industry 4.0; Human-machine interaction; SMEs; Cyber-physical systems; Retrofitting; IIoT; Machine learning	ELSEVIER	2543-1536	2024	10.1016/j.iot.2024.101094
Bruendl, Patrick; Stoidner, Micha; Nguyen, Huong Giang; Abrass, Ahmad; Franke, Joerg	Optimizing Intralogistics in an Engineer-to-Order Enterprise with Job Shop Production: A Case Study of the Control Cabinet Manufacturing	Intralogistics Control; cabinet Engineer-to-order; Efficiency	SAE INT	1946-3979	2024	10.4271/05-17-01-0006
Cowling, Marc; Liu, Weixi; Calabrese, Raffaella	Has previous loan rejection scarred firms from applying for loans during Covid-19?	Scarred borrowers; Discouraged borrowers; Bank loans; SMEs; Covid-19	SPRINGER	0921-898X	2022	10.1007/s11187-021-00586-2
Khan, Musawwer; Ali, Islam; Nisar, Wasif; Saleem, Muhammad Qaiser; Ahmed, Ali S.; Elamin, Haysam E.; Mehmood, Waqar; Shafiq, Muhammad	Modernization Framework to Enhance the Security of Legacy Information Systems	Modernization; legacy information system; security; SMEs	TECH SCIENCE PRESS	1079-8587	2022	10.32604/iasc.2022.016120
Abbas, Qaiser; Hina, Sadaf; Sajjad, Hamza; Zaidi, Khurram Shabih; Akbar, Rehan	Optimization of predictive performance of intrusion detection system using hybrid ensemble model for secure systems	Predictive modelling; Ensemble method; Intrusion detection; Secure systems	PEERJ INC		2023	10.7717/peerj-cs.1552
Maric, Drazen; Vukmirovic, Goran; Maric, Radenko; Nuseva, Daniela; Lekovic, Ksenija; Vucenovic, Sonja	Analysis of Food Supply Chain Digitalization Opportunities in the Function of Sustainability of Food Placement in the Western Balkans Region	Food Supply Chain (FSC); Internet of Things (IoT); Blockchain Technology (BT); sustainability; digitalization; retail; Western Balkans (WB)	MDPI		2024	10.3390/su16010002
Akhondi, Mehran; Noubar, Hossein Bodaghi Khajeh; Esfahlan, Hakimeh Niky; Najafi, Amir	Investigating the Acceptance Factors of Marketing Systems Based on Artificial Intelligence in Small Industrial Companies	acceptance factors; artificial intelligence (AI); marketing; small industry companies; SMEs	WILEY		2025	10.1155/hbe2/6684735
Babina, Tania; Bahaj, Saleem; Buchak, Greg; De Marco, Filippo; Foulis, Angus; Gornall, Will; Mazzola, Francesco; Yu, Tong	Customer data access and fintech entry: Early evidence from open banking	Financial regulation; Open banking; Financial innovation; Data access; Data rights; Big data; Artificial intelligence	ELSEVIER SCIENCE SA	0304-405X	2025	10.1016/j.jfineco.2024.103950
Al Aghbari, Sarah; Mohammed, Ahmed; Zubairu, Nasiru; Rahman, Noorul Shaiful Fitri Abdul	Exploring the social and environmental performance in fast-fashion supply chains: a comparative analysis between MNCs and SMEs	Fast-fashion supply chain; Social and environmental practices; Sustainable performance; Performance measurement; MNCs; SMEs; Comparative study	EMERALD GROUP PUBLISHING LTD	1741-0401	2025	10.1108/IJPPM-05-2024-0342
Chen, Jingjing; Cai, Tiefeng; He, Wenxiu; Chen, Lei; Zhao, Gang; Zou, Weiwen; Guo, Lingling	A Blockchain-Driven Supply Chain Finance Application for Auto Retail Industry	blockchain; supply chain finance; auto retail industry; SMEs	MDPI		2020	10.3390/e22010095
Qian, Hongyi; Wang, Baohui; Yuan, Minghe; Gao, Songfeng; Song, You	Financial distress prediction using a corrected feature selection measure and gradient boosted decision tree	Financial distress prediction; Gradient boosted decision tree; Feature importance; Permutation importance; Machine learning	PERGAMON-ELSEVIER SCIENCE LTD	0957-4174	2022	10.1016/j.eswa.2021.116202

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Subramanian, Nagamani; Suresh, M.	Economic sustainability factors influencing the implementation of sustainable HRM in manufacturing SMEs	Economic sustainability; Human resource management; Macroeconomic policies; Small and medium enterprises; Cost reduction strategy; Human resource efficiency	SPRINGER	1387-585X	2025	10.1007/s10668-023-04248-z
Marikova, M.; Rolinek, L.; Vrchota, J.; Rehor, P.	DETERMINATION OF THE LEVEL OF STRATEGIC MANAGEMENT IN SMEs	strategic management; strategies; SMEs; level of strategic management	UNIV ECONOMICS-PRAGUE		2022	10.18267/j.cebr.296
Zhang, Lei; Song, Qiankun	Multimodel Integrated Enterprise Credit Evaluation Method Based on Attention Mechanism		HINDAWI LTD	1687-5265	2022	10.1155/2022/8612759
Huynh, Phuc Hong	Enabling circular business models in the fashion industry: the role of digital innovation	Fashion industry; Sustainability; Circular economy; Digital innovation; Circular business model	EMERALD GROUP PUBLISHING LTD	1741-0401	2022	10.1108/IJPPM-12-2020-0683
Nasir, Vahid; Kooshkbaghi, Marzieh; Cool, Julie	Sensor fusion and random forest modeling for identifying frozen and green wood during lumber manufacturing	Sawing; Wood machining; Lumber manufacturing; Machine learning; Feature selection	ELSEVIER	2213-8463	2020	10.1016/j.mfglet.2020.09.011
Wang, Yunfeng; Ibrahim, Othman	Enhancing Crowdfunding Success With Machine Learning and Visual Analytics: Insights From Chinese Platforms	Crowdfunding; Investment; Random forests; Predictive models; Analytical models; Visual analytics; Data models; Social networking (online); Sentiment analysis; Context modeling; machine learning; predictive analytics; random forests; visual analytics; social networks	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2025	10.1109/ACCESS.2025.3546265
Dzemydiene, Dale; Dzemydaite, Giedre; Gopiseti, Dinesh	Application of multicriteria decision aid for evaluation of ICT usage in business	Information communication technology (ICT); Decision support; Business management systems; Multi-criteria decision making methods	SPRINGER	1435-246X	2022	10.1007/s10100-020-00691-9
Kim, Min-Seung; Lee, Chan-Ho; Choi, Ji-Hye; Jang, Yong-Ju; Lee, Jeong-Hee; Lee, Jaesik; Sung, Tae-Eung	A Study on Intelligent Technology Valuation System: Introduction of KIBO Patent Appraisal System II	KPAS II; technology valuation; Deep Neural Networks (DNN); intelligent system; sales estimation; discounted cash flow (DCF); income approach; ensemble	MDPI		2021	10.3390/su132212666
Mehmood, Khalid; Kiani, Ataullah; Rehman, Hina; Alshibani, Safiya Mukhtar; Piccardi, Patrice	Can Platform Leadership Drive Twin Transitions in Greening SMEs? Exploring the Nexus Between AI Infrastructure Flexibility, Information Effects, and Green Sustainable Practices	AI infrastructure flexibility; green sustainable practices; high-tech SMEs; information effects; platform leadership	WILEY	2694-6416	2024	10.1111/beer.12761

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Biadacz, Renata	Quality cost management in the SMEs of Poland	Survey research; Quality cost; Management; SMEs; Medium-sized companies	EMERALD GROUP PUBLISHING LTD	1754-2731	2021	10.1108/TQM-09-2019-0223
Nhung Vu; Le, Chau	How much do cohesive and diversified networks improve financial access for small business?	Entrepreneurial network; cohesive network; diversified network; SMEs; financial constraints	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0003-6846	2023	10.1080/00036846.2022.2089346
Cudic, Bojan	Factors impacting patent applications in European countries	developing countries; patent applications; small and medium enterprises	WILEY	1757-7802	2021	10.1111/rsp3.12405
Calvo, Nuria; Monje-Amor, Ariadna; Villarreal, Oskar	When your value proposition is to improve others' energy efficiency: Analyzing the internationalization dilemma of eco-innovations in SMEs	Energy efficiency; Business model archetype; Internationalization; System dynamics	ELSEVIER SCIENCE INC	0040-1625	2022	10.1016/j.techfore.2022.122069
Trieu, Hoa D. X.; Nguyen, Phuong V.; Tran, Khoa Tien; Vrontis, Demetris; Ahmed, Zafar	Organisational resilience, ambidexterity and performance: the roles of information technology competencies, digital transformation policies and paradoxical leadership	IT competencies; Organisational ambidexterity; Organisational resilience; Paradoxical leadership; Business performance; Digital transformation policies	EMERALD GROUP PUBLISHING LTD	1934-8835	2024	10.1108/IJOA-05-2023-3750
Nath, Vikanksh; Chattopadhyay, Chiranjoy; Desai, K. A.	NSLNet: An improved deep learning model for steel surface defect classification utilizing small training datasets	Computer vision; Surface defect classification; Neural structure learning; Smart manufacturing	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2022.10.001
Hennart, Jean-Francois; Majocchi, Antonio; Hagen, Birgit	What's so special about born globals, their entrepreneurs or their business model?	born globals; internalization theory; survival analysis; business models; international entrepreneurship; Uppsala model	PALGRAVE MACMILLAN LTD	0047-2506	2021	10.1057/s41267-021-00427-0
Trinh Hiep Thien; Nguyen Xuan Hung	INSTITUTIONAL PRESSURES, LEGITIMACY, RISKS, UNCERTAINTY AND VOLUNTARY ADOPTION OF IFRS FOR SMES IN VIETNAM	institutional pressures; legitimacy; risks; uncertainty; voluntary adoption of International Financial Reporting Standards	INST EASTERN EUROPE & CENTAL ASIA	2328-8272	2021	
Tsvetanova, Lora; Carraresi, Laura; Wustmans, Michael; Broering, Stefanie	Actors' strategic goals in emerging technological innovation systems: evidence from the biorefinery sector in Germany	Technological innovation systems; strategic goals; actor typology; biorefinery sector	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0953-7325	2022	10.1080/09537325.2021.1919300
Grant-Jacob, James A.; Mills, Ben; Zervas, Michalis N.	Real-time control of laser materials processing using deep learning		ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.08.145
Tazhibekova, Kashamida; Shametova, Aigerim; Maharramov, Rashad; Makar, Svetlana	The role of information and digital tools in supply chain management during the Covid crisis	small and medium-sized businesses; local market; digitalization; standardization; supply chain manageability	4S go, s.r.o		2023	10.22306/al.v10i1.344

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Yorulmaz, Halil; Baykal, Elif	Telework as a dynamic capability of firms: A qualitative research and narratives	telework; dynamic capabilities; flexible work arrangements; remote work; small and medium-sized enterprises; Turkey	URAL STATE UNIV ECONOMICS	2218-5003	2024	10.29141/2218-5003-2024-15-1-1
Barile, Berardino; Forti, Marco; Marrocco, Alessia; Castaldo, Angelo	Causal impact evaluation of occupational safety policies on firms' default using machine learning uplift modelling		NATURE PORTFOLIO	2045-2322	2024	10.1038/s41598-024-60348-4
Tan, Hua; Yan, Ye; Wu, Zheng Zhong	Determinants of the transition towards circular economy in SMEs: a sustainable supply chain management perspective	Green logistic management; Circular economy practices; Sustainability performance; Supply chain traceability; Small and medium enterprise; PLS-SEM	SPRINGER HEIDELBERG	0944-1344	2024	10.1007/s11356-024-31855-8
Pugsley, Todd	Fluidized bed applications and modern scale-up tools for the energy transition	biomass combustion; carbon products; chemical looping combustion; co-processing; discovery driven growth; energy transition; fluid catalytic cracking; fluidization; fluidized bed; hybrid model; machine learning; scale-up; turquoise hydrogen	WILEY	0008-4034	2025	10.1002/cjce.25420
Gurbych, Oleksandr; Pavliuk, Petro; Krasnienkov, Dmytro; Liashuk, Oleksandr; Melnykov, Kostiantyn; Grygorenko, Oleksandr O.	Filling the Gap in LogP and pKa Evaluation for Saturated Fluorine-Containing Derivatives With Machine Learning	acidity; basicity; fluorine; graph neural networks; lipophilicity; machine learning; molecular design	WILEY	0192-8651	2025	10.1002/jcc.70002
Alriyami, Salim Nasser Salim; Ahmed, Mahfooz	The use of technology among the Omani retailers amidst the COVID-19 pandemic	e-commerce; technology; retailers; COVID-19 pandemic; Oman; social media	INDERSCIENCE ENTERPRISES LTD	1368-4892	2023	10.1504/IJBPM.2023.132325
Yoo, Hyoung Sun; Jung, Ye Lim; Jun, Seung-Pyo	Prediction of SMEs' R&D performances by machine learning for project selection		NATURE PORTFOLIO	2045-2322	2023	10.1038/s41598-023-34684-w
Shah, Faiza; Liu, Yumin; Anwar, Aamir; Shah, Yasir; Alroobaea, Roobaea; Hussain, Saddam; Ullah, Syed Sajid	RETRACTED: Machine Learning: The Backbone of Intelligent Trade Credit-Based Systems (Retracted Article)		WILEY-HINDAWI	1939-0114	2022	10.1155/2022/7149902
Deshpande, Sourabh; Padalkar, Shailesh; Anand, Sam	IIoT based Framework for Data Communication and Prediction using Augmented Reality for Legacy Machine Artifacts	Augmented Reality; Legacy Machines Data; Mixed Reality; IoT; Industry 4.0/5.0; Smart Manufacturing; AR App; Machine Learning	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.08.058
Agarwal, Alpana	AI adoption by human resource management: a study of its antecedents and impact on HR system effectiveness	Artificial intelligence; Technology adoption; HR effectiveness; AI adoption; TOE model; TTF model	EMERALD GROUP PUBLISHING LTD	1463-6689	2023	10.1108/FS-10-2021-0199

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Le, Thanh Tiep	Linking big data, sustainable supply chain management and corporate performance: the moderating role of circular economy thinking	Big-data-driven supply chain; Sustainable supply chain management; Sustainable firm performance; Circular economy	EMERALD GROUP PUBLISHING LTD	0957-4093	2023	10.1108/IJLM-01-2022-0011
Memarzadeh, Milad; Asanjan, Ata Akbari; Matthews, Bryan	Robust and Explainable Semi-Supervised Deep Learning Model for Anomaly Detection in Aviation	anomaly detection; semi-supervised learning; explainable AI; aviation safety	MDPI		2022	10.3390/aerospace9080437
Temel, Serdal; Durst, Susanne	Knowledge risk prevention strategies for handling new technological innovations in small businesses	SMEs; Risk management; Emerging technologies; Countermeasures; Risk prevention; Knowledge risks	EMERALD GROUP PUBLISHING LTD	2059-5891	2021	10.1108/VJIKMS-10-2019-0155
Jahan, Suchana Akter; Al Hasan, Mohammad; El-Mounayri, Hazim	A framework for graph-base neural network using numerical simulation of metal powder bed fusion for correlating process parameters and defect generation	powderbed fusion; defect generation; multiscale modeling; online monitoring; machine learning	ELSEVIER	2213-8463	2022	
Chien, Fengsheng; Wang, Chia-Nan; Chau, Ka Yin; Van Thanh Nguyen; Viet Tinh Nguyen	Sustainability in the Business Sector: A Fuzzy Multicriteria Decision-Making Model for Financial Leasing Company Selection of the Vietnamese SMEs	Multicriteria Decision-Making Model; fuzzy theory; FAHP; TOPSIS; financial leasing company	SAGE PUBLICATIONS INC	2158-2440	2021	10.1177/21582440211036080
Manley, Scott C.; Williams, Ralph L., Jr.; Hair, Joseph F., Jr.	Enhancing TQM's effect on small business performance: a PLS-SEM exploratory study of TQM applied with a comprehensive strategic approach	TQM; Total quality management; CSA; Comprehensive strategic approach; Small business; PLS-SEM	EMERALD GROUP PUBLISHING LTD	1754-2731	2024	10.1108/TQM-10-2021-0299
Kopka, Alexander; Fornahl, Dirk	Artificial intelligence and firm growth - catch-up processes of SMEs through integrating AI into their knowledge bases	Artificial intelligence; Firm growth; Catch-up; Innovation; Productivity	SPRINGER	0921-898X	2024	10.1007/s11187-023-00754-6
Liang, Decui; Yi, Bochun	Two-stage three-way enhanced technique for ensemble learning in inclusive policy text classification	Three-way decisions; Decision support; Ensemble learning; Convolutional neural networks; Inclusive policy text classification	ELSEVIER SCIENCE INC	0020-0255	2021	10.1016/j.ins.2020.08.051
Psarras, Alkinoos; Anagnostopoulos, Theodoros; Tsotsolas, Nikos; Salmon, Ioannis; Vryzidis, Lazaros	Applying the Balanced Scorecard and Predictive Analytics in the Administration of a European Funding Program	Balanced Scorecard; predictive analytics; program performance	MDPI		2020	10.3390/admsci10040102
Antoniuk, Dmytro; Ivens, Bjoern Sven; Kolyada, Olexandr	HOW IS ARTIFICIAL INTELLIGENCE CHANGING HR? ADAPTIVE MANAGEMENT FOR THE NEW ENVIRONMENT	adaptive HR management; artificial intelligence; digital transformation; organisational flexibility; recruitment efficiency	Baltija Publishing	2256-0742	2025	10.30525/2256-0742/2025-11-2-13-26

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van de Weijer, Steve; Leukfeldt, Rutger; Moneva, Asier	Cybercrime during the COVID-19 pandemic: Prevalence, nature and impact of cybercrime for citizens and SME owners in the Netherlands	Cybercrime; Online crime; Internet; Remote work; Businesses; Victimization; COVID-19; Pandemic; coronavirus	ELSEVIER ADVANCED TECHNOLOGY	0167-4048	2024	10.1016/j.cose.2023.103693
Bin-Nashwan, Saeed Awadh; Li, Jackie Zhanbiao	What shapes AI adoption in financial service-oriented contexts? The game-changing role of innovation climate	Financial service-oriented contexts; Resource dependence theory (RDT); Artificial intelligence; Accounting; Innovation climate; AI adoption	EMERALD GROUP PUBLISHING LTD	2398-6247	2025	10.1108/IDD-12-2024-0199
Sabale, Dattatraya Balasaheb; Kaswan, Mahender Singh; Rath, Rajeev; Yadav, Vishwas	Investigating and modeling the circular economy enablers in product development process: net zero as a moderator	Circular economy; Enablers; Net zero; Sustainability; Manufacturing; Pythagorean fuzzy sets; DEMATEL	EMERALD GROUP PUBLISHING LTD	1463-5771	2025	10.1108/BIJ-06-2023-0401
McGovern, Megan E.; Rinker, Teresa J.; Wagner, Sean R.; Sekol, Ryan C.; Lesperance, Ronald; Schroth, James G.; Wegner, Diana	Enabling thermography of highly reflective laser welds using a multi-flash sequence approach	laser welds; flash thermography; nondestructive evaluation; paint; low emissivity; high reflectivity; metal welds	ELSEVIER	2213-8463	2022	
Garcia, Elizabeth	THE MANAGEMENT FINANCIAL AND COMPETITIVE STRATEGY: ANALYSIS OF THEIR DIFFERENCES ACCORDING TO BUSINESS SIZE	financial management; management; company size; strategy; economic competition	UNIV QUINDIO	1794-631X	2022	10.33975/riuq.vol34n2.1067
Nguyen, Xuan Truong; Nguyen, Thai Ha; Dang, Huynh Phuong; Pham, Thi Lan Phuong; Bui, Thi Thanh; Tran, Nhat Minh; Huynh, Tri An; Nguyen, Nam Phong	E-commerce Adoption in Distribution: An Empirical Study on Household Businesses in Food and Beverage Industry	E-commerce adoption; Distribution, Household businesses; Food and beverage industry, TAM and TOE frameworks; F&B distribution	KODISA Foundation	1738-3110	2022	10.15722/jds.20.02.202202.65
Firman, Ahmad; Putra, Aditya Halim Perdana Kusuma; Mustapa, Zainuddin; Ilyas, Gunawan Bata; Karim, Kasnaeny	Re-conceptualization of Business Model for Marketing Nowadays: Theory and Implications	Innovation; Business Strategy; Service-Dominant Logic; Resource-Based View; Competitive Advantage	KOREA DISTRIBUTION SCIENCE ASSOC	2288-4637	2020	10.13106/jafeb.2020.vol7.no7.279
Banati, Anna	Developing Security Information and Events Management Use Cases for 5G Specific Vulnerabilities and Attacks	5G networks; vulnerability; attack detection; SIEM	BUDAPEST TECH	1785-8860	2025	
Okecha, Chimkwanum; Branine, Mohamed; Mamman, Aminu	Investigating servant leadership and Ubuntu in Nigerian private sector enterprises: A parallel conceptual analysis	leadership; Ubuntu; Africa; SMEs; servant leadership; culture	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	2332-2373	2024	10.1080/23322373.2024.2350866

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Macchion, Laura; Toscani, Antonio Cavallin; Vinelli, Andrea	Sustainable business models of small and medium-sized enterprises and the relationships to be established within the supply chain to support these models	business model; circular economy; corporate social responsibility; environmental policy; social policy; supply chain; sustainability; sustainable business models	WILEY	1535-3958	2023	10.1002/csr.2374
Parrilli, Mario Davide; Radicic, Dragana	Cooperation for innovation in liberal market economies: STI and DUI innovation modes in SMEs in the United Kingdom	Small businesses; STI and DUI collaborations for innovation; entrepreneurial innovation system; varieties of capitalism; United Kingdom	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0965-4313	2021	10.1080/09654313.2021.1935756
Eze, Sunday C.; Chinedu-Eze, Vera C.; Awa, Hart O.; Alharthi, Rami Hashem E.	Factors stimulating value micro-businesses attribute to digital marketing technology (DMT) adoption		PUBLIC LIBRARY SCIENCE	1932-6203	2021	10.1371/journal.pone.0260145
Alharthi, Amna Ali; Althothali, Ghada Talat	THE ADOPTION OF SOCIAL MEDIA MARKETING BY HOME-BASED BUSINESSES IN SAUDI ARABIA	home-based businesses; micro-businesses; social media marketing; social influence; technology acceptance model; usefulness	SUMY STATE UNIV, DEPT MARKETING & MANAGEMENT INNOVATIVE ACTIVITY	2218-4511	2021	10.21272/mmi.2021.3-21
Chen, You-Shyang; Chou, Jerome Chih-Lung; Lin, Yu-Sheng; Hung, Ying-Hsun; Chen, Xuan-Han	Identification of SMEs in the Critical Factors of an IS Backup System Using a Three-Stage Advanced Hybrid MDM-AHP Model	backup system; information security (IS); small and medium enterprises (SMEs); modified Delphi method (MDM); advanced analytic hierarchy process	MDPI		2023	10.3390/su15043516
Deb, Santus Kumar; Nafi, Shohel Md; Valeri, Marco	Promoting tourism business through digital marketing in the new normal era: a sustainable approach	Digital marketing strategies; Digital renovation; Social media adoption; Mobile technologies; Tourism business performance; Structural equation modeling (SEM)	EMERALD GROUP PUBLISHING LTD	1460-1060	2024	10.1108/EJIM-04-2022-0218
Dharmawan, Mahdaviqia; Rahayu, Wiwit; Khomah, Isti; Kusnanda	Determinants of Social Media Adoption by Millennial Farmers to Improve Business Performance: Perspectives from the Technology-Organization-Environment (TOE) Framework	Social Media Adoption; Business Performance; Millennial Farmers; TOE Framework	Nan Yang Acad Sciences - NASS	2737-4777	2024	10.36956/rwae.v5i4.1327
Singh, Swarit Anand; Desai, K. A.	Automated surface defect detection framework using machine vision and convolutional neural networks	Machine vision; Surface defect detection; Centerless grinding; Deep learning; ResNet-101	SPRINGER	0956-5515	2023	10.1007/s10845-021-01878-w
Huy, Pham Quang; Phuc, Vu Kien	Unveiling how business process management capabilities foster dynamic decision-making for effectiveness of sustainable digital transformation	Business process management; Digital transformation; Dynamic decision-making; Small and medium enterprise; Sustainable development	EMERALD GROUP PUBLISHING LTD	1463-7154	2025	10.1108/BPMJ-06-2024-0467

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Al-Azzam, Majed Kamel Ali; Al-Alwan, Mohammad Amhamoud Mked; Alqahtani, Menahi Mosallam; Al-Hawary, Sulieman Ibraheem Shelash; Alserhan, Atallah Fahed	Determinants of behavioral intention to use big data analytics (BDA) on the information and communication technologies (ICT) SMEs in Jordan	Big Data Analytics (BDA); Technology Acceptance Model (TAM); Information and Communication Technologies (ICTs) SMEs; Jordan	GROWING SCIENCE	1929-5804	2023	10.5267/dsl.2023.4.004
Sharma, Nagendra Kumar; Kumar, Vimal; Verma, Pratima; Sharma, Mahak; Al Khalil, Ashwaq; Daim, Tugrul	Industry 4.0 factors affecting SMEs towards sustainable manufacturing	Industry 4.0; Sustainable manufacturing; SMEs; Best worst method (BWM); Hierarchical decision model (HDM)	ELSEVIER SCI LTD	0160-791X	2024	10.1016/j.techsoc.2024.102746
Karas, Michal; Reznakova, Maria	A novel approach to estimating the debt capacity of European SMEs	debt capacity; financial distress; macroeconomic factors; financial constraints	INST ECONOMIC RESEARCH-POLAND	1689-765X	2023	10.24136/eq.2023.017
Tatiparti, Suhasini; Goli, Gurunadham; Reddy, Tatiparti B. Prasad	Exploring the ethical implications of AI in talent management: perspectives from medium and large enterprises	Artificial intelligence; Talent management process; Employee performance; Medium and large-sized enterprises	EMERALD GROUP PUBLISHING LTD	1463-7154	2025	10.1108/BPMJ-05-2024-0338
Caballero-Morales, Santiago-Omar; Cuautle-Gutierrez, Luis; Cordero-Guridi, Jose-de-Jesus; Alvarez-Tamayo, Ricardo-Ivan	Six-Sigma Reference Model for Industry 4.0 Implementations in Textile SMEs	textile industry; Industry 4.0; sustainability; implementation guidelines; SMEs	MDPI		2023	10.3390/su151612589
Geng, Zhaohui; Bidanda, Bopaya	Automated Posture Positioning for High Precision 3D Scanning of a Freeform Design using Bayesian Optimization	3D scanning; Point cloud; Geometric metrology; Additive manufacturing; Bayesian optimization	ELSEVIER	2213-8463	2022	
Verhagen, Mathijs; de Reuver, Mark; Bouwman, Harry	Implementing Business Models Into Operations: Impact of Business Model Implementation on Performance	Business; Technological innovation; Europe; Analytical models; Standardization; Process control; Information exchange; Business models (BMs); business model innovation (BMI); enterprise architecture (EA); operating model (OM)	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2023	10.1109/TEM.2020.3046365
Bertschek, Irene; Wambach, Achim	AI in Europe - Is Regulation the Answer to Being a Laggard?	Artificial Intelligence; European regulation; digital single market; O30; O38	WALTER DE GRUYTER GMBH	2194-6167	2024	10.1515/ev-2024-0043
Parast, Mahour Mellat; Safari, Arsalan	Enhancing the quality and competitiveness of small businesses: A pooled cross-sectional analysis	Quality management; Small business; Malcom baldrige national quality award (MBNQA); Baldrige model; Structural equation modeling	ELSEVIER	0925-5273	2022	10.1016/j.ijpe.2022.108410
Liu, Jundi; Hwang, Steven; Yund, Walter; Neidig, Joel D.; Hartford, Scott M.; Boyle, Linda Ng; Banerjee, Ashis G.	A Predictive Analytics Tool to Provide Visibility Into Completion of Work Orders in Supply Chain Systems	data-driven engineering; engineering informatics; machine learning for engineering applications; manufacturing planning	ASME	1530-9827	2020	10.1115/1.4046135

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Kaur, Jaspreet; Srivastava, Sumita; Kaushik, Hans	FISM-FMICMAC-based analysis of challenges affecting potato processing by SMEs in India	Potato processing; FISM; FMICMAC; Nominal group technique (NGT); Policy framework	EMERALD GROUP PUBLISHING LTD	2044-0839	2025	10.1108/JADEE-05-2024-0160
Sannabe, Atsushi	How to improve SME performance using iterative random forest in the empirical analysis of institutional complementarity		SPRINGER NATURE		2022	10.1057/s41599-022-01123-6
Xu, Jing; Ruan, Xiaoli; Yang, Jing; Hu, Bingqi; Li, Shaobo; Hu, Jianjun	SME-MFP: A novel spatiotemporal neural network with multiangle initialization embedding toward multifunctional peptides prediction	Functional peptide; Multilabel classification; Deep neural networks; Class imbalance	ELSEVIER SCI LTD	1476-9271	2024	10.1016/j.compbiolchem.2024.108033
Wu, Jing; Zhang, Zhaocheng; Zhou, Sean X.	Credit Rating Prediction Through Supply Chains: A Machine Learning Approach	credit risk; credit rating; supply chains; machine learning application	WILEY	1059-1478	2022	10.1111/poms.13634
Hu, Jing; Huang, Lianming; Li, Weifu; Xu, Hongyi	Financing Mechanisms and Preferences of Technology-Driven Small- and Medium-Sized Enterprises in the Digitalization Context	SMEs; financing mechanism; financing preferences; machine learning	MDPI		2025	10.3390/systems13020068
Alfarizi, Muhammad; Widiastuti, Tika; Ngatindriatun	Exploration of Technological Challenges and Public Economic Trends Phenomenon in the Sustainable Performance of Indonesian Digital MSMEs on Industrial Era 4.0	Big Data; digital adoption; internet of things; MSMEs; sustainable digital business	WORLD SCIENTIFIC PUBL CO PTE LTD	2424-8622	2024	10.1142/S2424862223500045
Sudrajat, Antonius Wahyu; Ermatita; Samsuryadi	CN-GAIN: Classification and Normalization Denormalization-Based Generative Adversarial Imputation Network for Missing SMES Data Imputation	Missing values; GAIN method; normalization-denormalization; imputation; UMKM data	SCIENCE & INFORMATION SA ORGANIZATION LTD	2158-107X	2025	
Tong, Li Zhong; Wang, Jindan; Pu, Zhongmin	Sustainable supplier selection for SMEs based on an extended PROMETHEE II approach	Small and medium-sized enterprises; Sustainable; Supplier selection; PROMETHEE II; Probabilistic language term set	ELSEVIER SCI LTD	0959-6526	2022	10.1016/j.jclepro.2021.129830
Rexhepi, Gadaf; Sharif, Arshian; Najmi, Arsalan; Dinca, Gheorghita	Factors Deriving Sustainable Oriented Innovation Capability for Firm Competitiveness: Findings from the Family Businesses of an Emerging Countries	Sustainable oriented innovation capability; Firm competitiveness; Strategic planning; Leadership management; Knowledge management; Customer pressures; Government support	SPRINGER INT PUBL AG	1058-0476	2024	10.1007/s10834-024-09993-5
Lobo, Stanislaus; Samaranyake, Premaratne	An innovation management assessment framework	Innovation; Design for lean six sigma; Stage-gate; New product development	EMERALD GROUP PUBLISHING LTD	1463-5771	2020	10.1108/BIJ-02-2019-0085

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Magodi, A. Y.; Daniyan, I. A.; Mpfu, K.	APPLICATION OF LEAN SIX SIGMA TO A SMALL ENTERPRISE IN THE GAUTENG PROVINCE: A CASE STUDY		SOUTHERN AFRICAN INST INDUSTRIAL ENGINEERING	2224-7890	2022	10.7166/31-1-2504
Linares-Zegarra, Jose M.; Wilson, John O. S.	Access to finance for UK social enterprises	Access to finance; sources of funding; small- and medium-sized enterprises; social enterprises; women-led social enterprises; minority-ethnic group enterprises	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1351-847X	2024	10.1080/1351847X.2024.2332712
Bukartaite, Raimunda; Hooper, Daire	Automation, artificial intelligence and future skills needs: an Irish perspective	Human resource management; Technology; Artificial intelligence; Training needs; Education needs; Future skills needs	EMERALD GROUP PUBLISHING LTD	2046-9012	2023	10.1108/EJTD-03-2023-0045
Wescoat, Ethan; Bradford, Joshua; Krugh, Matthew; Mears, Laine	Contamination Factor Prediction Using Contrived Data for Bearing Useful Life Estimation	Purposeful Failure; Bearing Contamination; Data-Driven Machine Learning	ELSEVIER	2213-8463	2022	
Xu, Lili; Yang, Yubin; Chu, Xuejian	Research on the Influence Mechanism of Block Chain on the Credit of Transportation Capacity Supply Chain Finance		HINDAWI LTD	1024-123X	2021	10.1155/2021/1812096
Trieu, Hoa D. X.; Nguyen, Phuong Van; Vrontis, Demetris	The interplay of IT adoption, government support and firm performance: mediating roles of innovation and resilience in Vietnamese SMEs	IT application; Government support; Organizational resilience; Innovation; Firm performance	EMERALD GROUP PUBLISHING LTD	1558-7894	2025	10.1108/JABS-12-2024-0690
Islam, Md Asadul; Mendy, John; Haque, A. K. M. Ahasanul; Rahman, Mahfuzur	Green human resource management practices and millennial employees' retention in small and medium enterprises: The moderating impact of creativity climate from a developing country perspective	employee retention; green creativity climate; green human resource management practices; millennials; small and medium enterprises; social exchange theory	WILEY		2022	10.1002/bsd2.202
Khan, Rizwan Ullah; Richardson, Christopher; Salamzadeh, Yashar	Spurring competitiveness, social and economic performance of family-owned SMEs through social entrepreneurship; a multi-analytical SEM & ANN perspective	Social entrepreneurship; Differentiation and cost leadership strategies; Social and financial performance; SEM; Artificial Neurons Networks (ANN) Pakistan	ELSEVIER SCIENCE INC	0040-1625	2022	10.1016/j.techfore.2022.122047
Hoshino, Tadao; Shimamoto, Daichi; Todo, Yasuyuki	Accounting for Heterogeneity in Network Formation Behaviour: An Application to Vietnamese SMEs		WILEY	0305-9049	2020	10.1111/obes.12360
Ramos, Leo; Bermeo, Mike; Quelal, Andres; Crespo, Anthony; Cajamarca, Gabriela; Rivas-Echeverria, Francklin	SustainMeter: A knowledge-based system for assessing sustainability of SMEs in the fashion industry	Knowledge-based system; Sustainability; Sustainable development; Fashion industry; Sustainable fashion; Fuzzy logic	ELSEVIER	2352-7110	2024	10.1016/j.softx.2023.101611

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Gautam, Anuj; Aryal, Manish Raj; Deshpande, Sourabh; Padalkar, Shailesh; Nikolaenko, Mikhail; Tang, Ming; Anand, Sam	IIoT-enabled digital twin for legacy and smart factory machines with LLM integration ☆	Large language model; Industrial Internet of Things; Digital twin; Multi-agent framework; Retrieval-augmented generation	ELSEVIER SCI LTD	0278-6125	2025	10.1016/j.jmsy.2025.03.022
Guo, H.; Zhu, K. P.	Attention-based dual-scale hierarchical LSTM for tool wear monitoring	Tool wear; Dual-scale local attention; Hierarchical attention; Time-frequency; Multi-scale analysis	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.07.015
Kim, Duck Bong; Shao, Guodong; Jo, Guejong	A digital twin implementation architecture for wire	Digital Twin; Wire + Arc Additive Manufacturing; ISO 23247; Data Analytics	ELSEVIER	2213-8463	2022	10.1016/j.mfglet.2022.08.008
Dias, Joao Sidou; Yousefi, Milad	Finding the Causal Relations among Key Competencies in Microbreweries: A Multi-Criteria Decision-Making Approach	Competency Model; Multi Criteria Decision Making; DEMATEL; Microbrewery	KOREAN INST INDUSTRIAL ENGINEERS	1598-7248	2020	10.7232/iems.2020.19.3.657
Okuno, Mayumi J.; Okuno, Hiroshi G.	Legal frameworks for AI service business participants: a comparative analysis of liability protection across jurisdictions	Artificial intelligence; Artificial general intelligence; AI business governance; Liability protection; Business entity; SME regulatory challenges; AI regulation; EU AI Act; GDPR	SPRINGER	0951-5666	2025	10.1007/s00146-025-02288-9
Lu, Dening; Schwartz, Shimon; Xu, Linlin; Shafiee, Mohammad Javad; Vinson, Norman G.; Czarnecki, Krzysztof J.; Wong, Alexander	Integrating deep transformer and temporal convolutional networks for SMEs revenue and employment growth prediction	Transformer; BERT; Temporal convolutional network; Revenue growth prediction; Feature importance evaluation; Heterogeneous data modeling	PERGAMON-ELSEVIER SCIENCE LTD	0957-4174	2024	10.1016/j.eswa.2024.124129
Mallik, Girijasankar; Nguyen, Duc Nguyen; Chowdhury, Anis	Does firm size really affect the outcome of loan applications?	Access to finance; SMEs; Borrower discouragement; Heckman; Multinomial logit	ELSEVIER	0313-5926	2022	10.1016/j.eap.2022.04.004
Byrne, Seamus; Ludvigsen, Jan Andre Lee	Sport mega-event governance and human rights: the 'Ruggie Principles', responsibility and directions	sport mega-events; human rights; Ruggie principles; governance; sport; mega-events	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0261-4367	2023	10.1080/02614367.2022.2094998
Dolatabadi, Elham; Chen, Branson; Buchan, Sarah A.; Austin, Alex Marchand; Azimae, Mahmoud; McGeer, Allison; Mubareka, Samira; Kwong, Jeffrey C.	Natural Language Processing for Clinical Laboratory Data Repository Systems: Implementation and Evaluation for Respiratory Viruses	health; informatics; natural language processing; knowledge extraction; electronic health record; EHR	JMIR PUBLICATIONS, INC		2023	10.2196/44835
Ngo, Vu Minh; Vu, Hieu Minh	CAN CUSTOMER RELATIONSHIP MANAGEMENT CREATE CUSTOMER AGILITY AND SUPERIOR FIRMS' PERFORMANCE?	Customer Agility; Customer Relationship Management (CRM); Firms' Performance; Resource-Advantage Theory; Small and Medium Enterprises (SMEs); Tourism Industry	UNIV MALAYSIA SARAWAK, FAC ECONOMICS & BUSINESS	1511-6670	2021	10.33736/ijbs.3169.2021

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Zhu, Wen; Wu, Chengcheng; Li, Meiling; Yao, Fengmin	A data science framework for profit health assessment: development and validation	Profit Health Assessment; Data Science Framework; Signaling Theory; Machine Learning Algorithms; Earnings Quality Evaluation; Nonfinancial Metrics	SPRINGER		2024	10.1186/s13662-024-03847-y
Hrnjica, Edin; Veselinovic, Ljiljan	Performance and Effort Expectations in Implementing ESG Practices in Bosnian and Herzegovinian SMEs: An Application of the Technology Acceptance Model	Environmental practices; Social practices; Governance practices; ESG; Small and medium-sized businesses; Structural equation modelling; SEM; Bosnia and Herzegovina	HRVATSKO DRUSTVO EKONOMISTA	0424-7558	2025	10.32910/ep.76.2.5
Buyukselcuk, Elif Caloglu	Evaluation of Industrial IoT Service Providers with TOPSIS Based on Circular Intuitionistic Fuzzy Sets	IIoT; manufacturing; TOPSIS; circular intuitionistic; fuzzy sets	TECH SCIENCE PRESS	1546-2218	2024	10.32604/cmc.2024.052509
Wuisan, Dewi; Hermawan, Asep; Antonio, Ferdi; Pramono, Rudy	The quest of peer-to-peer lending applications marketing to small and medium enterprises: Assessing intention to recommend	intention to recommend; segmentation; mental accounting; peer-to-peer lending; Indonesia	LLC CPC BUSINESS PERSPECTIVES	1814-2427	2023	10.21511/im.19(4).2023.13
Seth, Dinesh; Rehman, Minhaj Ahemad A.	Critical success factors-based strategy to facilitate green manufacturing for responsible business: An application experience in Indian context	critical success factors (CSFs); development strategy; environment; green manufacturing; Indian; responsible business	WILEY	0964-4733	2022	10.1002/bse.3047
Feng, Shaw C.; Li, Shengyen; Yakout, Mostafa; Jones, Albert T.	Data organization in laser-based powder bed fusion for metals	Additive Manufacturing; Data Organization; Meta Data; Sensor Data; In-process Data; Ex-situ Inspection Data	ELSEVIER	2213-8463	2022	
Achuthan, Krishnashree; Sankaran, Sriram; Roy, Swapnoneel; Raman, Raghu	Integrating sustainability into cybersecurity: insights from machine learning based topic modeling	Sustainable development goal; Sustainable cybersecurity; Green cybersecurity; Digital economy; Smart city; Smart grids; Machine learning	SPRINGER NATURE		2025	10.1007/s43621-024-00754-w
Kemendi, A.; Michelberger, P.; Mesjasz-Lech, A.	INDUSTRY 4.0 AND 5.0-ORGANIZATIONAL AND COMPETENCY CHALLENGES OF ENTERPRISES	Industry 4; 0; Industry 5; Collaborative robots; security; risk management; human resources	CZESTOCHOWA UNIV TECHNOLOGY	2081-7452	2022	10.17512/pjms.2022.26.2.13
Shao, Qi-Gan; Liou, James J. H.; Weng, Sung-Shun; Su, Peiyao	CONSTRUCTING AN ENTREPRENEURSHIP PROJECT EVALUATION SYSTEM USING A HYBRID MODEL	entrepreneurial project; project evaluation; hybrid model; MCDM; BWM; TOPSIS	VILNIUS GEDIMINAS TECH UNIV	1611-1699	2020	10.3846/jbem.2020.13165

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Kmecova, Iveta; Juracka, Denis	COMPETENCES OF MANAGERS AND EXECUTIVES ACROSS ECONOMIC SECTORS	company size; competence management; human resource management; leadership; SME	SUMY STATE UNIV, DEPT MARKETING & MANAGEMENT INNOVATIVE ACTIVITY	2218-4511	2023	10.21272/mmi.2023.4-09
Bravo-Ortega, Claudio; Egana-delSol, Pablo; Winkler-Sotomayor, Nicole	Does the lack of resources matter in a dual economy: Decoding MSMEs productivity and growth	Small and medium-sized enterprises (SMEs); High-growth firms; Microenterprises; Micro enterprises; Middle income country; Latin America; Labor productivity; Sales; Firm growth	ELSEVIER	0313-5926	2023	10.1016/j.eap.2023.08.022
Tavana, Madjid; Sorooshian, Shahryar; Mina, Hassan	An integrated group fuzzy inference and best-worst method for supplier selection in intelligent circular supply chains	Circular economy; Sustainable supplier selection; Industry 4.0; Artificial intelligence; Multi-criteria decision-making	SPRINGER	0254-5330	2024	10.1007/s10479-023-05680-0
Advincula, Rafael Rosell Paez; Chavesta, Celso Gonzales; Ocares-Cunyarachi, Lilian	Innovation Management Model as a Source of Business Competitiveness for Industrial SMEs	Competitiveness; continuous improvement; management; optimization; strategies	SCIENCE & INFORMATION SAI ORGANIZATION LTD	2158-107X	2022	
Wang, Ke; Tian, Jing; Zheng, Chu; Yang, Hong; Ren, Jia; Li, Chenhao; Han, Qinghua; Zhang, Yanbo	Improving Risk Identification of Adverse Outcomes in Chronic Heart Failure Using SMOTE plus ENN and Machine Learning	heart failure; machine learning; SMOTE plus ENN; XGBoost; SHAP	DOVE MEDICAL PRESS LTD		2021	10.2147/RMHP.S310295
Wang, Weiqing; Chen, Yuxi; Wang, Liukai; Xiong, Yu	Developing the value of legal judgments of supply chain finance for credit risk prediction through novel ACWGAN-GPSA approach	Credit risk prediction; Legal judgments; BERT; ACWGAN-GPSA; Deep learning; Supply chain finance	PERGAMON-ELSEVIER SCIENCE LTD	1366-5545	2025	10.1016/j.tre.2025.104020
Metin, Bilgin; Ozhan, Fatma Gul; Wynn, Martin	Digitalisation and Cybersecurity: Towards an Operational Framework	cybersecurity; digitalisation; digital transformation; critical success factors; cybersecurity adoption factors; cybersecurity governance processes; cybersecurity risk assessment; operational framework	MDPI	2079-9292	2024	10.3390/electronics13214226
Dowsett, Ruth Mary; Green, Martin Steve; Harty, Christopher Francis	Speculation beyond technology: building scenarios through storytelling	automation; construction industry; future studies; innovation; modern methods of construction (MMC); robotics; scenario planning; small and medium-sized enterprises (SMEs); strategic planning; technological change	UBIQUITY PRESS LTD	2632-6655	2022	10.5334/bc.213

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Ragazou, Konstantina; Passas, Ioannis; Garefalakis, Alexandros; Galariotis, Emiliios; Zopounidis, Constantin	Big Data Analytics Applications in Information Management Driving Operational Efficiencies and Decision-Making: Mapping the Field of Knowledge with Bibliometric Analysis Using R	agile management; business model; data analytics; decision-making; efficiency; information management; operational performance; SMEs	MDPI		2023	10.3390/bdcc7010013
Nasir, Aemin; Zakaria, Nazlina; Do, Nhu; Velasquez, Santiago	The impact of knowledge management on sustainable performance with mediation effect of green innovation in Malaysian SMEs	Knowledge management; Knowledge sharing; Knowledge creation; Green innovation; Sustainable performance	EMERALD GROUP PUBLISHING LTD	2059-5891	2024	10.1108/VJIKMS-02-2024-0066
Shen, Wen-Cheng; Lin, Fu-Ren	The Institutionalization of Farmers Association Service Offerings via Line Group During Covid-19 Pandemic	Service-Dominant Logic; Social Media Marketing Strategies; Institutionalization; Graph Data Science; Mixed-methods Approach	ASSOC INFORMATION SYSTEMS	1943-7536	2025	10.17705/1pais.17206
Felemban, Haneen; Sohail, M.; Ruikar, Kirti	Exploring the Readiness of Organisations to Adopt Artificial Intelligence	technology; organisation; environment; artificial intelligence; front-end; planning	MDPI		2024	10.3390/buildings14082460
Cao, Tri Minh; Nguyen, Loc Thi Vy	Factors affecting artificial intelligence (AI) adoption in the talent acquisition process: the case of Vietnam's medium-sized firms	AI; Human resource; Medium-sized firms; Talent acquisition; Vietnam; Recruitment	EMERALD GROUP PUBLISHING LTD	1558-7894	2025	10.1108/JABS-08-2024-0444
Soomro, Sanam; Fan, Mingyue; Sohu, Jan Muhammad; Soomro, Safia; Shaikh, Sonia Najam	AI adoption: a bridge or a barrier? The moderating role of organizational support in the path toward employee well-being	AI anxiety; Managerial capability; AI adoption; Organizational support; Employee well-being	EMERALD GROUP PUBLISHING LTD	0368-492X	2024	10.1108/K-07-2024-1889
Khotimah, Bain khusnul; Agustina, Fitri; Puspitarini, Oktavia rahayu; Cahyani, Andharini dwi; Kustiyahningsih, Yeni; Anamisa, Devie rosa	HYPERPARAMETERS AND CENTROID IMPROVEMENTS IN THE K-MEDOIDS METHOD FOR GROUPING PROCESSED BEEF SMEs	clustering; grid search; K-medoids; binary search; sum of squared errors (SSE); SMEs	SCIENCE & KNOWLEDGE PUBL CORP LTD	2052-2541	2024	10.28919/cmbn/8369
Zhang, Chenxiang; Zhang, Fengrui; Chen, Ningyan; Long, Huizhen	RETRACTED: Application of artificial intelligence technology in financial data inspection and manufacturing bond default prediction in small and medium-sized enterprises (SMEs)	Financial data inspection; Artificial intelligence; Deep learning; Small and medium-sized enterprises; Manufacturing corporate bond default	SPRINGER	1936-9735	2022	10.1007/s12063-022-00314-3
Weidemann, Christoph T.; Kahana, Michael J.	Neural Measures of Subsequent Memory Reflect Endogenous Variability in Cognitive Function	free recall; EEG; subsequent memory effect; machine learning; neural decoding	AMER PSYCHOLOGICAL ASSOC	0278-7393	2021	10.1037/xlm0000966

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Tsunogaya, Noriyuki; Hellmann, Andreas	Using arguments and myths to lobby over controversial accounting issues: evidence from Japan	Business accounting council (BAC); Fair value accounting (FVA); Financial services agency (FSA); IFRS adoption; Japanese generally accepted accounting principles (J-GAAP); Myths	EMERALD GROUP PUBLISHING LTD	0114-0582	2020	10.1108/PAR-01-2019-0003
Yadav, Vishwas; Gahlot, Pardeep	Green Lean Six Sigma sustainability-oriented framework for small and medium enterprises	Green Lean Six Sigma; Small- and medium-sized enterprises; Manufacturing; Sustainability; Framework	EMERALD GROUP PUBLISHING LTD	0265-671X	2022	10.1108/IJQRM-08-2021-0297
Loffler, Emanuel; Schneider, Bettina; Asprion, Petra Maria; Zanwar, Trupti	CySecEscape 2.0-A Virtual Escape Room To Raise Cybersecurity Awareness	Cybersecurity Awareness; Escape Room Game; Small and Medium-sized Enterprises; Design Science Research	SERIOUS GAMES SOC	2384-8766	2021	10.17083/ijsg.v8i1.413
Oh, Jiyoung; Min, Daiki	Prediction of energy consumption for manufacturing small and medium-sized enterprises (SMEs) considering industry characteristics		PERGAMON-ELSEVIER SCIENCE LTD	0360-5442	2024	10.1016/j.energy.2024.131621
Yawised, Kritcha; Apasrawirote, Darlin; Chatrangsarn, Maneerut; Muneesawang, Paisarn	Travelling in the digital world: exploring the adoption of augmented reality (AR) through mobile application in hospitality business sector	Digital marketing; Digital technology; Virtual reality; UTAUT-2; SMEs; AR adoption	EMERALD GROUP PUBLISHING LTD	0972-7981	2023	10.1108/JAMR-01-2023-0023
Dubey, Prince; Bajpai, Naval; Guha, Sanjay; Kulshreshtha, Kushagra	Entrepreneurial marketing: an analytical viewpoint on perceived quality and customer delight	Gender; Entrepreneurial marketing; Customer Delight; Perceived Quality	EMERALD GROUP PUBLISHING LTD	1471-5201	2020	10.1108/JRME-09-2016-0033
Lee, Jay; Azamfar, Moslem; Bagheri, Behrad	A unified digital twin framework for shop floor design in industry 4.0 manufacturing systems	Cyber-physical systems; Digital twin; Shop floor design; Smart manufacturing; Industry 4.0	ELSEVIER	2213-8463	2021	10.1016/j.mfglet.2021.01.005
Sheikh, Wahidul; Miah, S. M. Abu Nahiyan; Hasan, Md. Tanvir; Zitu, Khadija Khatun; Hosain, Jakir	Optimising international trade: the examination of Incoterms selection by exporters and importers	Incoterm; International business; Export-import; BWM; MCDA	EMERALD GROUP PUBLISHING LTD	2059-6014	2024	10.1108/RIBS-08-2023-0093
da Silva, Agostinho; Cardoso, Antonio J. Marques	Co-Opetition and the Industrial Internet of Things: A Strategic Framework for Operational Efficiency in the Portuguese Ornamental Stone Sector	co-opetition; S-D Logic; service science; IIoT; ornamental stone sector	MDPI		2024	10.3390/admsci14060125
Fontes, Allyson; Shadmehri, Farjad	Three-dimensional finite element-based data-driven thermal model of in-situ automated fiber placement	Automated fiber placement; Machine learning (ML); Thermal modeling; Neural networks; Thermoplastic composites	ELSEVIER	2213-8463	2024	10.1016/j.mfglet.2024.03.017

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Achmad, Fandi; Prambudia, Yudha; Rumanti, Augustina Asih	Sustainable Tourism Industry Development: A Collaborative Model of Open Innovation, Stakeholders, and Support System Facilities	Sustainable tourism industry; tourism industry performance; open innovation; stakeholders; support system facilities	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2023	10.1109/ACCESS.2023.3301574
Schworm, Philipp; Wu, Xiangqian; Klar, Matthias; Aurich, Jan C.	Multi-objective rescheduling of job shop scheduling problems in manufacturing using Quantum Annealing	Process scheduling; Rescheduling; Multi-criterial optimization; Quantum Annealing	ELSEVIER	2213-8463	2024	10.1016/j.mfglet.2024.09.066
Wescoat, Ethan; Krugh, Matthew; Jansari, Vinita; Mears, Laine	Redefining the digital triplet for surrogate system integration	Purposeful failure twin; Purposeful failure methodology; Digital twin; Digital triplet	ELSEVIER	2213-8463	2023	10.1016/j.mfglet.2023.03.001
Sufian, Amr T.; Abdullah, Badr M.; Miller, Oliver J.	Smart Manufacturing Application in Precision Manufacturing	smart manufacturing; industry 4.0; digital transformation; operational performance; environmental sustainability	MDPI		2025	10.3390/app15020915
Hoffmann, Alexander; Kanbach, Dominik K.; Kraus, Sascha	Entrepreneurship through acquisition in the digital age: exploring website ownership patterns and motivations for selling	Entrepreneurship through acquisition; Buy-ins; Entrepreneurial finance; Search funds; Website ownership; Digital entrepreneurship; Succession; Online business models	EMERALD GROUP PUBLISHING LTD	1750-6204	2025	10.1108/JEC-08-2024-0144
Thanh Tiep Le; Behl, Abhishek; Pereira, Vijay	Establishing linkages between circular economy practices and sustainable performance: the moderating role of circular economy entrepreneurship	Circular economy practices; Circular entrepreneurship; Sustainable supply chain management; Sustainable performance; Emerging market	EMERALD GROUP PUBLISHING LTD	0025-1747	2024	10.1108/MD-02-2022-0150
Homan, Jiri; Beranek, Ladislav	Factors Influencing Cloud Computing Adoption by SMEs in the Czech Republic: An Empirical Analysis Using Technology-Organization-Environment Framework	Cloud computing; TOE framework; Small and medium enterprises; SaaS; PaaS; IaaS.	UNIV ECONOMICS, PRAGUE		2023	10.18267/j.aip.217
Lu, Jing; Cairns, Lisa; Smith, Lucy	Data science in the business environment: customer analytics case studies in SMEs	Decision-making; Modelling; Business strategy; Data analytics; Business analytics	EMERALD GROUP PUBLISHING LTD	1746-5664	2021	10.1108/JM2-11-2019-0274
Tauqeer, Amar; Kurteva, Anelia; Chhetri, Tek Raj; Ahmeti, Albin; Fensel, Anna	Automated GDPR Contract Compliance Verification Using Knowledge Graphs	digital contracts; data sharing; ontology; knowledge graph; GDPR compliance; smart cities; insurance	MDPI		2022	10.3390/info13100447
Lassoued, Rim; Phillips, Peter W. B.; Smyth, Stuart J.	Exploratory analysis on drivers and barriers to Canadian prairie agricultural technology innovation and adoption	Artificial intelligence; Competitive advantage; Decision making; Digital agriculture; IoT; Robotics; Smart farming; SMEs; R&D	ELSEVIER	2772-3755	2023	10.1016/j.atech.2023.100257

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Anshin, Valery; Bobyleva, Alla	THE DIGITAL TRANSFORMATION PROGRAM MANAGEMENT IN MEDIUM-SIZED BUSINESSES: A NETWORK APPROACH	digital transformation; program management; network approach; medium-sized business	UNIV BELGRADE, TECHNICAL FACULTY AT BOR	1452-4864	2021	10.5937/sjm16-30088
Martinez, Lisana B.; Scherger, Valeria; Orazi, Sofia	Post-pandemic performance of micro, small and medium-sized enterprises: A Self-organizing Maps application	SMEs; business failure; COVID-19; SOM; business performance; G33; M21; L25; C45	TAYLOR & FRANCIS AS	2331-1975	2023	10.1080/23311975.2023.2276944
Gazzola, Patrizia; Grechi, Daniele; Iliashenko, Iuliia; Pezzetti, Roberta	The evolution of digitainability in the fashion industry: a bibliometric analysis	Fashion industry; Digitalization; Circular economy; Digital innovation; Sustainability	EMERALD GROUP PUBLISHING LTD	0368-492X	2024	10.1108/K-05-2024-1385
Suto, David; Bajnai, Peter; Fenyves, Veronika	Forecasting the financial performance of small and medium-sized enterprises: evidence from the Hungarian food retail sector	SMEs; Food retail; Financial; modelling; Forecast; Panel regression; Profit; Hungarian	NATL UNIV FOOD TECHNOLOGIES	2304-974X	2024	10.24263/2304-974X-2024-13-4-12
Hossain, Kamal; Che Abdullah, Ahmad Sufian; Mohd Balwi, Mohd Abd Wahab Fatoni; Lubis, Asmuliadi; Azizan, Noor Azlinna; Alam, Mohammad Nurul; Taha, Azni Zarina	Linking entrepreneurial orientation with export performance: mediation effects of multiple differentiation strategies	Customer differentiation; Entrepreneurial orientation; Export performance; Product differentiation; Brand differentiation; Service differentiation; Export market category	EMERALD GROUP PUBLISHING LTD	0885-8624	2023	10.1108/JBIM-07-2021-0326
Griffiths, Paul David Richard; Baudier, Patricia	Enabling Responsible Banking through the Application of Blockchain	Responsible Banking; Blockchain; Traceability; Fintech; Sustainability; Transparency; Technological Innovation; Innovation; Financial Services	DE BOECK UNIV		2023	10.3917/jie.041.0017
Saha, Munmun; Panda, Sanjaya Kumar; Panigrahi, Suvasini	A modified Brown and Gibson model for cloud service selection	cloud computing; multi-criteria decision-making; MCDM; quality of service; QoS; cloud service provider; CSP; Brown and Gibson model; analytic hierarchy process; AHP; Delphi method; decision maker	INDERSCIENCE ENTERPRISES LTD	1742-7185	2023	10.1504/IJCSSE.2023.132150
Bogna, Frank; Raineri, Aldo; Dell, Geoff	Critical realism and constructivism: merging research paradigms for a deeper qualitative study	Constructivism; Qualitative study; Critical realism; Research paradigm	EMERALD GROUP PUBLISHING LTD	1746-5648	2020	10.1108/QROM-06-2019-1778
Del Vecchio, Vito; Lazoi, Mariangela; Marche, Claudio; Mettouris, Christos; Montagud, Mario; Specchia, Giorgia; Ali, Mostafa Z.	Designing Innovative Digital Solutions in the Cultural Heritage and Tourism Industry: Best Practices for an Immersive User Experience	cultural heritage; tourism; industry; visitor experience; user experience; immersive technology; cloud; extended reality; design; survey	MDPI		2025	10.3390/app15094935

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Almuayad, Khalil M. A.; Chen, You Zhen; Alammari, Amro A. S.; Al-Dubai, Sanaaabdulghfor	Effect of Knowledge Application and Knowledge Storage on Bank Performance Through Fintech Innovation: A Study of Yemeni Banks	Bank performance; Fintech innovation; Knowledge application; Knowledge storage	IGI GLOBAL	1548-0666	2024	10.4018/IJKM.336855
Evrard, Damien; Ben Rejeb, Helmi; Zwolinski, Peggy; Brissaud, Daniel	Designing Immortal Products: A Lifecycle Scenario-Based Approach	eco-design; lifecycle scenario; circular industrial systems	MDPI		2021	10.3390/su13063574
Polishchuk, Yevheniia; Ivashchenko, Alla; Kornyluk, Anna	REGIONAL SMART SPECIALIZATION: MICROBUSINESS IMPACT	innovations; regional development; SMART specialization; SMEs; microbusiness	BALTIC JOURNAL ECONOMIC STUDIES	2256-0742	2020	10.30525/2256-0742/2020-6-5-209-215
Stasiuk-Piekarska, Anna; Hordynska, Malgorzata; Michalska, Monika	The Usefulness of Cleaner Production Projects as an Element of the Initial Assessment of the Circularity of SMEs in the Context of Obtaining Funds Supporting the Implementation of the Circular Economy	circular economy; cleaner production; business model; innovation	MDPI		2024	10.3390/su16124951
Mendez, Oscar Javier Montiel; Garcia, Rosa Azalea Canales; Morales, Omar Humberto Gardea	Entrepreneurial Iatrogenesis: An Exploratory Approach	Context; Dark side of entrepreneurship; Entrepreneurial iatrogenesis	UNIV MALAGA	2444-8788	2023	10.24310/ejfbefb.v13i1.15751
Rojas-Cordova, Carolina; Heredia-Rojas, Boris; Ramirez-Correa, Patricio	Predicting Business Innovation Intention Based on Perceived Barriers: A Machine Learning Approach	innovation; business; machine learning; decision tree; predictive analytics; social data science; contingencies	MDPI		2020	10.3390/sym12091381
Narkhede, Ganesh; Dohale, Vishwas; Mahajan, Yash	Darker side of industry 4.0 and its impact on triple-bottom-line sustainability	industry 4.0; sustainability; sustainable development; sustainable manufacturing; systematic literature review; triple-bottom-line	WILEY	0968-0802	2024	10.1002/sd.3009
Sytnik, Natalia; Kravchenko, Maryna	Application of knowledge management tools: Comparative analysis of small, medium, and large enterprises	knowledge management; knowledge management awareness; knowledge management policy; human-centered tools; ICT tools; small; medium; and large enterprises	Cognitione Foundation for the Dissemination of Knowledge and Science	2299-7075	2021	10.7341/20211745
Park, Jisu; Riaz, Hamza; Kim, Hyunchul; Kim, Jungsuk	Advanced cover glass defect detection and classification based on multi-DNN model	Deep learning; Defect detection; Smart factory display manufacturing	ELSEVIER	2213-8463	2020	10.1016/j.mfglet.2019.12.006
Tran, Phuong Thi Kim; Ting, Irene Wei Kiong; Nguyen, Thien Huu; Tran, Hanh Thi My	Determinants of Management Accounting Application Use in Vietnamese Telecommunications Companies: The Moderating Role of Organisational Culture	management accounting; management accounting application; telecommunications company; organisational culture	MDPI		2023	10.3390/su151914419

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Hasbaoui, Anouar; Saida, Youssef	The Proposition of Enterprise Risk Management Process using Machine Learning Algorithm: Case of Mid-Size Company	Enterprise risk management; Artificial neural network; Stress test; Small and medium enterriese	TUENGR GROUP	2228-9860	2022	10.14456/ITJEMAS T.2022.143
Huang, Yiping; Li, Zhenhua; Qiu, Han; Tao, Sun; Wang, Xue; Zhang, Longmei	BigTech credit risk assessment for SMEs	Bigtech; Risk assessment; Asymmetric information	ELSEVIER SCIENCE INC	1043-951X	2023	10.1016/j.chieco.2023.102016
Nousopoulou, Evangelia; Kamariotou, Maria; Kitsios, Fotis	Digital Transformation Strategy in Post-COVID Era: Innovation Performance Determinants and Digital Capabilities in Driving Schools	digital transformation; innovation performance; digital capabilities; strategy; digitalization	MDPI		2022	10.3390/info13070323
Justino, Mateus Vicente; Tengeh, Robertson K.; Twum-Darko, Michael	TASK-TECHNOLOGY FIT PERSPECTIVE OF THE USE OF M-COMMERCE BY RETAIL BUSINESSES	Mobile commerce (m-commerce); Retailer; Retailing; Small and Medium Enterprises (SMEs); Mobile Commerce Application; Task-Technology Fit (TTF); Angola; Luanda	ENTERPRENEURS HIP & SUSTAINABILITY CENTER	2345-0282	2022	10.9770/jesi.2022.9.4(17)
Hornung, Krunoslav; Hornung, Maja	ERP Systems in Croatian Enterprises	comparative analysis; critical success factors; ERP implementation; Mann-Whitney U test; questionnaire survey	UNIV OSIJEK, TECH FAC	1330-3651	2020	10.17559/TV-20181122183358
Kumar, Anil; Singh, Rohit Kumar; Swain, Swapanrag	Adoption of Technology Applications in Organized Retail Outlets in India:A TOE Model	Organized retailers; TOE framework; Technology applications; Technology adoption intention	SAGE PUBLICATIONS LTD	0972-1509	2022	10.1177/09721509211072382
Farndale, Elaine; Horak, Sven; Piyanontalee, Rakoon; Puffer, Sheila M.; Vidovic, Maja	Looking back to look forward: Disruption, innovation and future trends in international human resource management	International human resource management; COVID-19 pandemic; Artificial intelligence; Diversity; Globalization; Global leadership	ELSEVIER	0969-5931	2025	10.1016/j.ibusrev.2024.102362
O'Gorman, Aoife; Lauryn, McMahon; Efremenko, Tatiana; Canina, Marita; Redava, Petia Ivanova; Puig, Luis Eloy; Cangelosi, Angelo; Ferro, Francesco; Dellino, Francesco; Van Gansbeke, Ramona; Bulgheroni, Maria; Jovanovic, Kosta; Brennan, Lorraine	MUSAE: Fusion of art and technology to address challenges in food and health	design futures art-driven; digital and sustainable transformation; food as medicine; health and wellbeing	WILEY	1471-9827	2025	10.1111/nbu.12723
Kumar, Aman; Shankar, Amit; Behl, Abhishek; Wamba, Samuel Fosso	Achieving Competitive Advantage Through Blockchain and Enterprise Metaverse Integration: The Role of Innovation Capabilities and Technostress	Blockchains; Metaverse; Technological innovation; Discrete cosine transforms; Environmental factors; Companies; Artificial intelligence; Training; Peer-to-peer computing; Hands; Blockchain; competitive advantage; enterprise metaverse; innovation capability; technostress	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2025	10.1109/TEM.2025.3562159

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Karademir, Devrim	A MODEL-BASED APPROACH TO DEVELOPING THE INDUSTRY 4.0 AWARENESS SCALE	Industry 4.0; Awareness; Scale Development; Factor Analysis; Structural Equation Modelling; Confirmatory Factor Analysis	PARLAR SCIENTIFIC PUBLICATIONS (P S P)	1018-4619	2021	
Medina, Will Yhonatan Amaya; Sanchez, Deisy Moreno; Rodriguez, Vladimir Nova	Fintech in the Face of the Economic Crisis Caused by COVID-19	financial market; innovation; technology; financial management; economic crisis; electronic commerce; financing; opportunity; government; small business	UNIV PEDAGOGICA & TECNOLOGICA COLOMBIA	0120-3053	2023	10.19053/01203053.v42.n75.2023.14220
Pei Changhong; Liu Bin	The Economics of China's Opening Up: Developing an Economic Theory That Explains China's Achievement	socialism with Chinese characteristics; open economics; global governance; a community of shared future for mankind	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	0252-9203	2021	10.1080/02529203.2021.1895500
Li, Rui; Niu, Zhanwen; Liu, Chaochao; Wu, Bei	The co-movement effect of managers' psychological factors on the BIM adoption decision in SMEs: a study based on fsQCA	BIM adoption decision; Psychological factors; Co-movement effect; Fuzzy-set qualitative comparative analysis (fsQCA); Necessary condition analysis (NCA)	EMERALD GROUP PUBLISHING LTD	0969-9988	2024	10.1108/ECAM-08-2022-0721
Kim, Myungsoo; Lee, Jaehyeong; Lee, Chaegy; Jeong, Jongpil	Framework of 2D KDE and LSTM-Based Forecasting for Cost-Effective Inventory Management in Smart Manufacturing	LSTM; 2D kernel density estimation; forecasting framework; smart manufacturing	MDPI		2022	10.3390/app12052380
Majstorovic, Vidosav D.; Mitrovic, Radivoje; Miskovic, Zarko	INDUSTRY 4.0 IN SERBIA - STATE OF DEVELOPMENT	Industry 4.0; Application; Serbia	UNIV BELGRADE, TECHNICAL FACULTY AT BOR	1452-4864	2022	10.5937/sjm17-36626
Safari, Arsalan; Das, Amit	Entrepreneurial failure analysis using quality management approaches	Entrepreneurial failure; quality management; root causes; content analysis; SMEs; qualitative analysis	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1478-3363	2023	10.1080/14783363.2022.2043739
Hoang, Thinh Gia; Bui, Minh Le	Business intelligence and analytic (BIA) stage-of-practice in micro-, small- and medium-sized enterprises (MSMEs)	Business intelligence; Business analytics; Micro, Small and medium enterprises (MSMEs); Adoption	EMERALD GROUP PUBLISHING LTD	1741-0398	2023	10.1108/JEIM-01-2022-0037
de Andreis, Federico; Paoloni, Paola	Successful relationships in non-EU female immigrant businesses	Relational capital; Immigrant entrepreneurship; SMEs	EMERALD GROUP PUBLISHING LTD	2059-5891	2025	10.1108/VJIKMS-07-2024-0269

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Svetlik, Jaroslav; Lastuvka, Igor	B2B COMMUNICATION STRATEGY: INTRODUCING A NEW MULTIFUNCTIONAL APPLICATION FOR THE WASTE MANAGEMENT INDUSTRY	app; B2B communication; digitalization; influencer marketing; innovation; relationship marketing; social media; waste sustainability	SUMY STATE UNIV, DEPT MARKETING & MANAGEMENT INNOVATIVE ACTIVITY	2218-4511	2022	10.21272/mmi.2022.3-14
Arcese, Gabriella; Valeri, Marco; Poponi, Stefano; Elmo, Grazia Chiara	Innovative drivers for family business models in tourism	Family business; Family dynamics; Family entrepreneurship; Tourism and hospitality management; Innovation drivers	EMERALD GROUP PUBLISHING LTD	2043-6238	2021	10.1108/JFBM-05-2020-0043
Vu Minh Ngo; Hieu Minh Vu	Customer agility and firm performance in the tourism industry	customer agility; customer orientation; firms' performance; knowledge management; IT capabilities; tourism industry; Vietnam	INST TOURISM	1332-7461	2020	10.37741/t.68.1.6
Ruschak, Michal; Caha, Zdenek; Talir, Milan; Konecny, Michal	THE APPLICATION OF CSR IN MARKETING COMMUNICATION AND ITS POTENTIAL IMPACT ON CUSTOMER PERCEIVED VALUE	corporate social responsibility (CSR); customer perceived value (CPV); marketing communication; marketing; value; reputation; performance	ENTERPRENEURS HIP & SUSTAINABILITY CENTER	2345-0282	2023	10.9770/jesi.2023.10.4(14)
Rohmana, Lailiya; Wulandari, Permata	The key determinants of digital repayment performance of ultra-micro entrepreneurs in Indonesia microfinance institution	Repayment performance; Ultra-micro (UMi) programs; Digital application; Indonesia	EMERALD GROUP PUBLISHING LTD	2045-2101	2024	10.1108/JEPP-04-2024-0050
Suharyati; Utami, Kery	Analysis of MSMEs Interest in Services Banking, Fintech and Cooperative	MSMEs; Banks; Fintech; Cooperatives; Interests	SOC ROMANA PENTRU ASIGURAREA CALITATII	1582-2559	2022	10.47750/QAS/23.187.27
Petrariu, Irina; Moscaliuc, Adrian; Turcu, Cristina Elena; Gherman, Ovidiu	A Comparative Study of Unsupervised Anomaly Detection Algorithms used in a Small and Medium-Sized Enterprise	Unsupervised anomaly detection algorithms; small and medium-sized enterprise; traceability; open-source libraries	SCIENCE & INFORMATION SAI ORGANIZATION LTD	2158-107X	2022	
Neff, Alexander; Weber, Patrick; Werth, Daniel	Digital entrepreneurship in wholesale: identification of implementation strategies for data spaces	Digital entrepreneurship; Wholesale; Data ecosystem; Data space; Implementation strategies; Business model; Digital services; Digital transformation; Innovation	EMERALD GROUP PUBLISHING LTD	1355-2554	2024	10.1108/IJEBR-10-2022-0943
Danilin, Ivan, V	National Champions and Technological Little Giants: Chinese Industrial Policy Between Modernization and Tradition	China; development policy; technology policy; national champions; small giants; national innovation system; matrix approach	MGIMO UNIV PRESS	2071-8160	2024	10.24833/2071-8160-2024-6-99-133-148

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Juszczyk, Oskar; Shahzad, Khuram	Blockchain Technology for Renewable Energy: Principles, Applications and Prospects	blockchain; technology adoption; business models; peer-to-peer (P2P); distributed energy; smart contract; energy digitalization; renewable energy; circular economy; Finland	MDPI		2022	10.3390/en15134603
Kubik, Christian; Molitor, Dirk Alexander; Varchmin, Sven; Leininger, Dominik Sebastian; Ohrenberg, Joost; Groche, Peter	Image-based feature extraction for inline quality assurance and wear classification in high-speed blanking processes	Blanking; Inline wear detection; Image-based quality control; Machine learning in high-speed metal forming	SPRINGER LONDON LTD	0268-3768	2023	10.1007/s00170-023-12653-x
Malakauskas, Aidas; Lakstutiene, Ausrine	Financial Distress Prediction for Small and Medium Enterprises Using Machine Learning Techniques	Financial Distress Prediction; Random Forest; Artificial Neural Networks; Logistic Regression; Small and Medium Enterprises	KAUNAS UNIV TECHNOL	1392-2785	2021	10.5755/j01.ee.32.1.27382
Yang, Dongqi; Xiao, Binqing	Feature Enhanced Ensemble Modeling With Voting Optimization for Credit Risk Assessment	Risk management; Predictive models; Data models; Adaptation models; Accuracy; Training; Soft sensors; Credit risk; ensemble modeling; feature enhancement; model interpretability; voting optimization	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2024	10.1109/ACCESS.2024.3445499
Palanisamy, Ramaraj; Wu, Yang	Users' attitude on perceived security of enterprise systems mobility: an empirical study	Security issues; Perceived security; Enterprise systems mobility; Enterprise systems security	EMERALD GROUP PUBLISHING LTD	2056-4961	2021	10.1108/ICS-05-2020-0069
Kalaiarasan, Varun Vinayak; Miller, Marcella; Han, Xu; Foreman, Brandon; Jia, Xiaodong	A Novel Methodology for Intracranial Pressure Subpeak Identification Enabling Morphological Feature Analysis	Intracranial pressure (ICP); traumatic brain injury (TBI); biomedical signal monitoring; biomedical signal monitoring; machine learning; machine learning; ICP waveform morphological analysis; ICP waveform morphological analysis	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9294	2025	10.1109/TBME.2024.3495542
Ebrahim, Amina; Castillo, Sebastian; Leyaro, Vincent; Swema, Ezekiel; Haule, Oswald	Bridging the Gap: Unveiling the Potential of Tanzania's SMEs through VAT Insights	VAT gap; bottom-up estimation; audit; tax compliance; Tanzania	OXFORD UNIV PRESS	1610-241X	2024	10.1093/cesifo/ifa-e024
Udokwu, Chibuzor	Formalizing and Simulating the Token Aspects of Blockchain-Based Research Collaboration Platform Using Game Theory	blockchain application; token model; simulation; game theory	MDPI		2024	10.3390/math12203252
Skrzek, Kinga; Mazgajczyk, Emilia; Dybala, Bogdan	Application of Fuzzy Logic-Based Expert Advisory Systems in Optimizing the Decision-Making Process for Material Selection in Additive Manufacturing	fuzzy logic; expert advisory systems; intelligent manufacturing; additive manufacturing; 3D printing; decision-making optimization; Industry 4.0	MDPI		2025	10.3390/ma18020324

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Shamim, Gulezar; Rihan, Mohd	Exploratory Data Analytics and PCA-Based Dimensionality Reduction for Improvement in Smart Meter Data Clustering	Cumulative variance; dimensionality reduction; elbow method; exploratory data analysis; k-means clustering; partitional clustering; post clustering analysis; principal component analysis; silhouette coefficient; unsupervised clustering; within cluster sum of square (WCSS)	TAYLOR & FRANCIS LTD	0377-2063	2024	10.1080/03772063.2023.2218317
Gavurova, Beata; Jencova, Sylvia; Bacik, Radovan; Miskufova, Marta; Letkovsky, Stanislav	Artificial intelligence in predicting the bankruptcy of non-financial corporations	engineering industry; automotive industry; bankruptcy prediction; Logistic regression; artificial intelligence; neural network	INST BADAN GOSPODARCZYCH	2083-1277	2022	10.24136/oc.2022.035
Ng, Sin-Pei; Ahmed, Pervaiz K.	The role of dynamic capabilities in the development of organisational ambidexterity and its effect on timely responsiveness in emerging market high-tech firms		WILEY	0033-6807	2025	10.1111/radm.12712
Adiguzel, Humeyra; Floros, Marios	Capacity utilization analysis through time-driven ABC in a small-sized manufacturing company	Time-driven activity based costing; Small-sized enterprises; Capacity utilization analysis; Time equations; M41; M11; M49	EMERALD GROUP PUBLISHING LTD	1741-0401	2020	10.1108/IJPPM-11-2018-0397
Chen, Wenshin	The Role of Government on Diffusion and Discontinuance of the Same ICT: Contrasting Cases of UAE and Taiwan	Diffusion; discontinuance; governmental role; ICT; interpretive case study; RFID; Taiwan; UAE	TAYLOR & FRANCIS INC	1097-198X	2023	10.1080/1097198X.2023.2266971
Ram, Jiwat; Manoharan, Ashokkumar; Sun, Siyao	Examining the Adoption of Online-to-Offline (O2O): Facilitating and Impeding Factors	Online-to-Offline (O2O) Technology; Innovation Process; Adoption Factors; Technology Planning and Management; Social Commerce	ASSOC COMPUTING MACHINERY	0095-0033	2021	10.1145/3447934.3447937
Gyarmathy, Andrea; Perenyi, Aron; Mesek, Melissa	Examining the use of Industry 4.0 technologies in e-commerce supply chains: a model of antecedents and outcomes of data-sharing platform applications	Industry 4.0; E-commerce supply chains; Supply chain visibility; Innovation diffusion theory; Complex adaptive systems	EMERALD GROUP PUBLISHING LTD	1359-8546	2025	10.1108/SCM-08-2024-0489
Sharma, Vikrant; Paliwal, Mukul K.	Driving industrial transformation: exploring the adoption, impact, and strategic frameworks for industry 4.0 technologies in Indian manufacturing sectors	Industry 4.0; technology adoption; organizational performance; policy development	TAYLOR & FRANCIS LTD	0951-192X	2025	10.1080/0951192X.2025.2496892

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Etemad, Hamid	The increasing prevalence of multi-sided online platforms and their influence on international entrepreneurship: The rapid transformation of entrepreneurial digital ecosystems	Multi-sided digital platforms; Digitization of international entrepreneurial environments; Evolution of macro entrepreneurial digital ecosystems (EDE); Case-study examples of digital ecosystems; Schematic representation of platform operations; Comparative characterization of platform's buyer and supplier relations; Indirect internationalization of iSMEs	SPRINGER	1570-7385	2023	10.1007/s10843-023-00331-8
Bucea-Manea-Tonis, Rocsana; Martins, Oliva M. D.; Bucea-Manea-Tonis, Radu; Gheorghita, Citalin; Kuleto, Valentin; Ilic, Milena P.; Simion, Violeta-Elena	Blockchain Technology Enhances Sustainable Higher Education	sustainable education (SE); blockchain; massive open online courses (MOOCs); artificial intelligence (AI); e-learning; educational platforms; distributed ledger technology (DLT); higher education (HE); higher education institution (HEI)	MDPI		2021	10.3390/su132212347
Jackson, Denise; Allen, Christina	Enablers, barriers and strategies for adopting new technology in accounting	Technology-Organisation-Environment framework; Technology adoption; Barriers; Strategies; Enablers	ELSEVIER	1467-0895	2024	10.1016/j.accinf.2023.100666
Kelpman, Karolin; Karjust, Kristo; Majak, Juri	An overview of smart workplace solutions and potential improvement areas	artificial intelligence; smart workplace; solutions; flexible manufacturing; systems; production optimization; small and medium-sized enterprises	ESTONIAN ACAD PUBLISHERS	1736-6046	2025	10.3176/proc.2025.2.13
Alnhoud, Omar Toheeteh; Shaqadan, Ashraf; Alkasasbeh, Riad	DEVELOPING FRAMEWORK FOR SAFETY ANALYSIS AND RISK ASSESSMENT IN CONSTRUCTION SITE ENVIRONMENT IN JORDAN	construction site; safety analysis; risk matrix; severity index; injuries; T-score; TRIR	SOC STRUCTURAL INTEGRITY & LIFE	1451-3749	2021	
Cho, Jaehan; DeStefano, Timothy; Kim, Hanhin; Kim, Inchul; Paik, Jin Hyun	What's driving the diffusion of next-generation digital technologies?		ELSEVIER	0166-4972	2023	10.1016/j.technovation.2022.102477
Lin, Hsiung-Cheng; Xiao, Sheng-Xi	Achievement of Dynamic Tablet Defect Detection Mechanism Using Biaxial Slope Symmetry Algorithm	Real-time; Symmetrical scanning; Tablet defect detection; Image processing	ELSEVIER SCIENCE INC	0022-3549	2024	10.1016/j.xphs.2024.03.004

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Mojdehi, Kosar Farajpour; Amiri, Babak; Haddadi, Amirali	A Novel Hybrid Model for Credit Risk Assessment of Supply Chain Finance Based on Topological Data Analysis and Graph Neural Network	Supply chains; Finance; Risk management; Graph neural networks; Accuracy; Predictive models; Feature extraction; Analytical models; Industries; Data models; Topological data analysis; graph neural network; credit risk; BallMapper; supply chain finance	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2025	10.1109/ACCESS.2025.3528373
Ulrich, Klaus; Ribeiro-Soriano, Domingo; Abadia, Olaia; Liu, Fagang	Blockchain as a tool to improve quality, traceability and safety in the food industry: successful case studies	Blockchain; Traceability; Food industry	EMERALD GROUP PUBLISHING LTD	0007-070X	2025	10.1108/BFJ-05-2024-0469
Hudakova, Maria; Gabrysova, Maria; Petrakova, Zora; Buganova, Katarina; Krajcik, Vladimir	The Perception of Market and Economic Risks by Owners and Managers of Enterprises in the V4 Countries	market risk; economic risk; risk management; V4 countries; enterprises	UNIV TOMASE BATI & ZLINE, FAK MANAGEMENTU EKONOMIKY	1804-171X	2021	10.7441/joc.2021.04.04
Ingaldi, Manuela; Ulewicz, Robert	The Business Model of a Circular Economy in the Innovation and Improvement of Metal Processing	sustainable development; production engineering; circular economy; innovations; metallurgy	MDPI		2024	10.3390/su16135513
Sang, Bin	Application of genetic algorithm and BP neural network in supply chain finance under information sharing	Supply chain finance; Genetic algorithm; BP neural network; Credit risk; Small and medium-sized enterprises	ELSEVIER	0377-0427	2021	10.1016/j.cam.2020.113170
Bae, Moon-Gyu; Lee, Tae-Hee	Impact of Past Entrepreneurial Outcomes on Strategic Orientation: A Prospect Theory Perspective	Generic Strategy; Prospect Theory; Risk-Taking; Serial Entrepreneurs; Generic Strategy; Prospect Theory; Risk-Taking; Serial Entrepreneurs	KOREA TRADE RESEARCH ASSOC		2024	10.35611/jkt.2024.28.8.175
Feng, Shaw C.; Li, Shengyen; Yakout, Mostafa; Jones, Albert T.	Data organization in laser-based powder bed fusion for metals	Additive Manufacturing; Data Organization; Meta Data; Sensor Data; In-process Data; Ex-situ Inspection Data	ELSEVIER	2213-8463	2022	
Abu Bakar, Amran; Ong, Siew Chin; Ting, Chuo Yew; Ooi, Guat See; Hassali, Mohamed Azmi Ahmad	Barriers for Implementation of E-pharmacy Policy: Views of Pharmacy Authorities, Public Institutions and Societal Groups	Community pharmacy; digital health; e-pharmacy; pharmaceutical policy; pharmacy practice; policy implementation	UNIV PUTRA MALAYSIA PRESS	0128-7702	2022	10.47836/pjssh.30.1.03
Pedota, Mattia	Big data and dynamic capabilities in the digital revolution: The hidden role of source variety	Artificial intelligence; Big data; Digitalization; Digital revolution; Dynamic capabilities; Knowledge	ELSEVIER	0048-7333	2023	10.1016/j.respol.2023.104812

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Shatiry, M. Sahir Ahmad; Ros, Ikhranizam M.; Matlan, M. Norman; Shafiqah, Farah; Chelliah, Navaneethan; Abd Rahim, Zulhasni	Artificial Intelligence HSE Monitoring & Digital Value Stream Mapping for Prefabrication Yard	Artificial intelligent; productivity; construction; prefabrication; VSM; DVSM; IoT	UNIV TUN HUSSEIN ONN MALAYSIA	2229-838X	2024	10.30880/ijie.2024.16.08.014
Primandaru, Noormalita; Kusuma, Manggar Wulan; Nasution, Olivia Barcelona	Antecedents of green manufacturing implementation by local MSMEs in Indonesia	organizational capability; internal competency development; manager behavior; competitiveness; green manufacturing	LLC CPC BUSINESS PERSPECTIVES	1998-6041	2023	10.21511/ee.14(2).2023.08
Le, Thanh Tiep; Behl, Abhishek	Role of corporate governance in quick response to Covid-19 to improve SMEs' performance: evidence from an emerging market	Corporate governance; Social responsibility engagement; Environmental responsibility engagement; SMEs performance; Emerging market	SPRINGER	1936-9735	2022	10.1007/s12063-021-00238-4
Renfors, Sanna-Mari; Veliveronena, Linda; Grinfelde, Ilze	Developing Tourism Curriculum Content to Support International Tourism Growth and Competitiveness: An Example from the Central Baltic Area	Competitiveness; curriculum development; international tourism; skills; the Baltic Sea; tourism education	ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	1096-3758	2020	10.1080/10963758.2019.1654889
Muegge, Janine; Seegruen, Anne; Hoyer, Tessa-Katharina; Riedelsheimer, Theresa; Lindow, Kai	Digital Twins within the Circular Economy: Literature Review and Concept Presentation	digital twin; circular economy; sustainability	MDPI		2024	10.3390/su16072748
Witek-Hajduk, Marzanna K.; Zaborek, Piotr	Social media use in international marketing: Impact on brand and firm performance	brand orientation; customer orientation; international branding; performance; social media marketing	SCIENDO	2299-9701	2022	10.2478/ijme-2022-0011
Peiro-Signes, Angel; Diez-Martinez, Ines; Segarra-Ona, Marival	The drivers of cooperation for innovation and the role of environmental orientation	cooperation for; drivers; environmental orientation; innovation; machine learning; SMEs	WILEY	1535-3958	2024	10.1002/csr.2726
Pham, Huy Quang; Vu, Phuc Kien	Managing big data and blockchain for enterprise internationalization process: Mediating role of dynamic accounting system capability	dynamic accounting information system; big data analytics; internationalization; Small and Medium Enterprises	SCIENDO	1842-0206	2024	10.2478/mmcks-2024-0007
Khan, Rizwan Ullah; Abbasi, Munir A.; Farhan, Abedallah Farouq Ahmad; Al-sakkaf, Mohammed Alawi; Singh, Karpal Singh Dara	Green HRM, organizational identification and sustainable development in the emerging economy: applications from social identity theory	GHR practices; Organizational identification; Employee behavior; Sustainable performance	EMERALD GROUP PUBLISHING LTD	1026-4116	2023	10.1108/JEAS-07-2022-0177

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Figlie, Roberto; Amadio, Riccardo; Tyrovolas, Marios; Stylios, Chrysostomos; Pasko, Lukasz; Stadnicka, Dorota; Carreras-Coch, Anna; Zaballos, Agustin; Navarro, Joan; Mazzei, Daniele	Towards a Taxonomy of Industrial Challenges and Enabling Technologies in Industry 4.0	Taxonomy; Industries; Fourth Industrial Revolution; Collaboration; Bibliographies; Systematics; Technological innovation; Business intelligence; Web services; Business challenges; enabling technologies; Industry 4.0; taxonomy; web platform	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2024	10.1109/ACCESS.2024.3356349
Broenner, Matthias; Wolff, Sebastian; Jovanovic, Jelena; Keuthen, Konstantin; Lienkamp, Markus	Production Strategy Development: Simulation of Dependencies Using Recurrent Fuzzy Systems	fuzzy logic; decision-making; recurrent fuzzy systems; production strategy; new markets; Africa	MDPI		2020	10.3390/systems8010001
Prijadi, Ruslan; Wulandari, Permata; Desiana, Putri Mega; Pinagara, Fajar Ayu; Novita, Maya	Financing needs of micro-enterprises along their evolution	Evolution; financing; micro-enterprises; start-up; ongoing; content analysis	EMERALD GROUP PUBLISHING LTD	2514-9369	2020	10.1108/IJOES-05-2018-0071
Zhu, Keda; Guo, Lihong	Financial technology, inclusive finance and bank performance	FinTech; Digital inclusive finance; Inclusive finance; Bank performance	ACADEMIC PRESS INC ELSEVIER SCIENCE	1544-6123	2024	10.1016/j.frl.2023.104872
Zhou, Ying; Shen, Long; Ballester, Laura	A two-stage credit scoring model based on random forest: Evidence from Chinese small firms	Credit scoring; Small firms; Expert system; Dominance analysis	ELSEVIER SCIENCE INC	1057-5219	2023	10.1016/j.irfa.2023.102755
Cerveny, Lubos; Sloup, Roman; Cervena, Tereza; Riedl, Marcel; Palatova, Petra	Industry 4.0 as an Opportunity and Challenge for the Furniture Industry-A Case Study	Industry 4; 0; smart company; project management; smart factories; innovation; artificial intelligence; competitiveness; cloud storage; process management; model 7S	MDPI		2022	10.3390/su142013325
Yang, Xiaoyun	Role of green finance and investment in sustainable resource development in China	Green finance; Sustainable energy resources; Fossil-based economic growth pattern; China	ELSEVIER SCI LTD	0301-4207	2023	10.1016/j.resourpol.2023.104219
Zhang, Shucheng; Jiang, Pei; Li, Xiaobin; Yin, Chao; Wang, Xi Vincent	A blockchain-empowered secure federated domain generalization framework for machinery fault diagnosis	Blockchain; Fault diagnosis; Federated learning; Domain generalization	ELSEVIER SCI LTD	1474-0346	2024	10.1016/j.aei.2024.102756
Banales, Santiago; Dormido, Raquel; Duro, Natividad	Multi-Step Clustering of Smart Meters Time Series: Application to Demand Flexibility Characterization of SME Customers	Electric load clustering; load profiling; smart meters; machine learning; data mining; demand flexibility; demand response	TECH SCIENCE PRESS	1526-1492	2025	10.32604/cmes.2024.054946
Levin, Eugene; Shults, Roman; Habibi, Reza; An, Zhongming; Roland, William	Geospatial Virtual Reality for Cyberlearning in the Field of Topographic Surveying: Moving Towards a Cost-Effective Mobile Solution	virtual reality; cyberlearning; training geospatial workforce	MDPI		2020	10.3390/ijgi9070433

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Lau, Henry; Tsang, Yung Po; Nakandala, Dilupa; Lee, Carman K. M.	Risk quantification in cold chain management: a federated learning-enabled multi-criteria decision-making methodology	Risk assessment; Risk identification; Cold chain; Federated learning; Multi-criteria decision-making	EMERALD GROUP PUBLISHING LTD	0263-5577	2021	10.1108/IMDS-04-2020-0199
Abilakimova, Anar; Bauters, Merja	Understanding twin transition dynamics in the Estonian metal manufacturing industry	metal manufacturing SMEs; digital transformation; green transformation; twin transition	ESTONIAN ACAD PUBLISHERS	1736-6046	2025	10.3176/proc.2025.2.02
Bornemann, Manfred; Alwert, Kay; Will, Markus	Lessons learned in intellectual capital management in Germany between 2000 and 2020-History, applications, outlook	Case studies; Germany; Intellectual capital management; Strategic management	EMERALD GROUP PUBLISHING LTD	1469-1930	2021	10.1108/JIC-03-2020-0085
Hang, Nga Phan Thi	Factors affecting the management of human resources at small and medium enterprises during Covid-19 pandemic in Vietnam	Human resource management; enterprises; covid-19 pandemic; policy implications; Vietnam	TAYLOR & FRANCIS AS	2331-1975	2024	10.1080/23311975.2024.2352884
Aleksic, Marko; Berber, Nemanja; Strugar, Maja; Bjekic, Radmila	The impact of corporate social responsibility on the environmental performance of large organizations in Serbia	corporate social responsibility; environmental performance; large organizations; PLS-SEM; Serbia	UNIV NOVI SAD, FAC ECONOMICS SUBOTICA	1821-3448	2024	10.5937/StraMan200021A
Sackey, Frank Gyimah; Asravor, Richard Kofi; Orkoh, Emmanuel; Ankrah, Isaac	Firm characteristics and asymmetric information based credit rationing in an emerging economy: a gender perspective	Credit rationing; Fairlie decomposition; Probit estimation; Discrimination; Firms; Ghana	SPRINGEROPEN	2228-7566	2023	10.1007/s40497-023-00363-3
Exposito-Langa, Manuel; Tomas-Miquel, Jose-Vicente; Fota, Andreea-Elena	Knowledge base and innovative practices: analysis of the moderating effect of network competence. An application in the Alicante wine industry	Wine industry; Knowledge base; Network competence; Innovative practices	EMERALD GROUP PUBLISHING LTD	1751-1062	2025	10.1108/IJWBR-11-2023-0073
Papagiannidis, Savvas; Davlembayeva, Dinara	Bringing Smart Home Technology to Peer-to-Peer Accommodation: Exploring the Drivers of Intention to Stay in Smart Accommodation	Sharing economy; Smart homes; Smart accommodation; SMEs; Value; Hospitality; The theory of consumption values	SPRINGER	1387-3326	2022	10.1007/s10796-021-10227-4
dos Santos, Ismael Luiz; Marinho, Sidnei Vieira; dos Santos, Ruan Carlos	The systematization knowledge of articles adherent to familiness, entrepreneurial orientation and absorptive capacity	Systematization; Familiness; Entrepreneurial orientation; Absorptive capacity	EMERALD GROUP PUBLISHING LTD	2043-6238	2021	10.1108/JFBM-04-2020-0037
Pavla, Vrabkova; Hana, Urbancova; Zuzana, Pacakova; Dominika, Kaderabkova	Symmetrical communication: an intra-organisational system to support conflict and crisis resolution in organisations	Bottom-up approach; top-down approach; feedback; employee voice; organisational culture; modern HR trends; Business, Management and Accounting; Leadership; Strategic Management	TAYLOR & FRANCIS LTD	2331-1975	2024	10.1080/23311975.2024.2421414

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Wu, Haishang	Business model and methods of evaluation in sustainable manufacturing	sustainability; material recycling; collaboration; localization; standard; AM; CM; SME	EDP SCIENCES S A	2265-4224	2021	10.1051/mfreview/2021026
Liu, Jiakai; Liu, Shiyang; Lai, Rongji; Lin, Qingfan	Improved Banzhaf Value Based on Participant's Triangular Fuzzy Number-Weighted Excess Contributions and Its Application in Manufacturing Supply Chain Coalitions	cooperative game; benefit distribution; Banzhaf value; triangular fuzzy number; supply chain management	MDPI		2024	10.3390/sym16121593
Zhang, Jianing; Fan, Jianhong; Yan, Xianghong	Research on Configurations for Marketing Performance of Science and Technology Enterprises in China Based on the TOE Framework	TOE framework; science and technology enterprises; marketing performance; fsQCA	SAGE PUBLICATIONS INC	2158-2440	2024	10.1177/21582440241304846
Eito-Brun, Ricardo; Amescua-Seco, Antonio	Developments in Aerospace Software Engineering practices for VSEs: An overview of the process requirements and practices of integrated Maturity models and Standards	Software development; Software engineering standards; SMEs; SPICE; Software; Maturity models	ELSEVIER SCI LTD	0273-1177	2021	10.1016/j.asr.2021.05.026
Kohv, Keijo; Lukason, Oliver	What Best Predicts Corporate Bank Loan Defaults? An Analysis of Three Different Variable Domains	failure prediction; corporate loan defaults; tax arrears; reporting delays; financial ratios	MDPI		2021	10.3390/risks9020029
Li, Xiang; Chu, Lei; Li, Yujun; Xing, Zhanjun; Ding, Fengqian; Li, Jintao; Ma, Ben	An Intelligent Financial Fraud Detection Support System Based on Three-Level Relationship Penetration	financial fraud detection; enterprise financial risks; three-level relationship penetration; fuzzy deterministic soft voting; 68Txx	MDPI		2024	10.3390/math12142195
Aquilani, Barbara; Piccarozzi, Michela; Abbate, Tindara; Codini, Anna	The Role of Open Innovation and Value Co-creation in the Challenging Transition from Industry 4.0 to Society 5.0: Toward a Theoretical Framework	Industry 4; 0; Society 5; 0; open innovation; value co-creation; big data; artificial intelligence	MDPI		2020	10.3390/su12218943
Halteh, Khaled	Does Size Matter? Analysing the Financial Implications of COVID-19 on SMEs and Large Companies Using a Hybrid Methodology	Financial distress prediction; Machine learning; ANN; MDA; Hybrid; COVID-19	SPRINGER NATURE		2025	10.1007/s44199-025-00107-0
Hayajneh, Jamal Abdelrahman . M.; Elayan, Malek Bakheet Haroun; Abdellatif, Mamdouh Abdallah Mohamed; Abubakar, A. Mohammed	Impact of business analytics and π -shaped skills on innovative performance: Findings from PLS-SEM and fsQCA	Big data; Business analytics; π -shaped skills; Innovative performance; Saudi vision 2030	ELSEVIER SCI LTD	0160-791X	2022	10.1016/j.techsoc.2022.101914
Deng, Yu; Zhang, Wenxia	RETRACTED: Modified CPT-TODIM method for evaluating the development level of digital inclusive finance under probabilistic hesitant fuzzy environment (Retracted Article)		PUBLIC LIBRARY SCIENCE	1932-6203	2023	10.1371/journal.pone.0282968

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Lukason, Oliver; Vissak, Tiia; Segovia-Vargas, Maria-Jesus	How Does Managerial Experience Predict the Internationalization Type of a Young Firm?	Business; Logistics; Interviews; Education; Economics; Correlation; Bibliographies; Exporter type; managerial experience; young firm; internationalization; SMEs	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2021	10.1109/ACCESS.2021.3054116
Taylor, Mark P.; Boxall, Peter; Chen, John J. J.; Xu, Xun; Liew, Angela; Adeniji, Adebayo	Operator 4.0 or Maker 1.0? Exploring the implications of Industrie 4.0 for innovation, safety and quality of work in small economies and enterprises	Automation; Industrie 4.0; Smart factories; Advanced manufacturing; Work organisation; Safety	PERGAMON-ELSEVIER SCIENCE LTD	0360-8352	2020	10.1016/j.cie.2018.10.047
Nguyen, The Kien; Khue, Nguyen Thi Minh; Tran, Quang Phu; Anh, Nguyen Thi Quynh; Cuong, Le Khanh; Du, Nguyen Chu; Cuong, Chu Viet; Thuong, Vu Thi; Anh, Dang Hoang; Vu, Nguyen Anh	Examining the Factors Influencing the Level of Circular Economy Adoption in Agriculture: Insights from Vietnam	Circular economy; Income; Policies; Scientific and technical; Households	Nan Yang Acad Sciences - NASS	2737-4777	2024	10.36956/rwae.v5i1.992
Comande, Giovanni; Varilek, Margaret	The many features which make the eIDAS 2 Digital Wallet either risky or the ideal vehicle for the transition to post-quantum encryption	EUDI wallet; Post-quantum cryptography; Migration PQC; Cybersecurity; Digital Identity	ELSEVIER ADVANCED TECHNOLOGY	2212-473X	2024	10.1016/j.clsr.2024.106022
Abedin, Mohammad Zoynul; Guotai, Chi; Hajek, Petr; Zhang, Tong	Combining weighted SMOTE with ensemble learning for the class-imbalanced prediction of small business credit risk	Small business; Credit risk; Imbalanced data; Oversampling; Weighted SMOTE; Ensemble learning	SPRINGER HEIDELBERG	2199-4536	2023	10.1007/s40747-021-00614-4
Pacheco, Diego Augusto de Jesus; Rampasso, Izabela Simon; Michels, Guilherme Schafer; Ali, Syed Mithun; Hunt, Julian David	From linear to circular economy: The role of BS 8001:2017 for green transition in small business in developing economies	Circular economy; Micro; Small and medium-sized enterprises; Sustainability; BS 8001:2017; Sustainable development; Corporate social responsibility	ELSEVIER SCI LTD	0959-6526	2024	10.1016/j.jclepro.2024.140787
Maack, Robert F.; de Puiseau, Constantin Waubert; Sokolova, Anna; Atsbha, Haile; Tercan, Hasan; Meisen, Tobias	Reducing the Sim2Real-Gap in Extrusion Blow Molding using Random Forest Regressors	machine learning; random forest; sim2real gap; manufacturing; extrusion blow molding; quality estimation	ELSEVIER	2213-8463	2022	
Yrjola, Mika; Niittymies, Aleks; Tabas, Abdollah Mohammadparast	Paradox blindness: How managers frame coopetition	Coopetition; Framing; Coopetition paradox; Managerial cognition; Small-and-medium-sized enterprises (SMEs)	ELSEVIER SCIENCE INC	0019-8501	2024	10.1016/j.indmarman.2024.06.001
Rivera, Dalilis Escobar; Terradellas Piferrer, Maria Rosa; Benito Mundet, Maria Helena	Measuring Territorial Social Responsibility and Sustainability Using the EFQM Excellence Model	EFQM model; quality management; sustainability; territorial social responsibility	MDPI		2021	10.3390/su13042153
Ribeiro Maria Clara, Dias Pinto; Jorge, Silva Ricardo; Claudio Leandro, Da Costa Pinho; Francisco Vitorino, Da Silva Martins	INTERNATIONAL RECOGNITION OF OWN BRANDS - THE CASE OF THE PORTUGUESE FOOTWEAR INDUSTRY	Portuguese footwear industry; own brand; international recognition; analysis of main components	SCIENDO	1842-4120	2021	10.2478/sbe-2021-0044

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Aguilar-Virgen, Quetzalli; Castaneda-Gonzalez, Missael; Marquez-Benavides, Liliana; Gonzalez-Vazquez, Jose; Taboada-Gonzalez, Paul	Concurrent Engineering Model for the Implementation of New Products in the Textile Industry: A Case Study	concurrent engineering; quality tools; quality improvement; new products	MDPI		2021	10.3390/app11083584
Islam, Md Amirul; Thambiah, Seethaletchumy; Ahmed, Elsadig Musa	The Relationship Between Islamic Microfinance and Women Entrepreneurship: A Case Study in Malaysia	Islamic Microfinance; Microfinance; Women Entrepreneurs; Adoption of IMF; Malaysia	KOREA DISTRIBUTION SCIENCE ASSOC	2288-4637	2021	10.13106/jafeb.2021.vol8.no5.0817
Amoah, John; Jibril, Abdul Bashiru; Odei, Michael Amponsah; Bankuoru Egala, Sulemana; Dziwornu, Raymond; Kwarteng, Kofi	Deficit of digital orientation among service-based firms in an emerging economy: a resource-based view	digital orientation; transformation; digitalisation; service-based firms; Ghana	TAYLOR & FRANCIS AS	2331-1975	2023	10.1080/23311975.2022.2152891
Wang, Chengbo; Li, Xiaomei; Su, Hong; Tian, Ying	Knowledge utilisation in Chinese medium-sized manufacturing firms - an exploration under the backcloth of quality improvement	China; Knowledge utilisation; Medium-sized enterprises	EMERALD GROUP PUBLISHING LTD	1367-3270	2021	10.1108/JKM-07-2020-0495
Vidyaratne, Lasitha; Carpenter, Adam; Powers, Tom; Tennant, Chris; Iftekharuddin, Khan M. M.; Rahman, Md Monibor; Shabalina, Anna S. S.	Deep Learning Based Superconducting Radio-Frequency Cavity Fault Classification at Jefferson Laboratory	time-series classification; fault identification; superconducting radio-frequency cavities; particle accelerator; LINAC; deep recurrent learning; convolutional neural networks	FRONTIERS MEDIA SA		2022	10.3389/frai.2021.718950
Saeedikiya, Mehrzad; Salamzadeh, Aidin; Salamzadeh, Yashar; Aeeni, Zeynab	Cognitions affecting innovation among generation Z entrepreneurs: the external enablement of digital infrastructure	Entrepreneurial mindset; Cognition; Innovation; Growth; Self-efficacy; Opportunity identification; Risk; Generation Z	EMERALD GROUP PUBLISHING LTD	1355-2554	2024	10.1108/IJEBR-02-2023-0188
Ma, Teng; Zhao, Kexin	Research on the resilience path of digitally driven project-based organizations: configuration analysis based on multivalued-set qualitative comparative analysis	Digitalization; Project-based organization; mv-QCA; Construction industry; Organizational resilience	EMERALD GROUP PUBLISHING LTD	0969-9988	2025	10.1108/ECAM-01-2024-0042
De Paola, Antonio; Musiari, Emma; Fortunati, Lara; Gregori, Francesco; Anselmi, Gian Piero; Andreadou, Nikoleta; Kotsakis, Evangelos; Fulli, Gianluca	An Open-Source IT Tool for Energy Forecast of Renewable Energy Communities	Renewable energy sources; Planning; Biological system modeling; Weather forecasting; Predictive models; Data models; Analytical models; Databases; Aggregates; Photovoltaic systems; Renewable energy communities; load/generation forecast; artificial intelligence; open-source software; energy management systems	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2025	10.1109/ACCESS.2025.3561937

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Zeqiri, Adelina; Ben Youssef, Adel; Zahar, Teja Maherzi	The Role of Digital Tourism Platforms in Advancing Sustainable Development Goals in the Industry 4.0 Era	digital platforms; tourism; sustainability; Industry 4.0; sustainable travel	MDPI		2025	10.3390/su17083482
Al-Gharbi, Salem; Al-Majed, Abdulaziz; Mahmoud, Mohamed; Abdulaheem, Abdulazeez	A Game-Theoretic Approach to Improve Energy-Related Data		AMER CHEMICAL SOC	2470-1343	2022	10.1021/acsomega.2c01706
Mwansa, Gardner	PROMOTING ADOPTION AND UTILIZATION OF CLOUD COMPUTING SERVICES FOR AGILE SOFTWARE DEVELOPERS: A SOUTH AFRICAN EXPERIENCE	Adoption; Migration; Cloud Computing; Software Engineering; Agile Development Methodologies	PONTIFICIA UNIV CATOLICA SAO PAULO-PUC-SP	2179-3565	2023	10.23925/2179-3565.2023v14i3p138-150
Dangayach, G. S.; Gaurav, Gaurav; Gupta, Sumit	Development of footprint framework of performance measurement system for SMMOs	Performance measurement system (PMS); Footprint framework; Small and medium manufacturing organizations SMMOs	EMERALD GROUP PUBLISHING LTD	0972-7981	2020	10.1108/JAMR-05-2020-0070
Masoumi, Abasali; Bond, Brian H.	Machine learning-based prediction of processing time in furniture manufacturing to estimate lead time and pricing		SPRINGER	0018-3768	2025	10.1007/s00107-024-02177-w
Le, Thanh Tiep	The association of corporate social responsibility and sustainable consumption and production patterns: The mediating role of green supply chain management	Green supply chain management; Corporate social responsibility; Sustainable consumption; Production patterns; Sustainable development goals; And emerging economy	ELSEVIER SCI LTD	0959-6526	2023	10.1016/j.jclepro.2023.137435
Borrego, Ana Clara; Carreira, Francisco Alegria; Pardal, Pedro; Abreu, Rute	Social Responsibility and SDG 8 during the First Wave of the COVID-19 Pandemic: The Role of Chartered Accountants in Portugal	chartered accountants; COVID-19 pandemic; SMEs; SDG 8; social responsibility	MDPI		2022	10.3390/su14148625
Waqar, Ahsan; Qureshi, Abdul Hannan; Alaloul, Wesam Salah	Barriers to Building Information Modeling (BIM) Deployment in Small Construction Projects: Malaysian Construction Industry	construction sector; barriers; BIM; small contractors; SEM; Malaysia	MDPI		2023	10.3390/su15032477
Strielkowski, Wadim; Guliyeva, Aida; Rzayeva, Ulviyya; Korneeva, Elena; Sherstobitova, Anna	Mathematical Modeling of Intellectual Capital and Business Efficiency of Small and Medium Enterprises	factor analysis; financial resources; intangible assets; small and medium enterprises; mathematical modeling	MDPI		2021	10.3390/math9182305
Sarra, Janis; Madaus, Stephan; Mevorach, Irit	Chasing assets abroad: Ideas for more effective asset tracing and recovery in cross-border insolvency		WILEY	1180-0518	2023	10.1002/iir.1499
Matenga, Alice Elizabeth; Mpofu, Khumbulani	Blockchain-Based Cloud Manufacturing SCM System for Collaborative Enterprise Manufacturing: A Case Study of Transport Manufacturing	SCM; cloud manufacturing; industry 4.0; event-driven microservices; permissioned blockchain; Kubernetes; stateful	MDPI		2022	10.3390/app12178664

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Seshadrinathan, Sujata; Chandra, Shalini	Trusting the trustless blockchain for its adoption in accounting: theorizing the mediating role of technology-organization-environment framework	Blockchain; Adoption; Trust; TOE framework; Accounting; Multimethod research	SPRINGER		2025	10.1186/s40854-024-00685-5
Wu, Ping; Jin, Ruoyu; Xu, Yidong; Lin, Feng; Dong, Yiting; Pan, Zhihong	THE ANALYSIS OF BARRIERS TO BIM IMPLEMENTATION FOR INDUSTRIALIZED BUILDING CONSTRUCTION: A CHINA STUDY	industrialized building; building information modeling; prefabricated construction; China; barrier; Analytic hierarchy process; factor analysis; questionnaire survey	VILNIUS GEDIMINAS TECH UNIV	1392-3730	2021	10.3846/jcem.2021.14105
Siwiec, Dominika; Pacana, Andrzej	Life Cycle-Based Product Sustainability Assessment Employing Quality and Cost	LCA; design; LCSA; quality; cost; sustainable product development; vacuum cleaner; production engineering; mechanical engineering	MDPI		2025	10.3390/su17083430
Martins, Hygor Vinicius Pereira; Setti, Joao Antonio Palma; Guimaraes, Cayley; Campos, Daniel Prado	Development of a robotic orthosis for fingers flexion motion by surface myoelectric control: Open source prototype	Artificial intelligence; Pattern recognition; Robotics; Signal processing; User-centered design; Modularization	ELSEVIER SCI LTD	1746-8094	2023	10.1016/j.bspc.2023.105014
Chatterjee, Sheshadri; Chaudhuri, Ranjan; Vrontis, Demetris; Thrassou, Alkis; Ghosh, Soumya K.	ICT-enabled CRM system adoption: a dual Indian qualitative case study and conceptual framework development	India; Artificial intelligence; Information and communication technology (ICT); Customer relationship management (CRM); Adoption; Framework	EMERALD GROUP PUBLISHING LTD	1558-7894	2021	10.1108/JABS-05-2020-0198
Civelek, Mehmet; Kljucnikova, Jana; Kloudova, Jitka; Vesela, Zuzana; Kljucnikov, Aleksandr	From intention to action: Understanding bank credit access through the lens of the theory of planned behavior	financial management; bank credit; Theory of Planned Behavior; entrepreneurship; cross- country analysis	INST BADAN GOSPODARCZYCH	2083-1277	2024	10.24136/oc.3082
Rubio-Mozos, Ernestina; Garcia-Muina, Fernando E.; Fuentes-Moraleda, Laura	Application of Ecosophical Perspective to Advance to the SDGs: Theoretical Approach on Values for Sustainability in a 4S Hotel Company	The Three Ecologies; ecosophy; Sustainable Development Goals; SMEs; Fourth Sector; purpose-driven companies; hospitality; sustainable business ecosystem; values for sustainability; Triple Wellbeing	MDPI		2020	10.3390/su12187713
Uchendu, Betsy; Nurse, Jason R. C.; Bada, Maria; Furnell, Steven	Developing a cyber security culture: Current practices and future needs	Cybersecurity culture; Information security culture; Security awareness; Organisational culture; Management; SMEs; Business; Behaviour; Psychology	ELSEVIER ADVANCED TECHNOLOGY	0167-4048	2021	10.1016/j.cose.2021.102387
Hancevic, Pedro I.; Sandoval, Hector H.	Solar panel adoption among Mexican small and medium-sized commercial and service businesses	Small and medium-sized enterprises (SMEs); Distributed photovoltaic generation; Electricity consumption; Technology adoption; Mexico	ELSEVIER	0140-9883	2023	10.1016/j.eneco.2023.106979

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Author Full Names	Article Title	Author Keywords	Publisher	ISSN	Publication Year	DOI
Rohani, Abbas; Zareei, Javad; Ghadamkheir, Kourosh; Farkhondeh, Seyed Alireza	Optimization of engine parameters and emission profiles through bio-additives: Insights from ANFIS Modeling of Diesel Combustion	Renewable energy; Alternative fuels; Engine performance; Adaptive neuro-fuzzy inference system (ANFIS)	ELSEVIER	2666-7908	2025	10.1016/j.clet.2025.100994
Dagidir, Buse Duygu; Ozkan, Baris	A comprehensive evaluation of a company performance using sustainability balanced scorecard based on picture fuzzy AHP	Picture fuzzy sets; AHP; Sustainability balanced scorecard; MCDM	ELSEVIER SCI LTD	0959-6526	2024	10.1016/j.jclepro.2023.140519
Tessmann, Tobias; Marty, Adrian P.; Stricker, Daniel; Huwendiek, Soren; Breckwoldt, Jan	There is no too small for frequent workplace-based assessment: Differences between large and small residency programs in anesthesia when using a mobile application to assess EPAs	competency-based education; CBME; WBA; EPA; entrustment; feedback; decision making; residency program; g theory; reliability; small business; SME; smartphone; mobile application	GERMAN MEDICAL SCIENCE-GMS	2366-5017	2024	10.3205/zma001709
Meng, Tao; Li, Qi; He, Chang; Dong, Zheng	Research on the configuration path of manufacturing enterprises' digital servitization transformation	Digital servitization; TOE framework; Qualitative comparative analysis	ELSEVIER	1059-0560	2025	10.1016/j.iref.2025.103952
Rapheal, Ojelabi; Adedeji, Afolabi; Opeyemi, Oyeyipo; Olugbenro, Ogunrinde	Modelling client and construction firm barriers hindering social client relationship management system implementation in the built environment	Client; construction organisation; PLS-SEM; construction business; model; built environment	TAYLOR & FRANCIS LTD	1745-2007	2024	10.1080/17452007.2023.2282121
Leal, Isamar Lisbeth; Jaimes, Ruth Mayerly Guerrero; Garcia, Mauricio Mogollon	MODEL OF MARKETING TO COUNTERACT THE ECONOMIC CRISIS IN SECTOR OF FOOT-WEAR ARTICLES IN CÚCUTA, COLOMBIA	Digital marketing; competitive approach; economic crisis; design; footwear sector; cluster	UNIV CIENFUEGOS	2218-3620	2023	
Rodrigues, Rodrigo G.; Ferreira, Fernando A. F.; Milici, Alexandra; Carayannis, Elias G.; Ferreira, Joao J. M.	Change Management and Advanced Wireless Network Implementation: Detection of Monetization Opportunities and Challenges	Wireless networks; Organizations; Biological system modeling; Transforms; Decision analysis; Analytical models; Pandemics; Change management; decision-making trial evaluation laboratory (DEMATEL); decision support; multiple-criteria decision analysis (MCDA); technology	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2024	10.1109/TEM.2022.3187650
Lu, Qiang; Lu, Wanfei; Jiang, Yu; Zhang, Qian	Impacts of supply chain finance on supply chain resilience: empirical evidence from a dynamic capability perspective	Dynamic capability theory; Supply chain finance; Supply chain resilience; Supply chain collaboration; Supply chain transparency	EMERALD GROUP PUBLISHING LTD	1741-038X	2025	10.1108/JMTM-04-2024-0207
Biswas, Sanjib; Pamucar, Dragan; Bozanic, Darko; Halder, Bikash	A New Spherical Fuzzy LBWA-MULTIMOOSRAL Framework: Application in Evaluation of Leanness of MSMEs in India		HINDAWI LTD	1024-123X	2022	10.1155/2022/5480848

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Fox, Haley; Kamaraj, Abishek B.; Drake, Dana	Investigating the effect of powder recoater blade material on the mechanical properties of parts manufactured using a powder-bed fusion process	Additive manufacturing; direct metal laser solidification; recoater blade; lattice structure; high aspect ratio	ELSEVIER	2213-8463	2022	
Seidel, A.; Wenzel, K.; Haenel, A.; Teicher, U.; Weiss, A.; Schaefer, U.; Ihlenfeldt, S.; Eisenmann, H.; Ernst, H.	Towards a seamless data cycle for space components: considerations from the growing European future digital ecosystem Gaia-X	Space4; 0; Digital transformation; Seamless data cycle; Gaia-X; Digital ecosystem; Data economy	SPRINGER WIEN	1868-2502	2024	10.1007/s12567-023-00500-4
Di Porto, Fabiana; Ghidini, Gustavo	I Access Your Data, You Access Mine: Requiring Data Reciprocity in Payment Services	Financial markets; Banks; Big data; Big tech; Artificial intelligence; Access to account; XS2A; Algorithms; Competition; Database; Digital conglomerates; Fintech; Platforms; Privacy; Regulation; SMEs	SPRINGER HEIDELBERG	0018-9855	2020	10.1007/s40319-020-00914-1
Jian, Zhaoquan; Javaid, Mudaser; Liao, Shudi	Strategic orientation, strategic flexibility and firm performance: the important role of strategic human resource management	Strategic flexibility; Market orientation; Entrepreneurial orientation; Strategic human resource; Firm performance	EMERALD GROUP PUBLISHING LTD	1750-614X	2024	10.1108/CMS-02-2024-0112
Malodia, Suresh; Chauhan, Chetna; Jabeen, Fauzia; Dhir, Amandeep	Antecedents and consequences of open innovation: a conceptual framework	Bricolage; Platforms; Platformization; Open innovation	EMERALD GROUP PUBLISHING LTD	1355-2554	2025	10.1108/IJEBR-03-2022-0235
Sudha, S.; Ganeshkumar, C.; Kokatnur, Shilpa S.	Adoption of mobile applications (apps) for information management in small agribusiness enterprises - an exploratory mixed-methods study of Farmer Producer Companies in India	Agriculture; Information and communications technology; Emerging market economies; Mobile technologies; Farmer producer companies	EMERALD GROUP PUBLISHING LTD	2514-9342	2024	10.1108/GKMC-12-2023-0470
Obeso, Maria; Hernandez-Linares, Remedios; Lopez-Fernandez, Maria Concepcion; Serrano-Bedia, Ana Maria	Knowledge management processes and organizational performance: the mediating role of organizational learning	Performance; SMEs; Spain; Knowledge management; Organizational learning; Knowledge management processes	EMERALD GROUP PUBLISHING LTD	1367-3270	2020	10.1108/JKM-10-2019-0553
D'Ascenzo, Fabrizio; Vinci, Giuliana; Cancer, Giulia; Ruggeri, Marco; Savastano, Marco	The Evaluation of Corporate Sustainability Strategies in Italy: Challenges and Opportunity of Recycled Packaging	sustainability; circular economic; plastic; recycled materials; re-use; single-use plastic	MDPI		2025	10.3390/su17083608

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Rianmora, Suchada; Punsawat, Poompachara; Yutisayanuwat, Charinya; Tongtan, Yosakorn	Design for an Intelligent Waste Classifying System: A Case Study of Plastic Bottles	Sorting; Recycling; Belts; Product design; Plastic products; Product development; Manufacturing processes; Fault diagnosis; Product design and development; Kansei engineering; conveyor belt; microcontroller; light sensor; fault tree analysis	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	2169-3536	2023	10.1109/ACCESS.2023.3274862
Stehlikova, Beata; Vincurova, Zuzana; Brezina, Ivan; Svihlikova, Ilona	COVID 19 MORTALITY AS A REFLECTION OF THE QUALITY OF HEALTH IN EU COUNTRIES		CENTER SOCIOLOGICAL RESEARCH	2071-789X	2023	10.14254/2071-789X.2023/16-3/8
Aloui, Aymen; Hamani, Nadia; Delahoche, Laurent	An integrated optimization approach using a collaborative strategy for sustainable cities freight transportation: A Case study	Collaborative city logistics; Integrated planning; Sustainable freight transport; Mixed-Integer linear programming; Heuristic; Collaborative inventory-location-routing problem	ELSEVIER	2210-6707	2021	10.1016/j.scs.2021.103331
Fares, Naila; Lloret, Jaime	An integrated SWOT-AHP-fuzzy TOPSIS approach for maturity management following the COVID-19 outbreak: lessons learned from fast fashion	SWOT-AHP; Fuzzy-TOPSIS; Maturity; Agility factors; COVID-19; Resilience management; Fast fashion	EMERALD GROUP PUBLISHING LTD	2398-5364	2022	10.1108/JGOSS-09-2021-0072
Abdullah, Ahmad; Saraswat, Shantanu; Talib, Faisal	A maturity model for assessing Industry 4.0 implementation using data envelopment analysis and best and worst method approaches	Industry 4.0; Micro small and medium enterprises (MSMEs); Maturity model; Best and worst method (BWM); Data envelopment analysis (DEA); Implementation	EMERALD GROUP PUBLISHING LTD	1741-0401	2025	10.1108/IJPPM-12-2023-0668
Safari, Mahsa; Asadi, Somayeh	A screening method for lowering customer acquisition cost in small commercial building energy efficiency projects	Energy efficiency; Small commercial buildings; Market research; Deep retrofit; Benchmarking; Building retuning	SPRINGER	1570-646X	2020	10.1007/s12053-020-09899-9
Kanapickiene, Rasa; Kanapickas, Tomas; Neciunas, Audrius	Bankruptcy Prediction for Micro and Small Enterprises Using Financial, Non-Financial, Business Sector and Macroeconomic Variables: The Case of the Lithuanian Construction Sector	bankruptcy prediction; small and micro enterprises; financial ratios; macroeconomic variables; construction-sector variables; non-financial variables; logistic regression; artificial neural network; multivariate adaptive regression splines (MARS)	MDPI		2023	10.3390/risks11050097
Lobo, Stanislaus Roque; Samaranayake, Premaratne	Comparative analysis of innovation management between ANZ (Australia, New Zealand) and TMSV (Thailand, Malaysia, Sri Lanka and Vietnam) regions	Innovation; Design for lean six sigma; Stage-gate; New product development; Innovation management; Innovation management capabilities	EMERALD GROUP PUBLISHING LTD	0265-671X	2025	10.1108/IJQRM-09-2023-0283

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Katahenggam, Nagathisen; Ch'ng, Chor Ban; Siow, Yuenching	Multilingual exploration of travel vlogs: unravelling heritage tourism marketing dynamics in Malaysia	Digital heritage tourism; Tourism linguistic marketing; Experience tourism; Vlogs; Tourism marketing	EMERALD GROUP PUBLISHING LTD	1755-4217	2025	10.1108/WHATT-02-2025-0059
Zhang, Xiaoge; Zhong, Sanqiang; Mahadevanb, Sankaran	Airport surface movement prediction and safety assessment with spatial-temporal graph convolutional neural network	Deep learning; Aviation safety; Trajectory prediction; Graph neural network; Safety assessment	PERGAMON-ELSEVIER SCIENCE LTD	0968-090X	2022	10.1016/j.trc.2022.103873
Cakar, Recep	Fintech Concept and Current Fintech Applications Used in Islamic Financial Institutions	Islamic Finance; Financial Transformation; Financial Technology; Islamic Fintech	AFYON KOCATEPE UNIV		2023	10.52637/kiid.1323142
Baiod, Wajde; Hussain, Mostaq M.	The impact and adoption of emerging technologies on accounting: perceptions of Canadian companies	Canada; Accounting; Emerging technology; Technology-organization-environment; Use and adoption	EMERALD GROUP PUBLISHING LTD	1834-7649	2024	10.1108/IJAIM-05-2023-0123
Vukmirovic, Goran; Maric, Radenko; Maric, Dra'en; Vucenovic, Sonja; Lekovic, Ksenija; Nuseva, Daniela	Improving Working Conditions in Retail During the COVID-19 Pandemic	working conditions; work incentives; position of workers; re tailing; COVID-19 pandemic	SVEUCLISTE ZAGREBU, PRAVNI FAKULTED-UNIV ZAGREB, FAC LAW	1330-2965	2023	10.3935/rsp.v30i3.1889
Shen, Lei; Zhao, Xiaodi; Panda, Debadrita; Parida, Vinit	Does Digital Economy Investment Promote Sustainable Competitiveness by Creating New Industry?	Industries; Technological innovation; Ecosystems; Investment; Sun; Media; Entrepreneurship; Economics; Collaboration; Art; Big data comprehensive pilot zone (BDPZ); creative industry; digital economy advancement; regional innovation system	IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC	0018-9391	2025	10.1109/TEM.2024.3521542
Zhang, Beiqin	COVID-19 Forecast and Bank Credit Decision Model Based on BiLSTM-Attention Network	COVID-19; Bank credit; SMEs; Inclusive finance; BiLSTM; Attention	SPRINGER NATURE	1875-6891	2023	10.1007/s44196-023-00331-5
Corvello, Vincenzo; Felicetti, Alberto Michele; Pini, Benedetta; Bigliardi, Barbara	International entrepreneurship as a dynamic capability in new ventures: Defining the concept and identifying its antecedents and outcomes through a systematic literature review	International entrepreneurship; Early internationalizing firms; Born Globals; International new ventures; Start-ups; Dynamic capabilities	SPRINGER	1570-7385	2024	10.1007/s10843-024-00368-3
Teddy-Ang, Sintia; Toh, Abigail	AI Singapore Empowering a Smart Nation		ASSOC COMPUTING MACHINERY	0001-0782	2020	10.1145/3378416

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Veiga, Diego Sande; Veiga, Jose Ramon Sande	Evaluation of European business innovation policies in the environmental technology industry: Analysis of the implementation of the ERDF-Innterconecta Programme of the Technology Fund 2007-2013 in Galicia	R & D & I policies; Environmental Innovation; Technology Fund; Evaluation of eco-innovation policies; Regional development	ASOC UNIV PUBLICAS ANDALUCIA-AUPA	0213-7585	2023	
Fox, Haley; Kamaraj, Abishek B.; Drake, Dana	Investigating the effect of powder recoater blade material on the mechanical properties of parts manufactured using a powder-bed fusion process	responsibility Additive manufacturing; direct metal laser solidification; recoater blade; lattice structure; high aspect ratio	ELSEVIER	2213-8463	2022	
Soukal, Ivan; Maci, Jan; Trnkova, Gabriela; Svobodova, Libuse; Hedvicakova, Martina; Hamplova, Eva; Maresova, Petra; Lefley, Frank	A state-of-the-art appraisal of bankruptcy prediction models focussing on the field's core authors: 2010-2022	Review; Business failure; Machine learning; Bankruptcy prediction models; Core authors	EMERALD GROUP PUBLISHING LTD	2658-0845	2024	10.1108/CEMJ-08-2022-0095
Wang, Shuang; Yu, Hui; Wei, Miaomiao	The effect of supply chain finance on sustainability performance: empirical analysis and fsQCA	Supply chain finance; Sustainability performance; Financial performance; Environmental; social and governance performance; Recipe	EMERALD GROUP PUBLISHING LTD	0885-8624	2023	10.1108/JBIM-03-2022-0154
Pacheco-Velazquez, Ernesto; Rodes-Paragarino, Virginia; Marquez-Urbe, Alberto	Exploring educational simulation platform features for addressing complexity in Industry 4.0: a qualitative analysis of insights from logistics experts	serious games; simulators; logistics education; Industry 4.0; complex thinking; educational innovation; higher education	FRONTIERS MEDIA SA		2024	10.3389/feduc.2024.1331911
Salah, Omar Hasan; Ayyash, Mohannad Moufeed	Understanding user adoption of mobile wallet: extended TAM with knowledge sharing, perceived value, perceived privacy awareness and control, perceived security	Mobile wallet; Knowledge sharing; Perceived value; Perceived privacy awareness and control; Perceived security; Perceived ease of use; Perceived usefulness; Palestine	EMERALD GROUP PUBLISHING LTD	2059-5891	2024	10.1108/VJIKMS-03-2023-0055
Du, Jun; Shepotylo, Oleksandr; Yuan, Xiaocan	How did the Brexit uncertainty impact services exports of UK firms?	Brexit; International business policy uncertainty; Synthetic control; Services trade; Internationalisation; Multinationals relocation; UK	SPRINGER NATURE	2522-0691	2025	10.1057/s42214-024-00202-6
Castaldi, Carolina	Measuring innovation in international business research: how can trademark data help?	Innovation; International business; Policy; Trademark	SPRINGER NATURE	2522-0691	2024	10.1057/s42214-024-00201-7