

Integrating Artificial Intelligence (AI) into Scientific Research on SME Management

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Welcome!

SCHOOL OF MANAGEMENT
iaelyon



8/15
JANUARY 2025



INTERNATIONAL

About you

<https://wheelofnames.com/n8u-4ae>



- Name
- topics of interest to develop an outline of a scientific article.
- Currently, what are you working on, and which master's program are you enrolled in?
- What are your expectations for this seminar?



About me

- Doctor of Economics (Guadalajara University)
- Assistant Professor at the Department of Marketing and analysis at Tecnologico de Monterrey, MEXICO.
- Business Intelligence, Data Analytics, Demand Management, Artificial Intelligence in Business

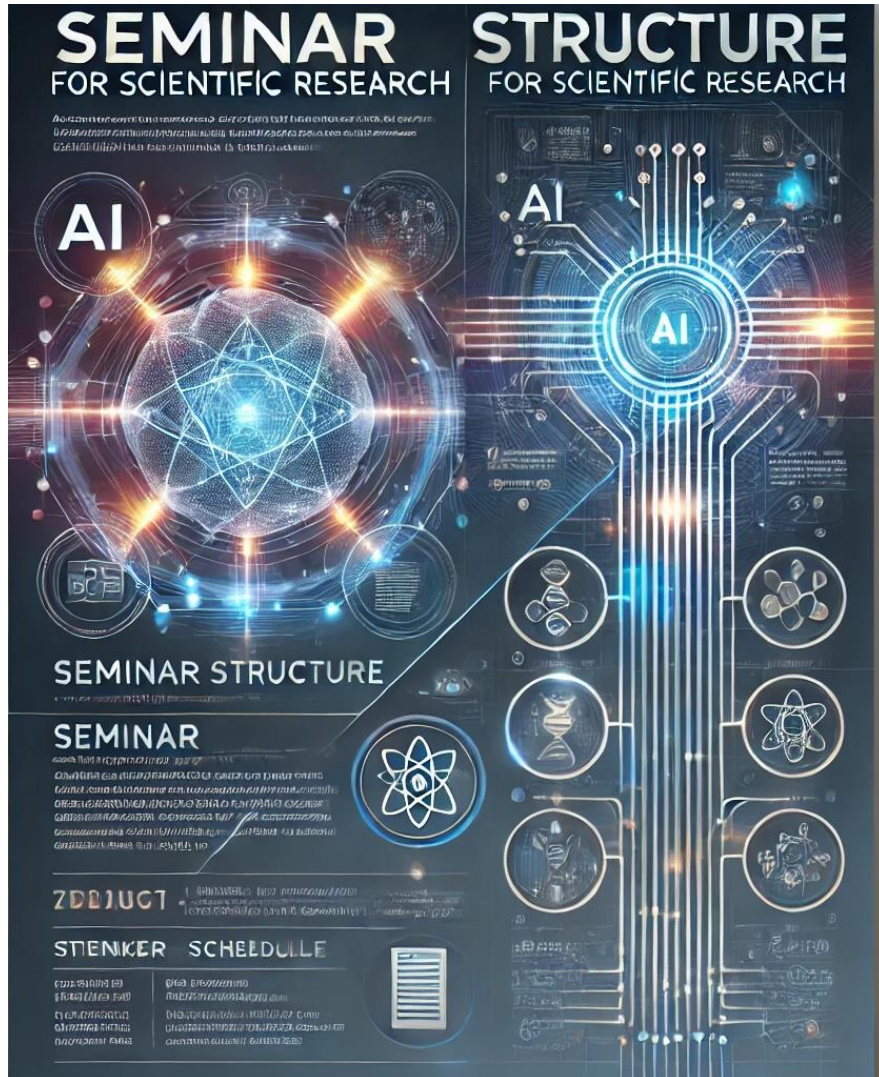
<https://orcid.org/0000-0003-3003-8686>

[https://scholar.google.com.mx/citations?user=ftJ8bvUAAA
AJ&hl=es&oi=ao](https://scholar.google.com.mx/citations?user=ftJ8bvUAAA&hl=es&oi=ao)

International Week timetable:

	DAY 1	DAY 2	DAY 3
8:15-8:30			Farewell Breakfast
8:30-9:00	Welcome Breakfast		
9:00-10:30	Courses	Courses	Courses (until 13 :00)
10:30-11:00	Coffee break	Coffee break	
11:00-12:30	Courses	Courses	
12:30-14:00	LUNCH	LUNCH	13:00-14:00: LUNCH
14:00-15:30	Courses	Courses	
15:30-16:00	Coffee break	Coffee break	
16:00-17:30	Courses	Courses	

Seminar structure



Day 1: Introduction to AI in the Scientific Research Process for SMEs

Day 2: Data Extraction, Synthesis, and Research Report Preparation

Day 3: Research Presentation and Visual Communication

Materials

All semianrio materials will be available on the platform at the following link:

<https://github.com/mrodriguezmarin>

Note: Make sure you have access.

Teams

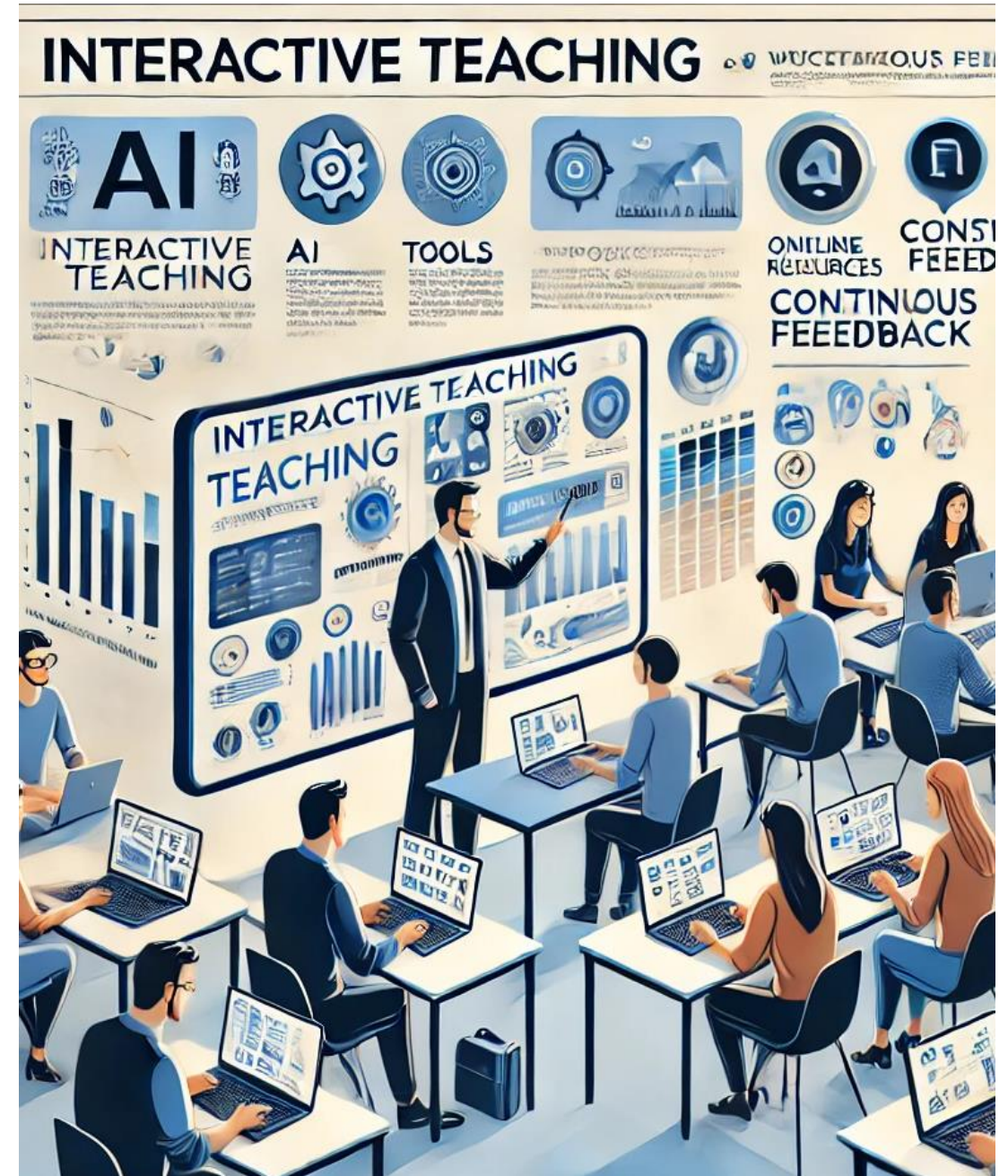
#	Last name	Firs name	Full name	Group #
1	Badrane	Hamza	Hamza Badrane	1
2	Bertrand	Killian	Killian Bertrand	
3	Brechon	Marceau	Marceau Brechon	
4	Chartier	Fablo	Fablo Chartier	2
5	Farge	Camille	Camille Farge	
6	Jallal	Wadid	Wadid Jallal	
7	Ksavrelof	Mathis	Mathis Ksavrelof	3
8	Laouini	Yasmine	Yasmine Laouini	
9	Mathieu	Noé	Noé Mathieu	
10	Rifki	Salma	Salma Rifki	4
11	Salmi	Elias	Elias Salmi	
12	Torbey	Fawzi	Fawzi Torbey	

Articles on SMES and Literature Review

- Rodriguez-Marin, M., Saiz-Alvarez, J. M., & Huezo-Ponce, L. (2022). A bibliometric analysis on pay-per-click as an instrument for digital entrepreneurship management using VOSviewer and SCOPUS data analysis tools. *Sustainability*, 14(24), 16956. <https://doi.org/10.3390/su142416956>
- Ramírez-Solis, E. R., & Rodriguez-Marin, M. (2022). Diffusion model for Mexican SMEs to support the success of innovation. *Sustainability*, 14(16), 10305. <https://doi.org/10.3390/su141610305>
- Gil, M., Rodriguez-Marin, M., & Montoya, M. A. (2020). Demand planning on small and medium-sized enterprises in Mexico: A case study of a confectionery firm. *Adv. Bus.-Relat. Sci. Res. J*, 11, 56-73.

Teaching method:

- The course will be conducted interactively, combining the instructor's expertise with the active participation of attendees through practical workshops, videos and more.
- Real scientific research that has employed this methodology will be explored, and various AI tools will be utilized.
- Additionally, participants will have access to online resources and will receive continuous feedback to ensure their progress.



Final Assignment: Scientific Article Draft

Objective: Develop a draft scientific article on a topic related to SMEs or another field of interest, integrating AI tools and following the guidelines of systematic research methods covered in the seminar.

Requirements:

- Must include a clear research question, comprehensive literature review, data analysis, and discussion of results.
- Use at least 3 AI tools (from the course) to assist with different parts of the research and writing process.
- Submission includes a reflection on how AI improved their research process.

Guideline for grading:

Appreciation	Excellent	Very satisfactory	Satisfactory	Average	Insufficient	Very insufficient
Equivalent	« Beyond expectations »	« Very good work »	« good work »	« Adequate but I expected more »	« I am disappointed »	« Not good enough »
Equivalence mark out of 20	18	16	13	10	7	4

Relevant articles on the topic Systematic Literature Review (SLR)

Sivarajah, U., Kamal, M. M., Irani, Z., & Weerakkody, V. (2017). Critical analysis of Big Data challenges and analytical methods. *Journal of business research*, 70, 263-286.

<https://doi.org/10.1016/j.jbusres.2016.08.001>

Garousi, V., Felderer, M., & Mäntylä, M. V. (2019). Guidelines for including grey literature and conducting multivocal literature reviews in software engineering. *Information and software technology*, 106, 101-121.

<https://doi.org/10.1016/j.infsof.2018.09.006>

Majid, M., Habib, S., Javed, A. R., Rizwan, M., Srivastava, G., Gadekallu, T. R., & Lin, J. C. W. (2022). Applications of wireless sensor networks and internet of things frameworks in the industry revolution 4.0: A systematic literature review. *Sensors*, 22(6), 2087. <https://doi.org/10.3390/s22062087>

Tandon, A., Dhir, A., Islam, A. N., & Mäntymäki, M. (2020). Blockchain in healthcare: A systematic literature review, synthesizing framework and future research agenda. *Computers in Industry*, 122, 103290.

<https://doi.org/10.1016/j.compind.2020.103290>

Badi, S., & Murtagh, N. (2019). Green supply chain management in construction: A systematic literature review and future research agenda. *Journal of cleaner production*, 223, 312-322.

<https://doi.org/10.1016/j.jclepro.2019.03.132>

Rules of our sessions

- Take what you want
- Keep it simple
- Less but deeper
- We will use some open access applications
- Most of the AI apps are paid. I will show you them.
- Interactive
- Active participation
- Have fun!

MENTIMETER

Join at [menti.com](https://www.menti.com) use code 7578 6576

<https://www.menti.com/alawe6jnzaqt>

Please provide an indication about your familiarity with the following tools:

IA in general

ChatGPT

Consensus

Jenni.AI

Gamma

VOSviewer.



<https://www.mentimeter.com/app/presentation/al74czikzpaqxqujooyirvydcac7fg81/edit?question=bhrhmsnp5o1h>

MENTIMETER

Join at menti.com use code 7578 6576

Please provide an indication for the following statements:

I once struggled to develop research.

I usually use some AI resources to conduct scientific research.

Strongly disagree

Strongly agree

After participating in this seminar, I know...
I would like to know...

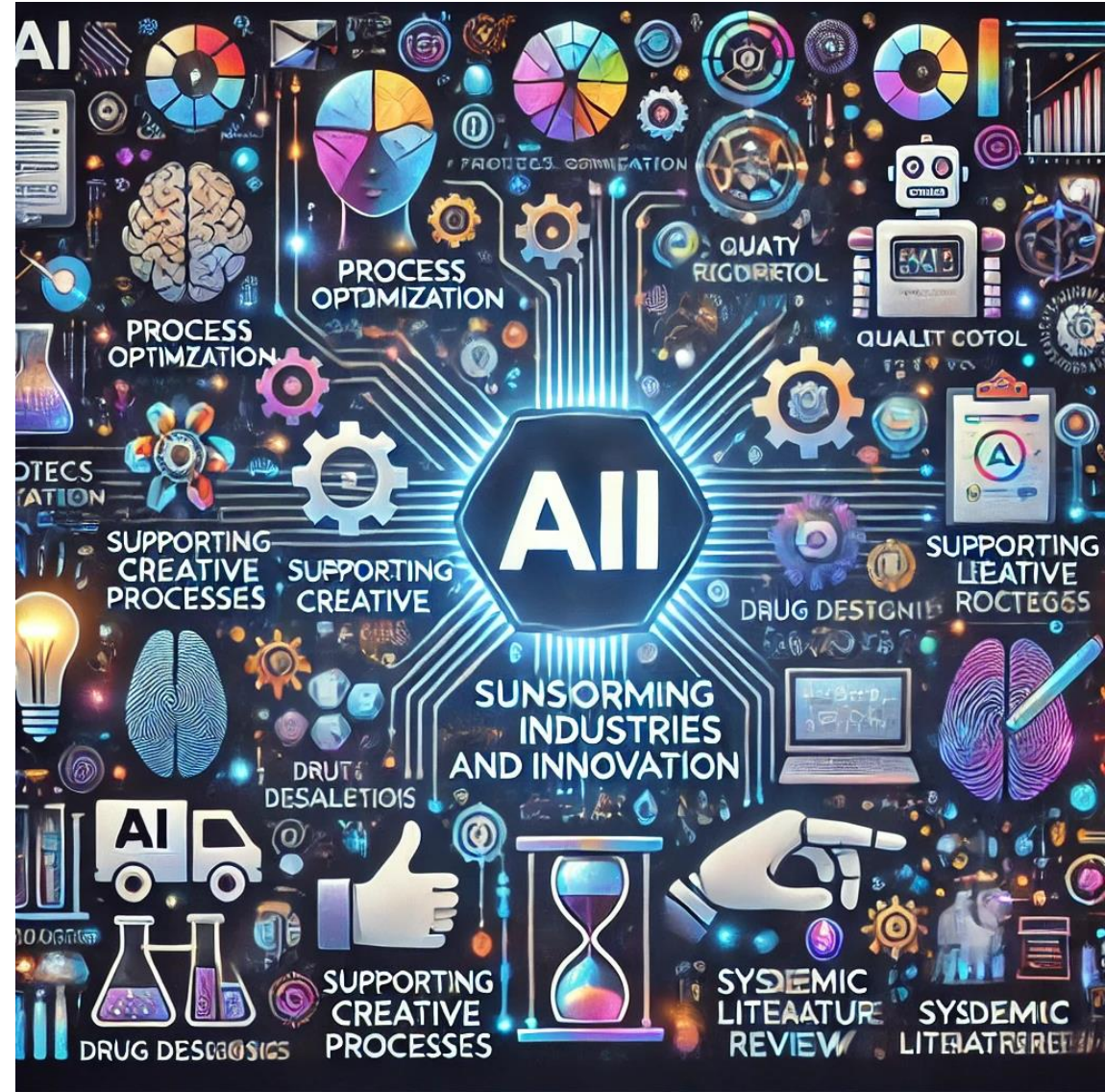


Seminar aim

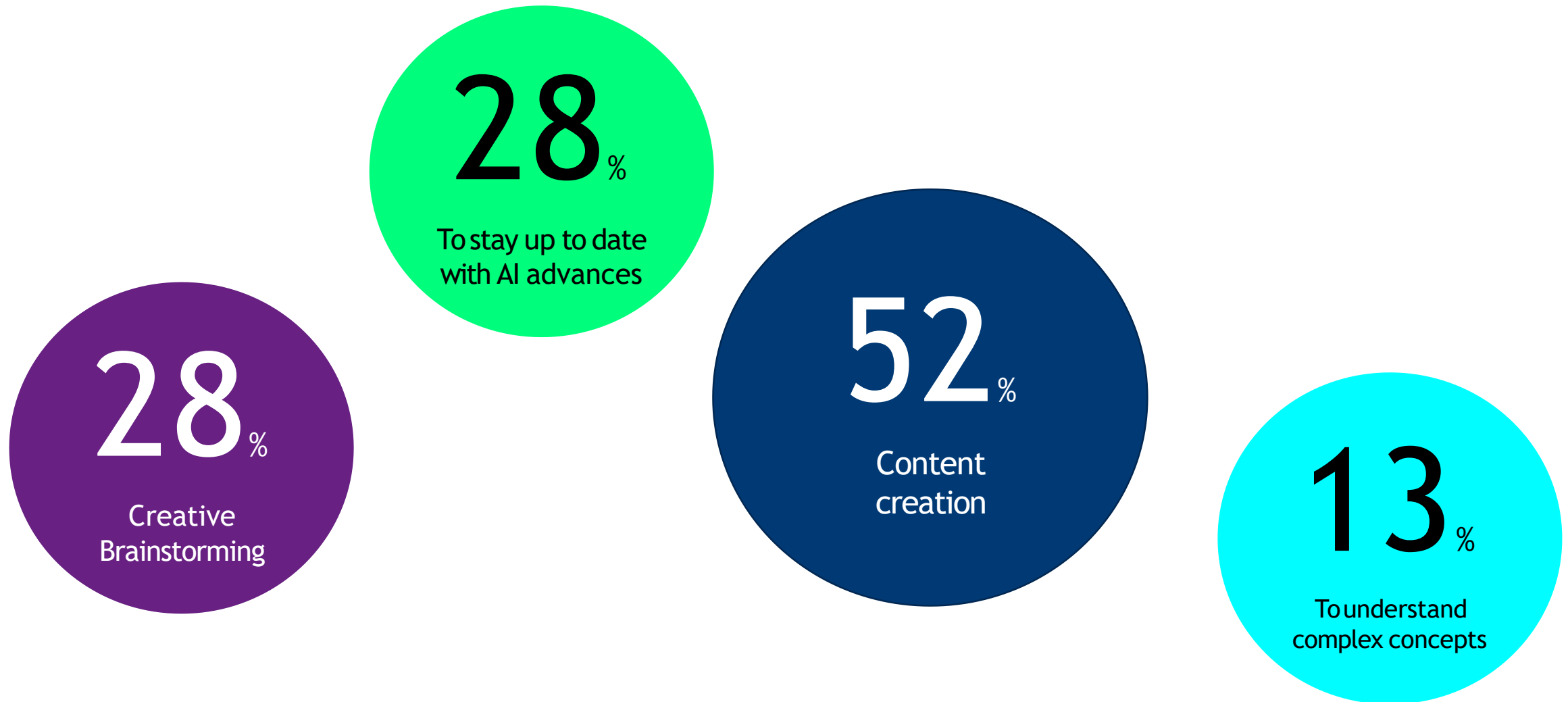
This seminar synthesizes the role of artificial intelligence (AI) and automation in systematic literature reviews (SLRs)

AI is used for different purposes

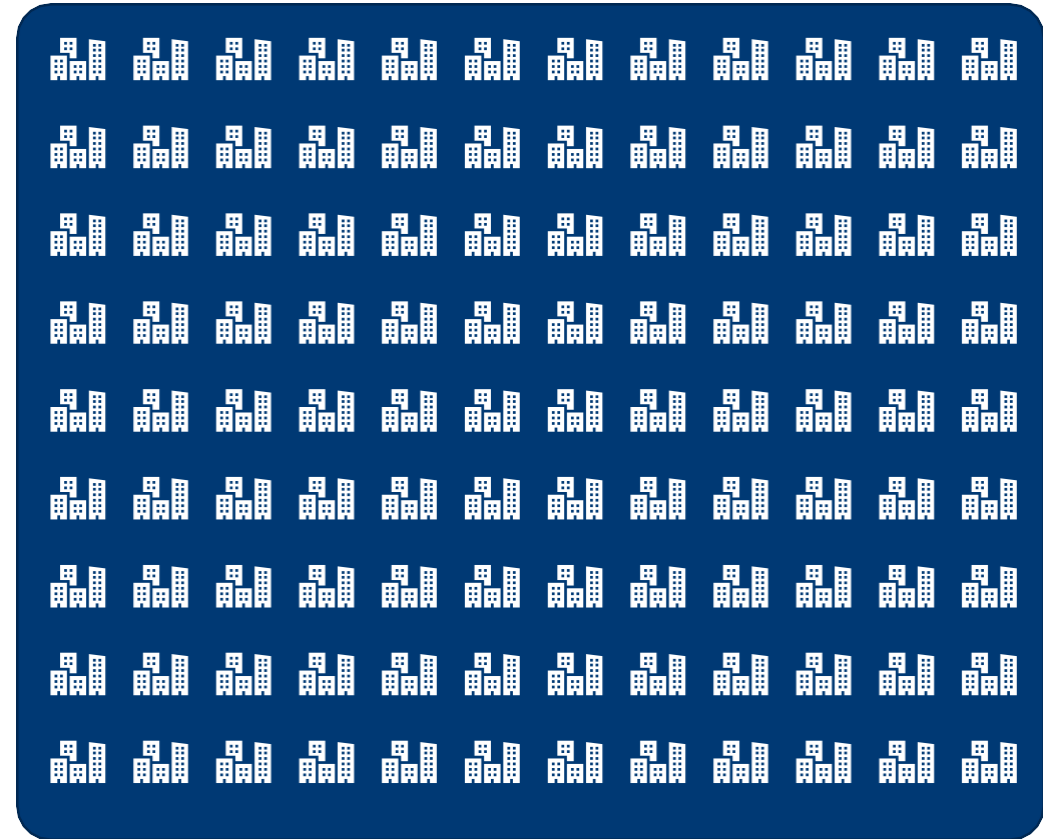
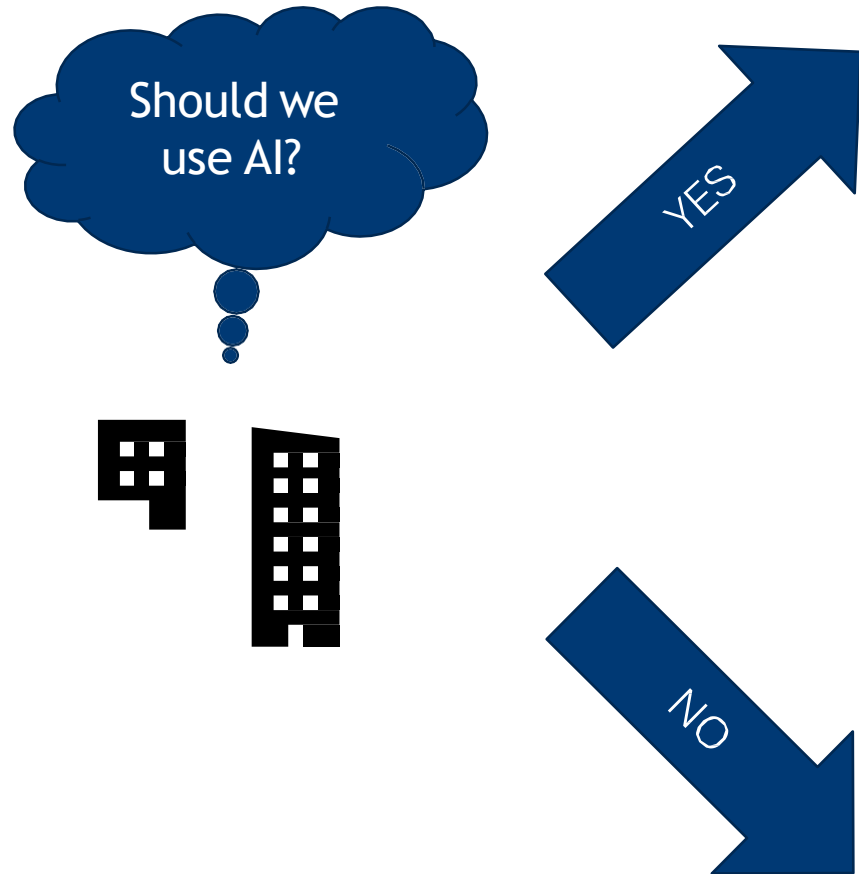
- Process Optimization
- Pattern Recognition
- Supporting Creative Processes
- Quality Control
- Chatbots / Virtual Agents
- Recommendation Systems
- Market Analysis
- Content analysis
- Drug discovery
- Product Design
- **Systematic Literature Review**
-



For what are you using AI?



AI is (pretty much) everywhere



Because AI is everywhere...

New capabilities required!

AI meets academia: transforming systematic literature reviews

EuroMed Journal
of Business

Przemyslaw Tomczyk
Kozminski University, Warszawa, Poland

Philipp Brüggemann
FernUniversität in Hagen, Hagen, Germany, and

Demetris Vrontis
*Department of Management, School of Business, University of Nicosia,
Nicosia, Cyprus;*

*S P Jain School of Global Management – Dubai Campus,
Dubai, United Arab Emirates and
Department of Management Studies, Adnan Kassab School of Business,
Lebanese American University, Beirut, Lebanon*

Received 8 March 2024
Revised 16 June 2024
Accepted 22 August 2024

Abstract

Purpose – This study synthesizes the role of artificial intelligence (AI) and automation in systematic literature reviews (SLRs), focusing in particular on efficiency, methodological quality and human-machine collaboration.

Design/methodology/approach – A systematic review methodology was applied, analyzing studies from Scopus and Web of Science databases to explore the use of AI and automation in SLRs. A final sample of 28 articles was selected through a rigorous and interdisciplinary screening process.

Findings – Our analysis leads to seven themes: human and machine collaboration; efficiency and time savings with AI; methodological quality; analytical methods used in SLRs; analytical tools used in SLRs; SLR stages AI is utilized for and living systematic reviews. These themes highlight AI's role in enhancing SLR efficiency and quality while emphasizing the critical role of human oversight.

Research limitations/implications – The rapid advancement of AI technologies presents a challenge in capturing the current state of research, suggesting the need for ongoing evaluation and theory development on human-machine collaboration.

Practical implications – The findings suggest the importance of continuously updating AI applications for SLRs and advocating for living systematic reviews to ensure relevance and utility in fast-evolving fields.

Originality/value – This study provides a comprehensive overview of the current state of AI and automation in SLRs, highlighting the need for ongoing evaluation and theory development on human-machine collaboration.

The current issue and full text archive of this journal is available on Emerald Insight at:

<https://www.emerald.com/insight/1450-2194.htm>

- **Activity:** Group discussion on potential applications of AI in SME research, scientific studies, or other industries, focusing on improving efficiency, decision-making, and innovation.

What is Systematic Literature Review (SLR)?

A **Systematic Literature Review (SLR)** is a methodical and structured approach to identifying, evaluating, and synthesizing all available research relevant to a specific research question or topic. Unlike traditional reviews, an SLR follows a predefined protocol and is designed to minimize bias and ensure that the review is comprehensive and reproducible.

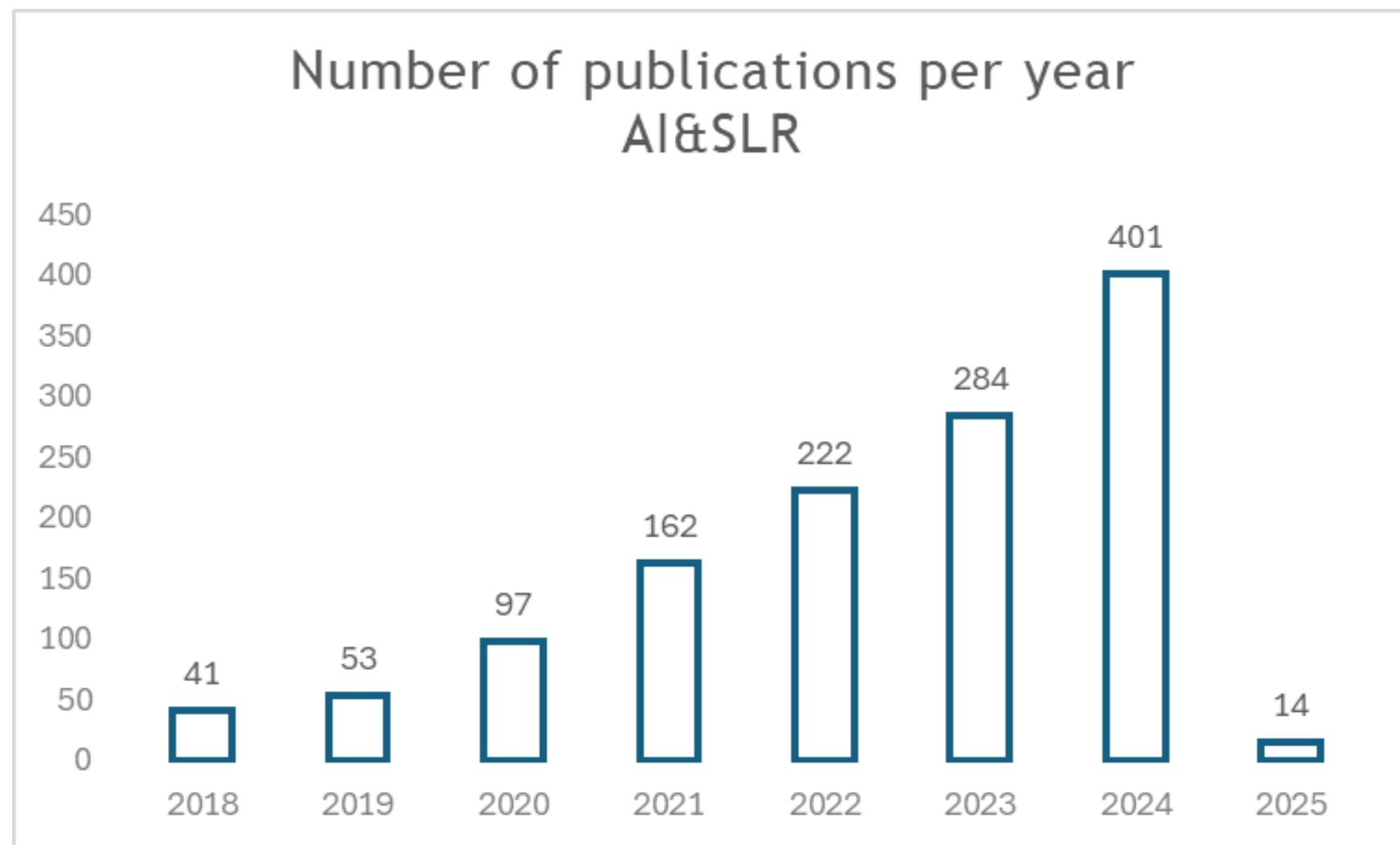
Introduction

Technological Evolution: AI and ML are transforming scientific methodologies across fields like health, data science, and management (Thrassou et al., 2022, 2024; Shneiderman, 2002; Fleischer et al., 2018).

AI in SLRs: AI enhances efficiency, accuracy, and accessibility in systematic literature reviews by automating tasks like screening and data extraction (Beller et al., 2018; O'Connor et al., 2019).

Historical Context: Automation in SLRs began in the 1990s, with continuous advancements improving the review process (Stanfill and Marc, 2019; Schmidt et al., 2021). It hasn't started with ChatGPT.

Bibliometrics



Source: Scopus, December 2024

Motivation to conduct an empirical study



1. Scoping review



2. Research Question



3. Literature identification
& selection



4. Data extraction
& Synthesis



¹What makes the Literature Review time intensive?

- Conceptualization/Scoping Review
- Research questions
- Literature identification and selección
- Data preparation
- Robustness checks
- Reporting and recomendation
- ...

Sometimes, this is the consequence...



Let's start ...

- Conceptualization/Scoping Review

The conceptualization stage of scientific research is the foundation of the study, where the researcher defines the problem, establishes objectives.

- Research questions

The formulation of research questions is a critical step in scientific investigation, where the researcher translates the identified problem into specific, clear, and answerable inquiries. These questions guide the research process, focusing on key aspects of the study while ensuring relevance and feasibility.

Activity (Individual)

What are your main research questions?

In case you don't have them yet, ask them.

For example:

Does Corporate Social Responsibility (CSR) have an impact on SMEs?

How does Corporate Social Responsibility (CSR) influence the performance of SMEs?

How do SMEs integrate Corporate Social Responsibility (CSR) into their business strategies?

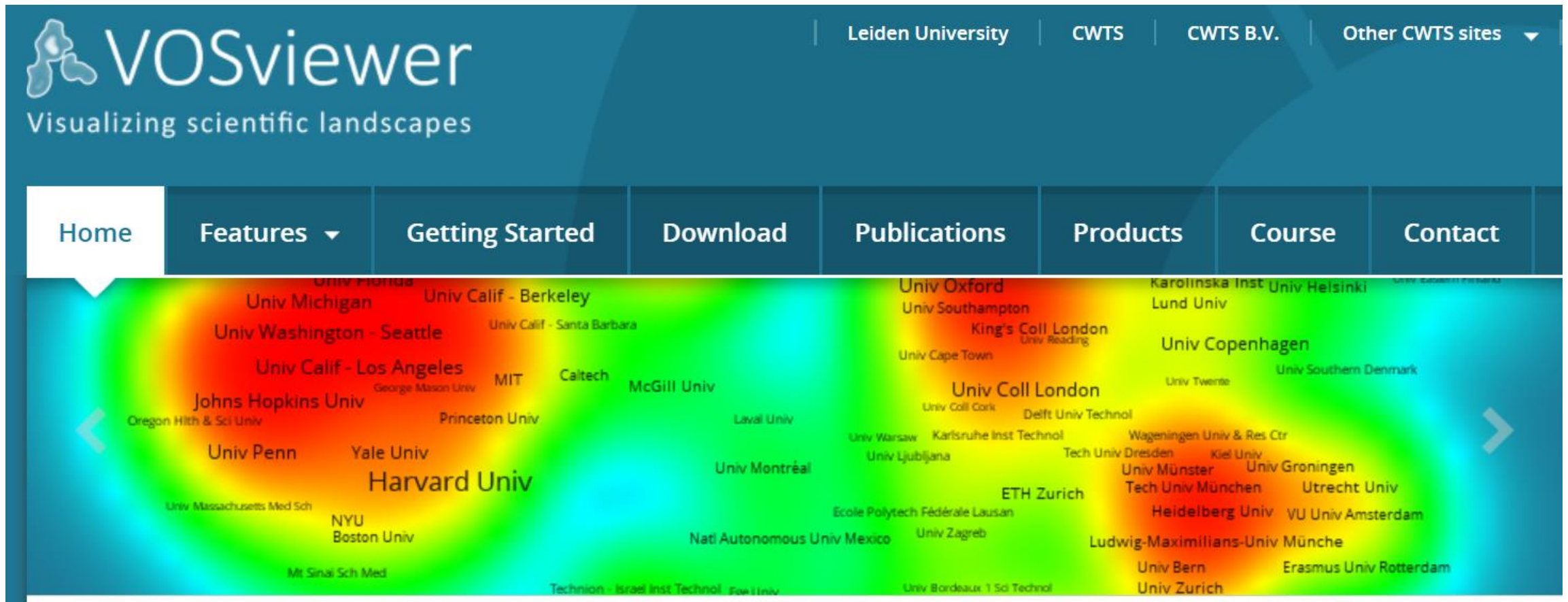
- Literature identification and selection

The stage of literature identification and selection in scientific research involves locating, evaluating, and choosing relevant academic sources to build a strong foundation for the study. This step ensures the researcher understands the current state of knowledge, identifies gaps, and contextualizes their work within existing research. It includes using databases, journals, and other reliable sources to gather information and then critically assessing the quality and relevance of each source.



- # Activity (Individual)

Installation of VOSviewer software (<https://www.vosviewer.com/>)
and SCOPUS database (<https://www.scopus.com/>)



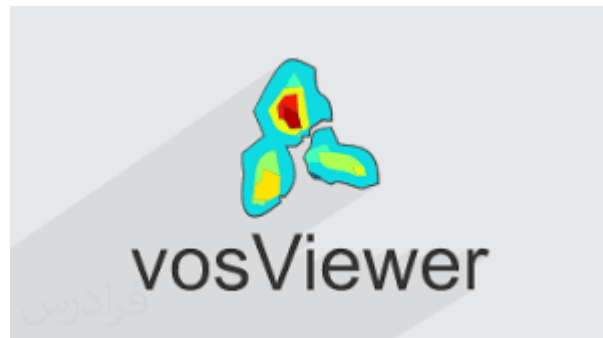
Installation of VOSviewer software

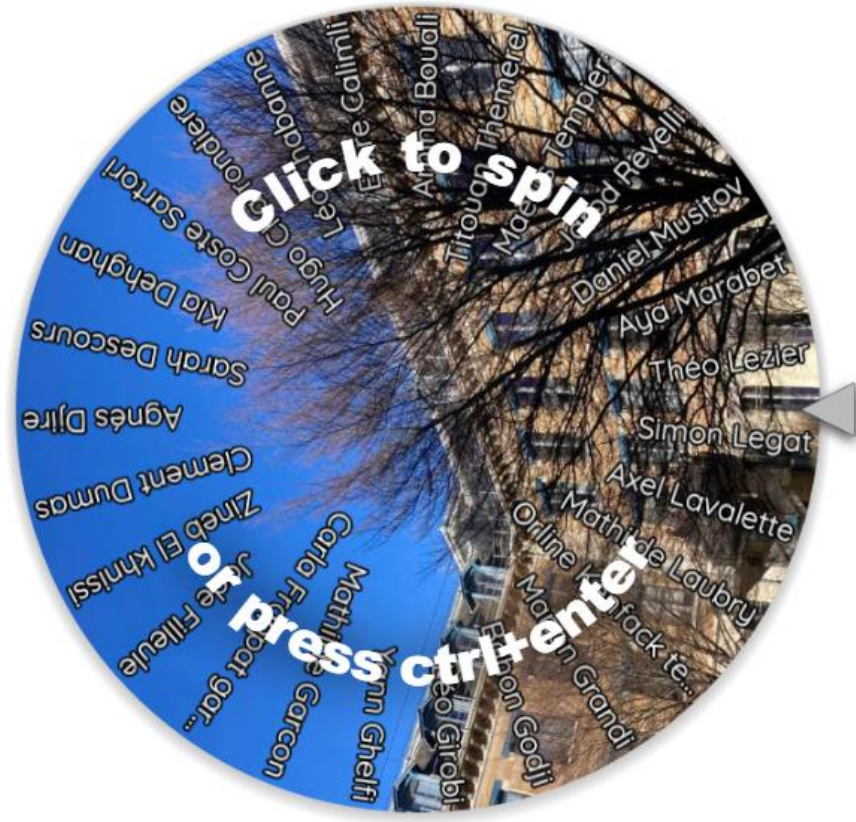
File Commands Tools Favorites Options Help

Add Extract To Test View Delete Find Wizard Info VirusScan Comment SFX

↑ VOSviewer_1.6.20_exe.zip - ZIP archive, unpacked size 70,336,837 bytes

Name	Size	Packed	Type	Modified	CRC32
..			Carpeta de archivos		
data	696,447	83,831	Carpeta de archivos	26/09/2016 03:...	
HISTORY.txt	44,468	10,847	Documento de texto	30/10/2023 11:...	B898C429
LICENSE.txt	1,888	804	Documento de texto	30/10/2023 11:...	B757A3CB
Manual_VOSviewer_1.6.20.pdf	1,368,647	1,211,684	Chrome HTML Doc...	30/10/2023 11:...	3A844D9F
VOSviewer.exe	68,225,387	61,902,711	Aplicación	30/10/2023 11:...	010006DC





Answer the following questions:

- What key concepts do you remember from the first session?
- How would you apply what you learned in your professional or research area?
- How useful was the dynamic of the first session for your learning?
- What did you like the most about the first session?
- Do you feel the session's pace was appropriate for you?

- # Activity (Individual)

Installation of VOSviewer software (<https://www.vosviewer.com/>)
and SCOPUS database (<https://www.scopus.com/>)

Brought to you by ITESM



Scopus 20

Empowering discovery since 2004

 Search

Lists

Sources

SciVal ↗



Create account

Sign in

Celebrating 20 years of innovative discovery

Our Scopus journey started in 2004 and during the past two decades Scopus grew into the leading platform for innovative discovery, driving research for the benefit of all.

[About our journey >](#)

Documents

Authors

Researcher Discovery

Organizations

[Search tips ?](#)

Search authors using:



Author name



ORCID




Keyword

New

Enter last name *

Enter first name

[+ Add affiliation](#)

Search 

Activity (Individual)



25 minutes

- Download the scopus database SME's.csv from the DRIVE folder that the professor will share.
- Use VOSviewer software to load Scopus database
- On the topic of SMES identify: the main 25 authors
- Top 25 countries that have researched the topic (Citations)
- Where is your country in the ranking with respect to this research topic?
- Identifies topics related to SMES research

Deliver the activity in a Word or Power Point file.

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SLR procedure (Vrontis, Christofi, 2021*)

Stage	Description	References
Scoping Review	Defines the boundaries and focus of the study, systematically determining inclusion criteria and timeframe.	Vrontis & Christofi, 2021
Research Purpose and Research Question	Defines the scope and focus of the study, followed by the formulation of research questions based on identified gaps.	Billore et al., 2023; Vrontis & Christofi, 2021
Research Context	Refers to the setting, background, and elements that may affect the research, helping in interpreting findings.	Vrontis et al., 2020; Christofi et al., 2017; Baima et al., 2020; Vrontis et al., 2022
Literature Identification	Systematic search and assessment of relevant publications to map the current state of knowledge on a topic.	Jain et al., 2022
Literature Selection	Selecting relevant sources based on research questions, objectives, and quality to ensure a rigorous literature base.	Christofi et al., 2017; Battisti et al., 2023
Data Extraction and Synthesis	Collecting and analyzing data from selected literature to identify patterns and synthesize key insights.	Christofi et al., 2021; Battisti et al., 2023
Reporting and Recommendation	Summarizing and synthesizing results, identifying gaps, and providing recommendations for future research.	Christofi et al., 2017; Pereira et al., 2023b

*Vrontis, D., & Christofi, M. (2021). R&D internationalization and innovation: A systematic review, integrative framework and future research directions. *Journal of Business Research*, 128, 812-823.

Systematic Literature Review (SLR) References.

- Vrontis, D., & Christofi, M. (2021). R&D internationalization and innovation: A systematic review, integrative framework and future research directions. *Journal of Business Research*, 128, 812-823. <https://doi.org/10.1016/j.jbusres.2019.03.031>
- Vrontis, D., Makrides, A., Christofi, M., & Thrassou, A. (2021). Social media influencer marketing: A systematic review, integrative framework and future research agenda. *International Journal of Consumer Studies*, 45(4), 617-644. <https://doi.org/10.1111/ijcs.12647>
- Billore, S., Anisimova, T., & Vrontis, D. (2023). Self-regulation and goal-directed behavior: A systematic literature review, public policy recommendations, and research agenda. *Journal of Business Research*, 156, 113435. <https://doi.org/10.1016/j.jbusres.2022.113435>

Systematic Literature Review (SLR) Structure.

- Abstract
- Introduction
- Research design
- Bibliometrics (optional)
- Thematic análisis-The Method
- Conclusions
- Discussion
- Further Research
- References

What AI gives to SLR

- **Conversation** (we ask in natural language- AI answers in different forms)
- **Consequently** - the mindset. Researcher as a manager of SLR writing proces
- **Fast searching and writing** - pre-writing of the manuscript
- **Time:** savings in time

What AI doesn't give

- Full control
- The correct answer to all questions.
- Better results in literature identification and selection than Scopus or WoS

SLR with AI. Table of software

Tool	web	Scoping analysis	Purpose and research questions	Context analysis	Literature identification	Literature selection	Data extraction and synthesis	Report preparation and recommendations	SUM	Price
Consensus.app	https://consensus.app/	1	1	1	1	1	1		6	Freemium
SciSpace	https://typeset.io/	1		1	1	1	1	1	6	Freemium
Elicit	https://elicit.org/	1		1	1	1	1		5	Freemium
Paperpal	https://edit.paperpal.com									
Epsilon	https://www.epsilon-ai.com/	1		1	1			1	4	Freemium
Julius	https://julius.ai/	1	1	1				1	4	Freemium
Open Read	https://www.openread.academy/	1		1	1			1	4	Freemium
Paper Digest	https://www.paperdigest.org/	1		1	1			1	4	Freemium
Research Kick	start.researchkick.com		1	1	1		1		4	Paid
SciSummary	https://scisummary.com/	1			1	1	1		4	Freemium
Scite	https://scite.ai/	1		1	1			1	4	Freemium
Blainly	https://blainy.com/	1		1				1	3	Freemium
Genei	https://app.genei.io/	1		1				1	3	Paid
Jenni	https://jenni.ai/	1		1				1	3	Freemium
MirrorThink	https://mirrorthink.ai/	1		1				1	3	Paid
Perplexity	https://www.perplexity.ai/	1		1				1	3	Freemium
PowerDrill	https://powerdrill.ai/	1		1				1	3	Freemium
Research Buddy	https://researchbuddy.app/	1		1				1	3	Freemium
Textero	https://app.textero.ai/	1		1				1	3	Freemium
Petal	https://www.petal.org/						1	1	2	Freemium
Cambiran	https://www.cambrianml.org/				1				1	Free
ChatDoc	https://chatdoc.com/							1	1	Paid
SUM		17	3	17	10	4	6	15	72	

Focus on

- ChatGPT <https://www.openai.com/>
- Consensus <https://consensus.app/search/>
- Jenni <https://app.jenni.ai>
- Paperpal <https://edit.paperpal.com/>
- SCISPACE <https://typeset.io>

ChatGPT installation

1. Installation and Use of ChatGPT 3.5

Step 1: Create an OpenAI Account

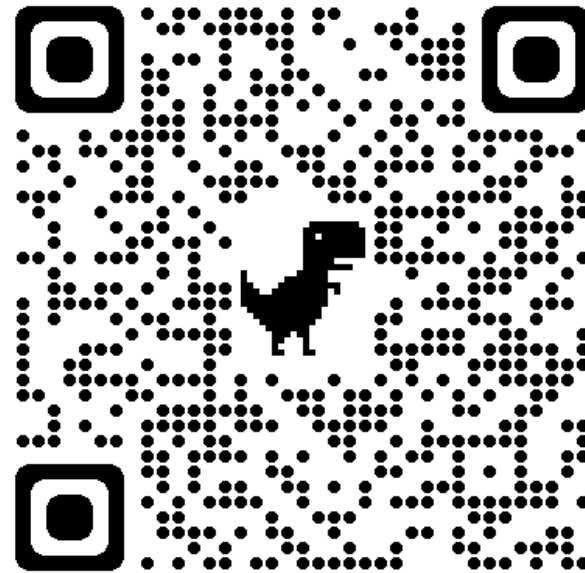
Visit the OpenAI website:

Open your browser and go to

<https://www.openai.com/>.

2. Register:

1. Click "Sign Up" or "Register."
2. Fill out the form with your email and create a password.



Note: If you have another version of ChatGPT installed it is fine.

Hands on

Individual activity with ChatGPT

Write the following prompt in ChatGPT

Prompt 1 : Write a scientific article on the topic [Systematic Literature Review on Small and Medium Enterprises]. Includes the main bibliographical references, citing them appropriately.

What were the results and your experience in this activity?

Hands on

Individual activity with ChatGPT

Write the following prompt in ChatGPT

Prompt 2 : I want to write a literature review about [Small and Medium Enterprises (SMES)]. Can you help me come up with a structure for this review?

What were the results and your experience in this activity?

Hands on

Individual activity with ChatGPT

Now write the Prompt with the research topic of your interest, section in yellow with brackets

Prompt 3 : I want to write a literature review about [Topic]. Can you help me come up with a structure for this review?

What was the result, does the review of literature and structure that ChatGPT produced make sense?

Hands on

Individual activity with Google Scholar

Search and explore bibliographical references in pdf of your topic of interest in Google Scholar, use keywords or author

Generate a folder on your laptop with a clear name related to your topic of interest. Keep all the papers you found on the topic in it, making sure to organize them in an orderly manner.



<https://scholar.google.com/>

Jenni AI vs. Paperpal



- has outline builder feature
- versatility in outlining
- Can search academic databases and insert references
- Accurate AI assistant (Ask Jenni)



- Works with Microsoft word
- guide to start writing a scientific article
- Text improvements suggestions

Procedure proposition

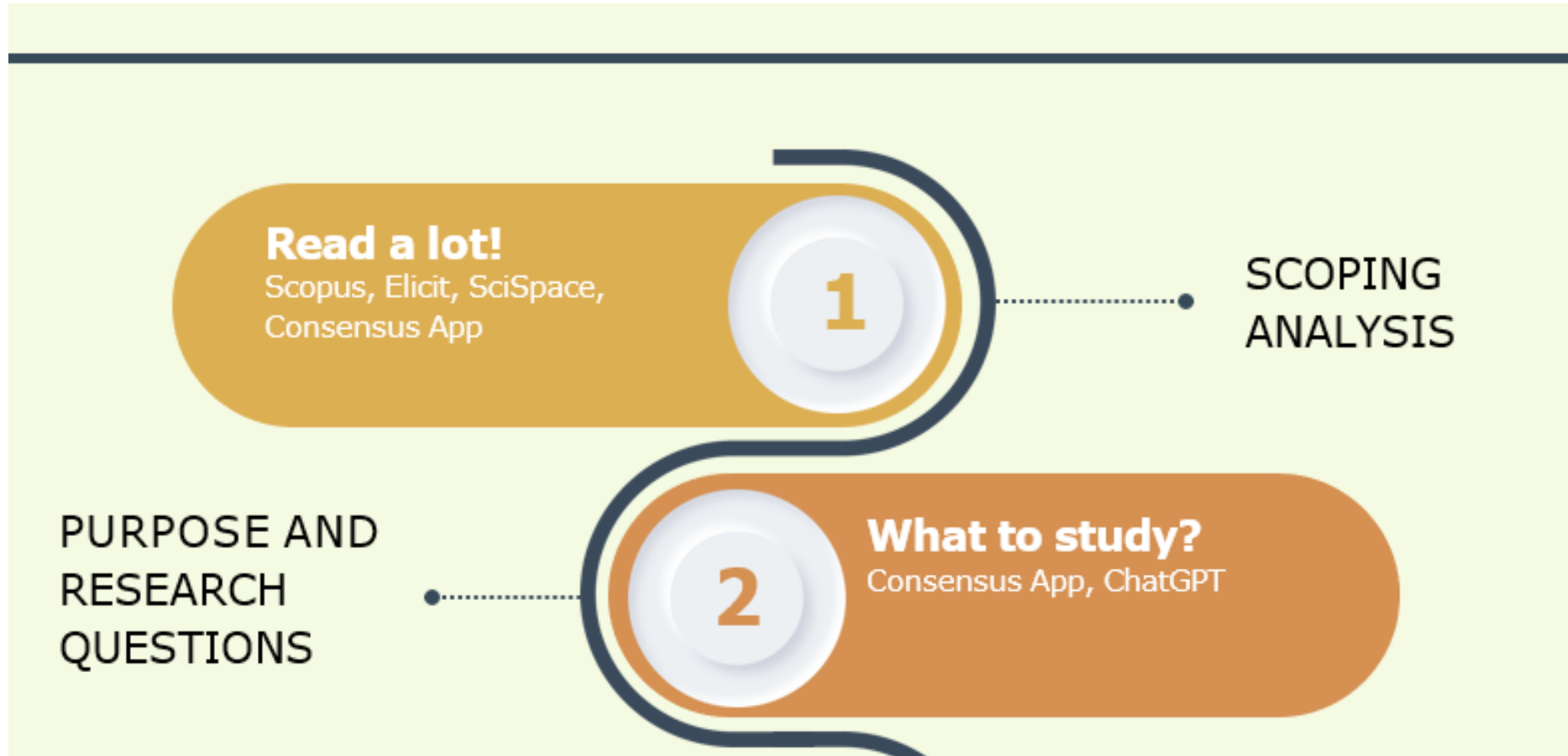


PRZEMYSŁAW TOMCZYK, PHD
with adaptations by MAURO RODRÍGUEZ-MARIN



HOW TO WRITE A LITERATURE REVIEW WITH AI?

AI into Scientific Research seminar IAE Lyon 2025



Note: Poster 1 is available in the DRIVE folder shared by the professor.

HOW TO WRITE A LITERATURE REVIEW WITH AI?

AI into Scientific Research seminar IAE Lyon 2025



HOW TO WRITE A LITERATURE REVIEW WITH AI?

AI into Scientific Research seminar IAE Lyon 2025

DATA
EXTRACTION,
SYNTHESIS AND
PRESENTATION

6

What the data is about?

Consensus App, Elicit, SciSpace,
Gamma and Fliki

Write!

ChatGPT, ChatDOC, Jenni.ai,
Elicit, SciSpace, Scite.

7

REPORT
PREPARATION

Mind the
ethics.
How to use
AI tools to
meet
publishers
requirements

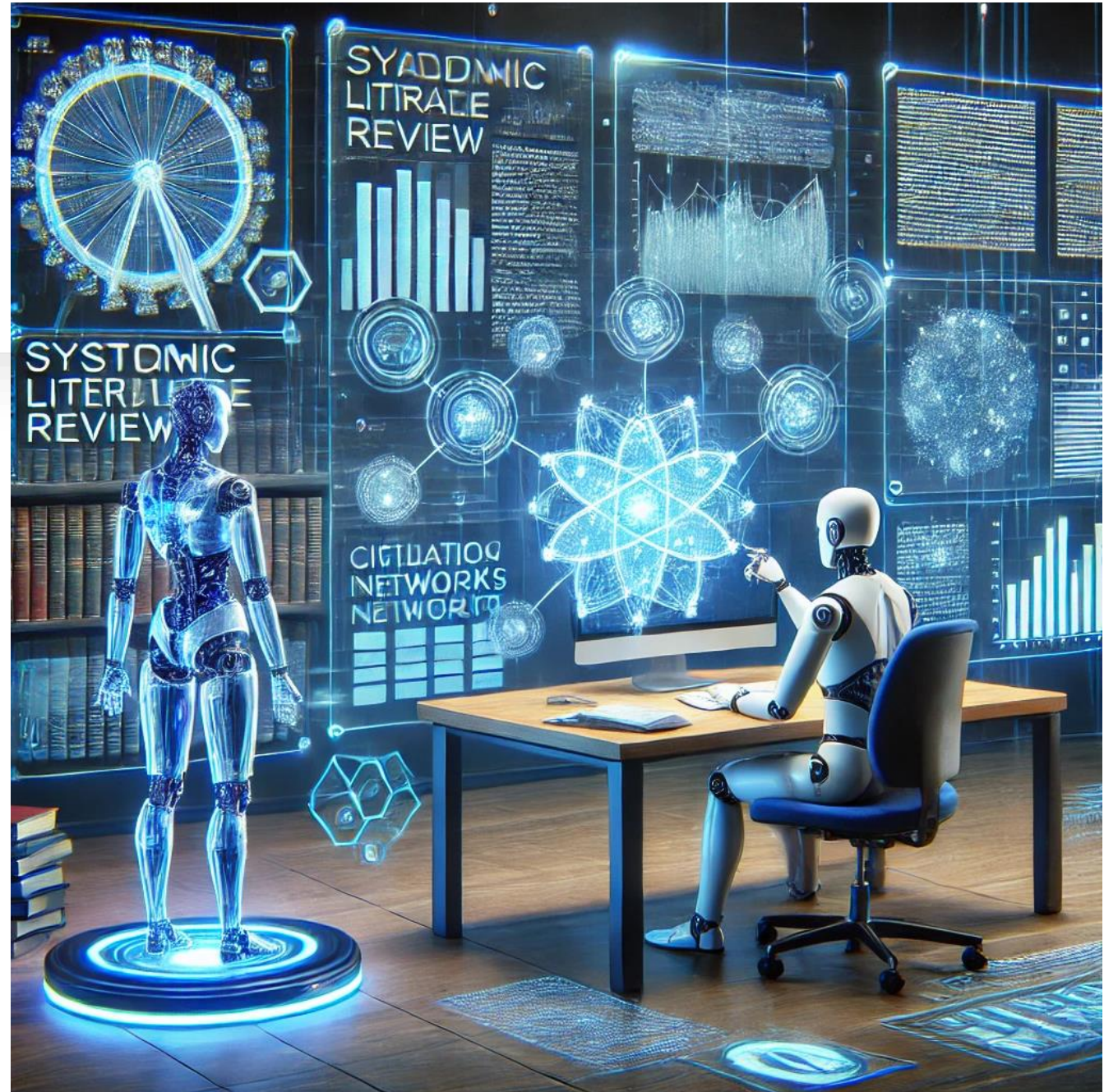
What publishers say?
Claims, if needed

*Additionally, Furthermore,
Secondly, Crucial, Realm...*

How to recognize AI?

Human - AI
collaboration in the
future

AI as a tool or as a
research partner?



Learnings

- **AI in Research:** AI tools significantly enhance the efficiency of SLR
- **Applications of AI:** AI is versatile, supporting tasks like process optimization, content creation, and SLR
- **Tool Utilization:** Freemium and paid AI tools such as Consensus, SciSpace, Paperpal and Elicit provide comprehensive support for research, including scoping reviews, data synthesis, and report preparation.
- **AI Limitations:** While AI accelerates research processes, it doesn't guarantee accuracy or replace manual quality checks, especially in literature identification and selection.
- **Human-AI Collaboration:** Effective integration involves treating AI as a complementary partner, balancing automation with human oversight for optimal research outcomes.

Introduction to Ethical considerations: Leveraging AI for Scientific Research

This seminar explores the transformative role of AI in scientific research, emphasizing its ethical and responsible integration into academic practices. Researchers must navigate not only the technical capabilities of AI but also its broader implications on research integrity, data privacy, and societal impact. The seminar equips researchers with the vocabulary and analytical tools necessary to critically evaluate AI applications. Topics include their potential to advance research, challenges surrounding fairness and bias, and the ethical considerations involved in decision-making processes related to AI usage.

Key Questions for Consideration

- What constitutes ethical and responsible use of generative AI in scientific research, particularly regarding academic integrity, data protection, and reproducibility?
- How can researchers maximize the benefits of generative AI while addressing challenges like algorithmic bias, data security, and over-reliance on automation?
- What critical factors should researchers consider to ensure the transparent and equitable deployment of generative AI in their work?
- How can the use of generative AI in research align with data privacy regulations and respect participants' rights in studies involving information?

About you

<https://wheelofnames.com/jg5-3y4>



- What was your experience with this seminar? What key takeaways do you have?

- What was your experience with this seminar? What key takeaways do you have?

Thank you!

Thank you very much for your active participation in the seminar. It was a great experience for me, and I hope you were able to take something valuable from it. I truly appreciate your infinite patience.

Merci beaucoup pour votre participation active au séminaire. Ce fut une excellente expérience pour moi, et j'espère que vous avez pu en retirer quelque chose de précieux. Je vous suis infiniment reconnaissant pour votre patience.