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Assessing the Societal Impact of Academic Research With Artificial Intelligence (AI): A Scoping Review of Business School Scholarship as a 'Force for Good'

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ABSTRACT

This study addresses critical questions about how current evaluative frameworks for academic research can effectively translate scholarly findings into practical applications and policies to tackle societal 'grand challenges'. This scoping review analysis was conducted using bibliometric methods and AI tools. Articles were drawn from a wide range of disciplines, with particular emphasis on the business and management fields, focusing on the burgeoning scholarship area of 'business as a force for good'. The novel integration of generative AI research approaches underscores the transformative potential of AI-human collaboration in academic research. Metadata from 4051 articles were examined in the scoping review, with only 370 articles (9.1%) explicitly identified as relevant to societal impact. This finding reveals a substantial and concerning gap in research addressing the urgent social and environmental issues of our time. To address this gap, the study identifies six meta-themes related to enhancing the societal impact of research: business applications; faculty publication pressure; societal impact focus; sustainable development; university and scholarly rankings; and reference to responsible research frameworks. Key findings highlight critical misalignments between research outputs and the United Nations Sustainable Development Goals (SDGs) and a lack of practical business applications of research insights. The results emphasise the urgent need for academic institutions to expand evaluation criteria beyond traditional metrics to prioritise real-world impacts. Recommendations include developing holistic evaluation frameworks and incentivising research that addresses pressing societal challenges—shifting academia from a 'scholar-to-scholar' to a 'scholar-to-society' paradigm. The implications of this shift are applied to business-related scholarship and its potential to inspire meaningful societal impact through business practice.

1 | Introduction

Academic research provides critical knowledge for advancing the human condition and sustaining the planet. Grasping the volume, significance, and scope of knowledge transfer (Isaac et al. 2024) from academia to sectors affecting economic and social well-being, and environmental sustainability presents a significant challenge that differs across various disciplines.

Many approaches exist to assess academic research in terms of societal impact (Bornmann and Haunschild 2019; Gerke et al. 2023; Gómez et al. 2022; Ochsner and Bulaitis 2023;

Summary

- Just 370 of 4051 articles (9.1%) explicitly examined societal impact in business-related academic research.
- AI-human collaboration using tools like ChatGPT and Leximancer can enhance the depth and efficiency of research reviews.
- This study showcases a breakthrough in applying generative AI as a co-analyst in academic research synthesis.
- Traditional academic metrics (e.g., citations, journal rankings) misalign with real-world societal contributions.
- The paper proposes shifting from a "scholar-to-scholar" to a "scholar-to-society" model of academic evaluation.
- Holistic frameworks are needed to evaluate and incentivize business research aligned with the UN SDGs.

Smit and Hessels 2021; Watermeyer and Chubb 2018; Williams 2020). Understanding and assessing the societal impact of research can be both obvious and elusive. For example, medical research for life-saving Covid-19 vaccines during the 2020 pandemic undeniably impacted lives (Karakulak et al. 2023). Yet, in many cases, knowledge gained through the research process often needs development before practical application, requiring time to gain momentum and additional insights before its impact can be fully recognised and understood. Due to challenges in measuring knowledge transfer that results in positive societal outcomes, academia has shifted focus towards more quantifiable performance metrics of research publications (i.e., h-index, citation counts, journal impact factors) A metric that has arguably contributed to a 'publish or perish' academic culture (Kulczycki 2023; Morris 2023; Van Dalen and Henkens 2012). That is, most academic research is produced to satisfy very specific disciplinary requirements and cultural norms of academia–a *scholar-to-scholar* paradigm (Hoffman 2021; Horta et al. 2022; Walsh 2008). Knowledge is advanced, and in many cases the research is not incentivised for its positive contributions to the 'real world' outside of academia (Singh 2022).

1.1 | Research Question: What Is the Societal Impact of Research?

This paper attempts to deepen the dialogue around the following two-part research question concerning the societal impact of research:

1. What are the predominant themes, methodologies, and assessments in the scholarly literature concerning the evaluation of the societal impact of academic research?
2. To what degree do current frameworks for academic research foster the translation of scholarly findings into practical applications and policies that effectively address global challenges?

To address this two-part research question, we utilise an in-depth exploration of academic literature through a scoping review methodology (Munn et al. 2022), complemented by the application of bibliometric and Artificial Intelligence (AI) tools—specifically, Leximancer and ChatGPT—guided by human training, supervision, and evaluation.

In addressing the complex challenges of conducting comprehensive literature reviews following the principles of a scoping review, traditional methodologies often fall short. Researchers must read all articles and synthesise insights (Schick-Makaroff et al. 2016) from the data, a process that is time-consuming and can render the information irrelevant by the time it is completed (Dubé et al. 2023). Additionally, this approach can lead to biases and inaccuracies due to the temporal and affective influences on the authors. To overcome these challenges, we introduce an AI-human collaboration technique (Burger et al. 2023; Li et al. 2024b; Nah et al. 2023) that we call *AI-Human Socratic Dialoguing*, an AI version of 'dialogue as research' (Akhmedov 2024). This is an interactive and iterative exchange between ChatGPT and the authors leveraging the methodology of a Socratic dialogue (Brinkmann et al. 2015; Stenning et al. 2016). Socratic dialogue is a method of inquiry that employs probing questions to stimulate critical thinking, clarify ideas, and examine underlying beliefs. It emphasises collaborative exploration, critical examination, and philosophical inquiry to generate insights and synthesise ideas. This approach fosters deep understanding and reflection, encouraging participants to question assumptions and develop well-reasoned conclusions. As an example of AI-human collaboration, Socratic dialogue holds tremendous promise for impactful scholar-to-society oriented research: 'enabling human scholars to probe complex phenomena and make management research truly meaningful and impactful for broader audiences, is possible' (Clegg and Sarker 2024).

This investigation reveals that there is a wide yet underexplored opportunity for academic research to evaluate the contribution of research, specifically within the business and management discipline. It aims to determine the extent to which the research has had a positive influence on society. While there exists a robust and developing body of academic literature that considers the fundamental dynamics of the societal impact of research, further investigation in this domain is warranted. Moreover, research assessing this impact suggests that scholars typically possess a genuine intent for their work to contribute to the public good and advance environmental sustainability. However, the effectiveness of research in achieving meaningful societal outcomes is constrained by the predominantly scholar-to-scholar focused approach. According to Barrington and Karolyi (2023), Irwin (2023), and Martin and Scott (2020), ideal research should maintain a balance between rigour and relevance. However, Kapasi and Rosli (2020) point out that the emphasis on academic rigour often overshadows the pursuit of practical relevance. Despite these challenges, however, achieving a balance between the two is not only desirable but also achievable (Du et al. 2022; Irwin 2018).

In identifying existing gaps and opportunities for further investigation, this exploration enhances our understanding of how scholarly work produced within academia should be

measured to encourage research that can significantly address the diverse and urgent social and environmental issues facing our world today (Da Conceição Tavares et al. 2022; Schiebel et al. 2019). We suggest that adopting a more thorough approach to both acknowledging and measuring the actual impact of scholarly research is necessary. Arguably, conceiving academic research from a scholar-to-scholar to a scholar-to-society perspective would unleash the power of research to impact the real world outside of academia (Ozanne et al. 2024).

2 | Method

We outline the methodology used in our investigative scoping review following the general guidelines of the scoping review protocol (Kastner et al. 2012; Lockwood et al. 2019; Munn et al. 2018, 2022; Peters et al. 2021, 2022). The research methodology and results involve several steps that integrate bibliometric methods and AI tools with human interpretation critically guiding the interaction with these technologies: presentation of the core findings and themes identified through the review; discussion of summary statistics, themes, narratives, and gaps in the literature on responsible research assessment; suggestions and recommendations for future research directions; and an evaluation of the advantages and challenges of using Generative AI in research. Additionally, incentives for institutions, publishers, and researchers are proposed to encourage a shift from a scholar-centric to a society-focused research approach (Steingard and Rodenburg 2023). While the study focuses on business-related disciplines, the findings offer generalisable lessons for other fields seeking to enhance their societal impact.

2.1 | Investigative Study Following Scoping Review General Principles

This investigation follows the general principles of a formal scoping review (Arksey and O'Malley 2005). A scoping review is described as a type of 'research synthesis' (Smith 2023) that aims to comprehensively identify key concepts, themes, gaps, and opportunities within a particular domain of academic research. Using these principles, we seek to discover the prevailing discussions in scholarly literature regarding the evaluation of research impact on society. Additionally, we aim to identify the existing and potential assessment frameworks that could promote adequate knowledge transfer to crucial fields, particularly for the business discipline. Through this enhanced understanding best practices for measuring the positive impact of research on society can be identified. These practices have the potential to influence research efforts to make a difference in addressing today's 'grand challenges' (Howard-Grenville and Spengler 2022; Seelos et al. 2022; Tarba et al. 2024) and 'wicked problems' (Ranabahu 2020). Figure 1 outlines the five-step research method used for this study.

In keeping with good scientific study practice, the method section predominantly contains descriptions of the scoping review methodology and does not reveal its results. However, results from step 3 will appear in the methods section as they inform subsequent steps necessary to complete the scoping review methodology.

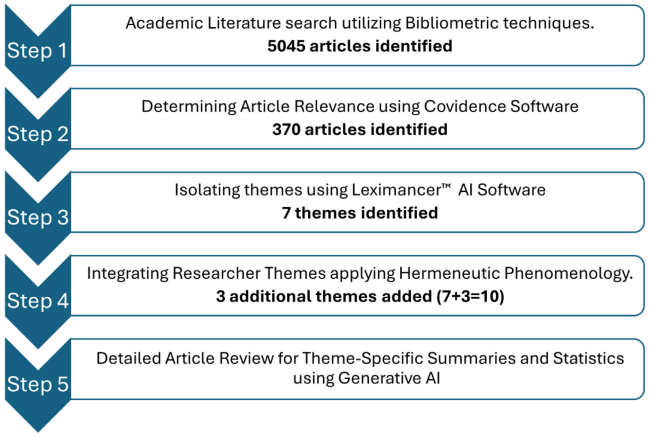

FIGURE 1 | Scoping review 5-step process: What is the societal impact of academic research?

Step 1. Academic Literature Search using bibliometric techniques

The review process aimed to identify a broad spectrum of literature discussing the societal impact of research to isolate key themes, uncover gaps in the literature and locate innovative research approaches (Munn et al. 2018). To refine the breadth of literature, we restricted our search to repositories containing academic literature within the business discipline. This included the following databases: ABI/INFORM Global, ABI/INFORM Trade & Industry, and Asian & European Business Collection. Next, the focus was placed exclusively on scholarly outputs from academic, peer-reviewed journal articles from 1968 to 2022. To ensure a broad but precise net was cast, key search terms were identified alongside several Boolean operators. For example, the term 'research' might be paired with a Boolean operator that searches for this word to be at least four words away from the terms 'assessment', 'impact', 'evaluation' or 'measure'. Informed by research (AACSB 2023; Bellow et al. 2018; Kim 2018; see also AACSB 2020; Barrington and Karolyi 2023; Boni et al. 2023; Cornuel et al. 2023; Cross et al. 2021; Eustachio et al. 2024; UNPRME 2023; Idowu et al. 2023), and after several refinements and iterations based on the authors' disciplinary knowledge, the search string that revealed the best results in terms of the number of articles and relevance was as follows:

> ((research NEAR/4 (assessment OR impact OR evaluation OR measure*)) AND ("responsible research" OR "Social Responsible Research" OR "research impact" OR "Real World Impact" OR "Social Impact Evaluation Criteria" OR "Sustainable Development Goals") AND (stype.exact("Scholarly Journals") AND PEER(yes))) AND (stype.exact("Scholarly Journals") AND PEER(yes)) are the words "AND", "OR" and "NOT".

This final search extracted 5021 papers worthy of further investigation. Additional papers were incorporated beyond 2022,

employing the identical search terms through Scopus and Dimensions AI via ChatGPT-4, bringing the article count up to 5045. Notably, relevant papers were added throughout the process to keep the data current in this rapidly changing discipline. This approach helps combat the almost instantaneous outdatedness of data collected, as cautioned by Dubé et al. (2023). While many of the papers extracted from the databases addressed the application of societal impact within the disciplines associated with business research, other papers emerged revealing that numerous fields possess well-established literature that addresses societal impact relevant to their disciplines that could provide further insights for this study (e.g., engineering, Zarog 2021; healthcare, Dean et al. 2020; tourism, McCabe and Qiao 2020).

Step 2. Relevance Review Using Covidence Software

Next, the 5045 academic journal article metadata (Maggio et al. 2021) were imported into the systematic review software tool Covidence (Covidence 2024). Covidence provides a robust platform for title and abstract screening by any number of reviewers simultaneously (Couban 2016). The software removed 994 total duplicates, taking the number of articles for review from 5045 to 4051. For this next round of article reviews, the authors established inclusion and exclusion criteria. These exclusion criteria included articles from non-relevant disciplines (i.e., medical, animal and plant science) as well as articles that discussed societal impact but did not specifically discuss research about societal impact. Inclusion criteria were anchored in the vision and seven foundational principles of what constitutes responsible research established by Responsible Research in Business Management's (RRBM, n.d.-b; Tijdink et al. 2021). The RRBM approach supports a realignment of academic incentives and culture towards research that not only upholds academic rigour, but also demonstrates social responsibility and significant impact in the real world.

Using these criteria, each author reviewed the 4051 article titles and abstracts to determine their relevance for a full review. Articles deemed irrelevant by both authors were excluded from the study. Those considered relevant by both authors were included. For articles without consensus, the authors engaged in virtual face-to-face discussions to determine their inclusion. These conversations yielded fruitful insights about the fundamental dimensions of the societal impact of research and strengthened the research question's focus and the final selection of literature. Table 1 provides an overview of the interrater process facilitated by the authors. Utilising best practices of interrater reliability (Belur et al. 2018), the authors then collaborated to finalise the final 370 articles for inclusion (Figure 2).

TABLE 1 | Interrater reliability process of inclusion and exclusion for 5045 articles.

	Include	Exclude (include duplicates)	Total
Round 1	1348	2703	5045
Round 2	370	978	1348

Figure 2 conveys the combined results of both authors through the funnelling process, from identification to screening and finally to inclusion or exclusion.

3 | Leximancer Content Analysis of 370 Articles

Next, the metadata from the 370 articles produced by the relevance review was thematically analysed using Leximancer (Angus et al. 2013; Leximancer, n.d.). It is an AI-based computer-assisted qualitative data mining and analysis software (CAQDAS) (Vignato et al. 2021) widely used in academic research for content analysis (Zollmann 2024). Leximancer is effectively a content text analyser, finding patterns, clusters, consistencies, and embedded meanings within qualitative data.

Leximancer's process unfolds in several well-defined steps. First, it scans the metadata of all individual articles to identify key concepts, based on their frequency and interconnections. The initial points of interest for each concept, called 'concept seeds,' evolve as the analysis incorporates more text, finds related terms, and expands on these concepts. Then, Leximancer maps out a thesaurus for each concept seed, listing all the terms linked to that concept. Next, it groups these terms into broader themes or 'bubbles' based on their frequency and interconnections within the text. Finally, the software produces a visual map that shows how these themes interact and highlights the most common themes with a heat-map, making it easier to see which themes stand out in the data.

Through a process of refinement—omitting common words and closely examining the concept seeds that informed the theme bubbles—seven distinct themes surfaced. Figure 3 showcases these concept seeds and key themes as generated by Leximancer's analysis of 370 articles with the one-word theme bubbles elaborated and enhanced by the author team to more precisely reflect their meaning. Table 2 lists the seven core themes generated from the Leximancer analysis.

4 | Integrating Researcher Themes Applying Hermeneutic Phenomenology

Building on the Hermeneutic Phenomenology framework as outlined by Van Manen (2014) and further informed by an additional screening of articles, the authors discerned the necessity to extract three additional themes. This decision, influenced by the authors' accumulated expert knowledge, aims to refine the data analysis process in the subsequent phase of this study's methodology for enhanced accuracy and alignment with the research question of this investigation. First, the theme of 'perverse effects from targeting publications' was added. This theme pinpoints more precisely how prevailing academic cultural norms and performance pressures influence researchers to favour submissions to certain journals, usually those with prestige value. These journals, however, may demonstrate a predisposition against articles that explicitly engage with the societal implications of that research (Rodenburg et al. 2021; Steingard and Linacre 2023). Next, the theme 'potential positive impact on society' introduces an important differentiation, emphasising research that transcends the traditional scholar-to-scholar discourse in favour of

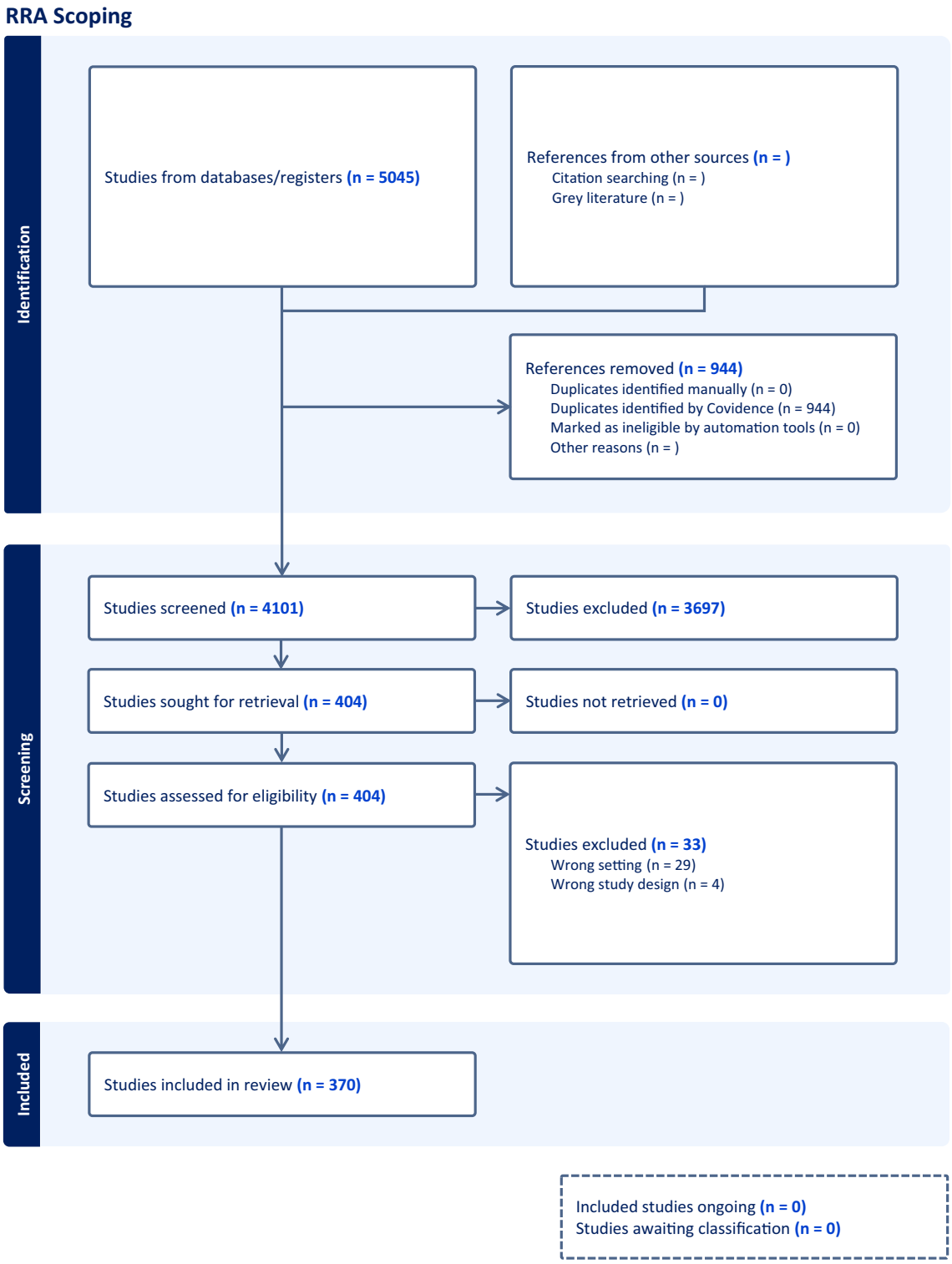

FIGURE 2 | Covidence funnelling schematic combining both authors.

a scholar-to-society orientation (Steingard and Rodenburg 2023). Finally, the theme 'reference to guidelines or frameworks' highlights scholarly works aligned with established research directives aimed at fostering societal impact, emphasising a commitment to propel research beyond academic confines to broader societal engagement and betterment. Table 2 displays the expanded set of 10 themes that guides the subsequent phase of the methodology.

5 | Detailed Article Review for Theme-Specific Summaries and Statistics Utilising Generative AI

We utilise the previously identified 10 themes (see Table 2) to conduct an exhaustive analysis of the articles. We categorised the articles based on their relation to the themes as either explicitly present, implicitly present, or not present. For articles mentioning the themes, we generated a summary for each theme

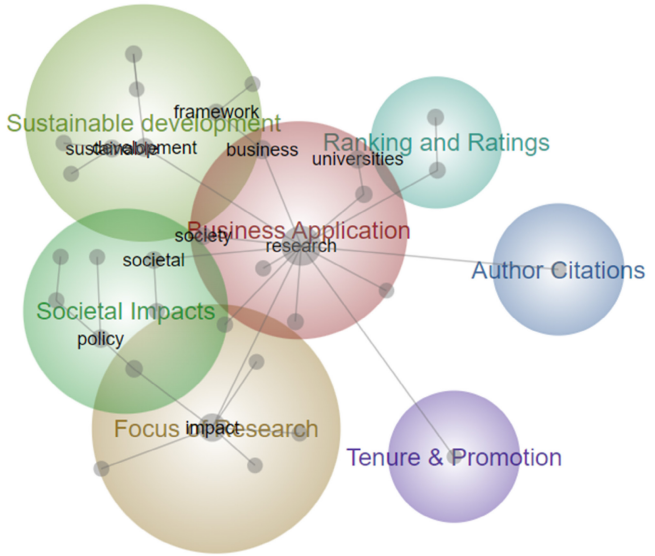

FIGURE 3 | Leximancer concept map of content highlighting 7 core themes across 370 articles.

identified within each article. This process aimed to gauge the themes' prevalence, summarise the narratives shaping them, and offer an overview to trace the evolution of research on responsible assessment in the business and management discipline. The objective was to pinpoint literature gaps and highlight critical areas for future research thereby advancing the discipline's contribution to societal impact.

Given the authors' demands, ChatGPT-4 (OpenAI, n.d.)—a generative AI belonging to the large language model (LLM) category—was chosen to tackle the significant challenges of data mining and content analysis. As an innovative and swiftly evolving technology, ChatGPT has gained increasing recognition for its capabilities in quantitative and qualitative text mining and data analysis within various academic domains (AlZaabi et al. 2023; Kandeel and Eldakak 2024).

In leveraging ChatGPT for our research, we adhered to the best practices of AI-human collaboration (Vössing et al. 2022). As Rahman et al. (2023, 9) emphasise, 'human control should be apparent' and ChatGPT should not operate independently in academic research. We carefully integrated ChatGPT as an aggregator, synthesiser, and thematic insight tool. We consistently validated its outputs (Cohen et al. 2018) through what effectively was an interrater reliability process (Belur et al. 2018). This process involved two professors and five undergraduate and graduate students (total) rigorously supervising ChatGPT's contributions to ensure outputs were reliable and hallucinations (Hua et al. 2024; Maleki et al. 2024) were minimised. This ongoing validation of Generative AI tools was particularly critical in analysing the themes contained in the final 370 articles focused on societal impact. Throughout this process, ChatGPT was used to identify overarching and specific themes, provide insights and support our recommendations—all under strict human oversight.

This AI-human collaboration exemplifies the evolving standards of optimising AI-human partnerships in research. As noted by Zamfirescu-Pereira et al. (2023), while 80% of GPT outputs are verifiable and explainable, the remaining 20% may not be—ranging from not totally accurate to completely wrong. AI-human collaboration is a rapidly evolving professional practice that offers immense power and potential but requires constant vigilance to address its imperfections (Drori and Te'eni 2024). Researchers should indeed approach AI with boundless enthusiasm tempered by 'intellectual humility'—acknowledging its transformative potential while remaining mindful of its inherent limitations (JSTOR Daily 2024; Kalmykov and Kalmykov 2024).

To analyse data in the scoping review, we employed a systematic and structured approach using a carefully designed prompt considered in light of an emerging prompting framework (Liu et al. 2023). We attempted to follow 'prompt engineering' best practices (Sahoo et al. 2024). These steps indicate the major points of interrogation for the prompt: (1) familiarising with the dataset and confirming the ability to perform a meta-analysis; (2) generating quantitative summary statistics and visualisations to capture explicit, implicit, and negative responses; (3) conducting qualitative analyses to distill key themes; (4) summarising insights from impactful articles; (5) identifying research gaps and proposing future directions; and (6) developing recommendations to enhance the societal impact of academic research.

ChatGPT was utilised in two ways as illustrated in Figure 4. First, ChatGPT performed a meta-analysis on the 10 themes previously identified in Table 2 (referenced in step 4), providing a detailed quantification and analysis of how frequently each theme appeared across the 370 articles. Specifically, ChatGPT assessed the occurrence of these predefined themes within the articles, organising the findings into three distinct categories: 1. Explicitly Present, 2. Implicitly Present, and 3. Not Present. ChatGPT then proceeded to summarise instances within each article where these themes were observed. To ensure precision, each whole article PDF was individually read and processed through ChatGPT. This yielded a comprehensive collection of 3710 thematic data points amalgamated into one comprehensive Word document.

In stage 2 of the analysis (see Figure 4), ChatGPT reviewed this consolidated comprehensive document to both compute summary statistics by distilling the occurrences of each theme across the body of literature and provide the primary insights underlying each theme. Following this automated analysis, the authors engaged with the findings to critically evaluate the themes and narratives. This review led to a refinement of the themes, narrowing them down from 10 to 6 based on their relevance and interconnectedness. See results section for final 6 themes.

6 | Results

6.1 | Summary Statistics and Key Insights Identified Using AI-Human Socratic Dialoguing

The summary statistics obtained through an in-depth analysis of 10 themes using ChatGPT 4.0 for data mining and thematic exploration illustrate key trends across the studied dataset. Table 3 provides a detailed numerical breakdown of the prevalence of each theme within the 370 articles, categorised into three distinct groups: Explicitly Present, Implicitly Present and Not Present.

TABLE 2 | 10 Societal impact of research themes 7 + 3.

7 Leximancer initial themes	
1. Business applications	Potential or actual applications of concepts, theories, case studies, frameworks, solutions, etc. to the practice of business (e.g., Cadman and Sarker 2022; Oberholzer and Buys 2023; Rispal 2015).
2. Tenure and promotion	The consideration of tenure and promotion as a constraint on pursuing research oriented towards social impact (e.g., Carter et al. 2023; Reale 2022).
3. Societal impact	Focus on research content that explicitly addresses analyses and solutions to real-world social and environmental 'grand challenges' (e.g., Carter et al. 2023; Chatterjee et al. 2023; Välikangas 2022).
4. Sustainable development	Inclusion of content promoting sustainable development as broadly reflected in the United Nations SDGs (United Nations n.d.) (e.g., Berrone et al. 2023; Howard-Grenville et al. 2019; Lu et al. 2023; Hazenberg and Paterson-Young 2022; Xin et al. 2024).
5. University and scholarly rankings	The consideration of university and scholarly rankings as a constraint on pursuing research oriented towards social impact (e.g., Lauronen 2020; Tóth et al. 2024).
6. Focus of research	Degree to which research is primarily focused on and/or applied to demonstrable domains of societal impact (e.g., Brenninkmeijer 2022; De Jong et al. 2022).
7. Author citation rates	The consideration of author citation rates as a constraint on pursuing research oriented towards social impact (Bal et al. 2024; Krueger and Shorter 2019; Izquierdo-Egea 2023; Marsicano et al. 2022).
Additional 3 themes added based on 7 Leximancer themes	
8. Perverse Effects from Targeting Publications	Focusing primarily on publishing in top journals poses a significant challenge, as it may divert scholars' attention away from publishing impactful research in other journals (Fassin 2021; Ràfols et al. 2012).
9. Reference to Responsible Research Frameworks	Frameworks and guidelines that set standards to facilitate the generation of research that emphasises societal impact. (Bauer 2020; Cross et al. 2021; Jensen 2023; Peruginelli and Pölönen 2023).
10. Potential to positively impact society	The expectation that research should yield positive outcomes for society across a spectrum of real-world contexts, particularly those concerning human welfare and planetary sustainability (Bornmann 2012; Daraio et al. 2019; De Jong et al. 2022).

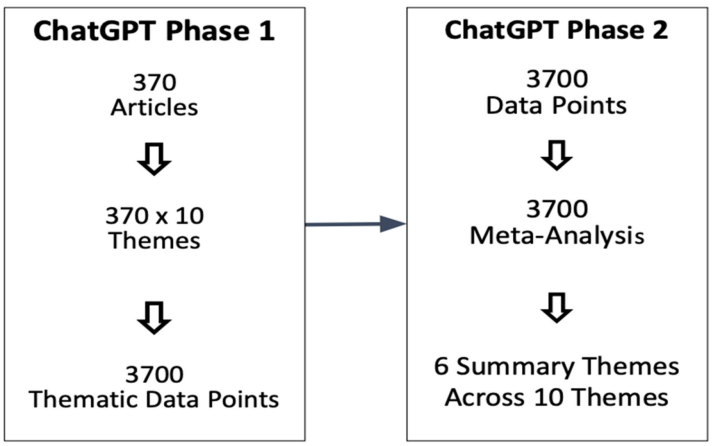

FIGURE 4 | Two-step process utilising ChatGPT-4.

TABLE 3 | Prevalence of the 10 themes across 370 articles by category (explicitly present, implicitly present, not present).

Theme	Explicitly present	Explicit yes (%)	Implicitly Present	Implicit yes (%)	Total Yes	Total yes (%)	Not present	Total no (%)
1. Practical Business Applications	185	50.0%	100	27.00%	285	77.00%	85	23.00%
2. Tenure and Promotion	90	24.3%	130	35.10%	220	59.50%	150	40.50%
3. Societal Impacts	150	40.5%	170	45.90%	320	86.50%	50	13.50%
4. Sustainable Development or United Nations SDGs	80	21.6%	140	37.80%	220	59.50%	150	40.50%
5. University Rankings or Ratings	60	16.2%	110	29.70%	170	45.90%	200	54.10%
6. Focus of the Research	180	48.6%	120	32.40%	300	81.10%	70	18.90%
7. Author Citation Rates	85	23.0%	105	28.40%	190	51.40%	180	48.60%
8. Perverse Effects from Targeting Publications for T&P	70	18.9%	120	32.40%	190	51.40%	180	48.60%
9. Reference to Responsible Research Frameworks	75	20.3%	95	25.70%	170	45.90%	200	54.10%
10. Potential to Positively Impact Society	200	54.1%	100	27.00%	300	81.10%	70	18.90%

The dataset shows a wide range of explicit and implicit discussions across the themes, with explicit discussions ranging from a low of 16.2% (University Rankings or Ratings) to a high of 54.1% (Potential to Positively Impact Society). This variation indicates differing levels of direct engagement with the themes within the article set that is focused on the prevailing discussions in scholarly literature regarding the evaluation of research impact on society.

Implicit discussions add a significant layer to the dataset's thematic analysis, often broadening the scope of themes like 'Societal Impacts' and 'Focus of the Research', which suggests an implied exploration of these themes by the authors beyond their explicit mention.

The theme of 'Societal Impacts' either positive or negative, were discussed both explicitly and implicitly the most overall with this theme being present in 86.5% or 320 articles. 'Practical Business Applications' and 'Potential to Positively Impact Society', not surprisingly, are also prevalent themes highlighted in 300 articles each (81.1% presence). These themes suggest that responsible research should have a main focus on practical implications and societal benefits, reinforcing a shift from scholar-to-scholar to scholar-to-society. Present in 300 articles (81.1%), 'Focus of the Research' is another highly discussed theme that highlights the articles' emphasis on the research objective as an explicit and central theme.

Themes related to 'Sustainable Development or United Nations SDGs,' 'Tenure and Promotion,' and 'Author Citation Rates' show moderate levels of engagement, with total presence rates of 59.5%, 59.5% and 51.4%, respectively. These reflect focused but significant interest areas within the dataset. 'Perverse Effects from Targeting Publication metrics' and 'Reference to Responsible Research Frameworks' both have a total presence rate of 51.4%, indicating a critical awareness of the impacts of publication metrics and the importance of responsible research. 'University Rankings or Ratings' is the least discussed theme, with a presence in only 170 articles (45.9%). This suggests that while university rankings or ratings hold some interest, they may not be as integral to the conversation on research impact as other themes.

Upon examining the summary statistics and insights for each theme in the Results section, the authors identified numerous interrelationships and overlaps among the themes. This analysis led to the conclusion that consolidating the 10 themes into 6 would provide a clearer and more coherent structure when moving to the discussion section of this paper. Table 4 shows the

TABLE 4 | Theme consolidation: Mapping original 10 themes to 6 meta themes.

10 Themes	6 Meta-themes
1. Practical Business Applications	1. Practical Business Applications
2. Tenure and Promotion 7. Citation Counts 8. Perverse Effects from Targeting Publications	2. Faculty Publication Pressure
3. Societal Impacts of Research	3. Societal Impacts of Research
6. Focus of Research on Societal Impact	
10. Potential Positive Impact on Society	
4. Sustainable Development or SDGs	4. Sustainable Development or SDGs
5. Importance of Research for University Rankings	5. Importance of Research for University Rankings
9. Reference to Research Frameworks	6. Reference to Research Frameworks for Societal Impact

theme consolidation that maps the original 10 themes to the 6 meta themes that are elaborated in turn.

6.2 | Summary of Key Insights From the Content Review of 6 Meta-Themes Applying Principles of AI-Human Socratic Dialoguing

In this section, we used ChatGPT to probe key questions aimed at better understanding the major themes identified in the literature. Specifically, we explored how these themes function as both limitations and potential leverage points for transformation. The conversation was contextualised within the broader academic cultural ecosystem, pinpointing opportunities for various stakeholders–such as faculty, administrators, publishers and editors–to adapt to changes that would ultimately catalyse societal impact.

6.2.1 | Practical Business Applications

This theme revealed a strong acknowledgment of research's real-world applicability and direct relevance to business practices in the context of societal impact (Cornuel et al. 2023). Articles highlighted how academic inquiries are increasingly driven by practical outcomes, aiming to solve real-world problems and offering actionable insights for businesses. The focus was on bridging theoretical knowledge with practical applications, ensuring research findings are not only publishable but also implementable in business contexts. This emphasis on practicality is seen as essential in enhancing the societal impact of research, with studies often geared towards addressing specific industry challenges, improving operational efficiency, and contributing to strategic decision-making within organisations (Hashim et al. 2024).

6.2.2 | Faculty Publication Pressure

Articles that addressed this topic focused on the tension between achieving academic career success (e.g., tenure, promotion, funding, appointments) and the aspiration to produce research with meaningful societal impact (Rodenburg et al. 2022; Steingard and Rodenburg 2023). Many discussed citation rates as markers of research impact, critically interrogating whether these metrics adequately capture the full breadth of a study's influence beyond academia. Citations, as recorded on platforms like Google Scholar and Elsevier's Scopus, measure academic reach within scholarly communities. However, citation counts often fail to account for essential aspects of research impact that deliver tangible societal benefits (Iping et al. 2022).

In order to advance the societal impact of research, it is necessary to critically reassess the value placed on traditional academic success indicators (Wróblewska et al. 2023) like publishing in prestigious journals against the imperative to address society's 'grand challenges' (Dorado 2022; Tarba et al. 2024) through research. There is an emerging consensus on the necessity for academic institutions to broaden their evaluation criteria to include research's real-world impacts while moving beyond citation metrics and journal rankings (Steingard and Linacre 2023). It underscores the call for a more integrated evaluation framework that appreciates and rewards contributions towards solving societal challenges, signalling a shift towards valuing the holistic societal impact of scholarly work (Bauer 2020). The RRBM's 7 Principles of Responsible Research is on the vanguard in regard to this approach (RRBM, n.d.-b).

6.2.3 | Societal Impacts of Research

There appears to be growing evidence that the academic sector is strategically evolving to produce and disseminate research with societal impact. This strategic emphasis addresses a broad spectrum of societal issues, including sustainability, social inequality, and healthcare. The academic community is dedicated to leveraging knowledge creation as a driver of societal progress, particularly through the critical role of research in informing policies, shaping public narratives and enabling social and economic change (De Villiers et al. 2024).

The academic community demonstrates a clear intention to produce research that has a tangible, positive impact on society. This intention is reflected in research agendas meticulously aligned

with addressing global challenges signalling a transformative shift towards a value-driven research ethos. Prioritising societal benefit as a meaningful and accountable metric (Ochsner and Bulaitis 2023) for evaluating research excellence is central to the ongoing sea-change in societal impact of research.

6.2.4 | Sustainable Development or SDGs

Approximately 22% (80) articles explicitly mentioned the concept of Sustainable development, with 38% of the articles implicitly discussing this topic. There's a considerable, but not overwhelming, adoption of the Sustainable Development Goals (SDGs) as a universally acknowledged framework guiding academic research towards human betterment, economic prosperity, and environmental sustainability. Integrating research within the SDGs represents a conscious effort to align scholarly dissemination with the goals of sustainable development (Belmonte-Ureña et al. 2021). Academia is positioned to play a pivotal role in advancing a sustainable future through research that is both informed by and directed towards the SDGs. As encouraging evidence, 98.17% of recent AACSB Continuous Improvement Review (CIR) (Continuous Improvement Review, n.d.; Ethier 2023) reports for accreditation voluntarily reported key performance indicators aligned with the SDGs (ICAM 2024, n.d.; Steidle and Henderson 2023). Although the SDGs are widely embraced by AACSB schools (AACSB 2024) and serve as a foundation set of normative standards integrated in United Nations PRME business schools (PRME 2024), there is some criticism that promoting SDGs in business schools is 'mostly erroneous economics' and 'indoctrination over education' (McGee and Block 2022, 383). Although clearly a minority point of view, such politicised critiques are ideologically driven and overlook the invaluable contributions that SDG integration makes in enhancing the social impact of business schools (Conklin and Houston 2024; Dyllick 2023; Moratis and Melissen 2022; Nelson 2024; Weybrecht 2017, 2023a, 2023b).

6.2.5 | Importance of Research for University Rankings

The importance of research for university rankings or ratings was seldom directly discussed. This suggests ambivalent or non-existent engagement within the academic community on the value of such metrics. There is a concern that an overemphasis on rankings could potentially shift focus away from impactful research towards more quantifiable but less impactful research. What is needed is a balanced approach that considers the value of research as a catalyst for societal impact alongside its contribution to institutional reputation and prestige (Barrington and Karolyi 2023; Du et al. 2022; Martin and Scott 2020).

For example, in the business school ranking space, the Corporate Knights' Better World MBA Rankings explicitly prioritise sustainability and societal contributions, evaluating schools on metrics such as sustainability-focused curricula, research output, and alignment with sustainable development goals (Rodenburg et al. 2021). Even more conventional business school ranking methodologies, like the Financial Times, which have traditionally emphasised metrics such as alumni earnings and academic reputation, are evolving towards impact considerations. It has recently updated its ranking methodology to place greater emphasis on societal impact and to answer a clarion call for a re-imagined 'approach and the need for fresh methods, metrics, and standards' (Jack 2021, 795).

Evidence from the overall higher education space is equally encouraging. Studies highlight alternatives to traditional university rankings by focusing on societal impact and sustainability. Moustafa (2024) critiques existing ranking systems that rely on biased metrics. He advocates for internal assessments that prioritise community satisfaction and societal contributions. Kuipers-Dirven et al. (2022) propose participatory methods to evaluate how universities enhance societal impact. They use a case study from a Dutch research institution. De la Poza et al. (2021) link university efforts in sustainability to their performance in the Times Higher Education Impact Rankings. Similarly, Bautista-Puig et al. (2022) analyse the methodology of the THE Impact Rankings and its effectiveness in measuring universities' contributions to the United Nations Sustainable Development Goals (SDGs). These studies show a clear shift towards holistic measures of university impact (Principles for Responsible Management Education 2025).

The interplay between university rankings and the 'publish or perish' culture has been critically examined in recent literature (Trueblood et al. 2025). For instance, Steingard and Rodenburg (2023) highlight that the emphasis on publication metrics for ranking purposes often leads to a focus on quantity over quality with diminished attention to societal impact. Similarly, Argento and van Helden (2023) discuss how the pressure to publish in high-impact journals driven by ranking considerations can result in research agendas that prioritise institutional prestige over addressing real-world challenges. Becker and Lukka (2023) also examine how instrumentalist pressures dominate research processes and further perpetuate this issue. These studies resonate with the findings in our scoping review—the need for a balanced approach that values both academic rigour and societal relevance (Ramassa et al. 2023; Steingard et al. 2023; Zait 2023).

6.2.6 | Reference to Research Frameworks for Societal Impact

Responsible research frameworks or guidelines emphasise academia's commitment to ethical, responsible research practices. Traditional quantitative evaluations of quality research (e.g., journal impact factors, number of articles produced) are augmented with a wide variety of 'responsible research assessments' (Biagetti et al. 2020; Framework for Responsible Research and Innovation, n.d.; Gärtner et al. 2024; Joly and Matt 2017; Peruginelli and Pölönen 2023). While not universally discussed, these frameworks are essential tools for guiding research towards positive societal impacts, ensuring ethical considerations are at the forefront of academic inquiry. Guidelines such as the European Union's Responsible Research and Innovation (RRI) framework (Forsberg and Wittrock 2022; George et al. 2023; Jensen 2023; Publications Office of the European Union 2013; Von Schomberg 2013), Responsible Research in Business and Management (RRBM, n.d.-a), America's DORA declaration (DORA 2024; Hatch and Curry 2020), The HIBAR Research

Alliance (Elrod et al. 2020), the United Kingdom's Research Excellence Framework (REF) (REF 2029, n.d.; Pinar and Ünlü 2019; Sutton 2020), and the upcoming FRAS program (Future Research Assessment Programme, n.d.) are effectively refocusing academic research towards responsibility and societal impact.

7 | Discussion

In this discussion section, we first draw conclusions from the summary of key insights to address the original two-part research question outlined in the introduction. Next, we offer recommendations and future directions for both interdisciplinary and business management fields to address the gaps identified in this body of literature. Given the extensive and, at times, novel use of AI in the methods for this scoping review, we include a grounded reflection on our learnings from this process in Appendix 1 titled *Authors' Notes on Generative AI as a Method within Academic Research*. While relevant, this reflection extends slightly beyond the methodological requirements of our study and has the potential to be expanded into a standalone methods paper.

7.1 | Revisiting the Research Question of Societal Impact of Research

1. *What are the predominant themes, methodologies, and assessments in the scholarly literature concerning the evaluation of academic research's societal impact?*

Many articles emphasised the importance of bridging the gap between research and practical applications to make research insights accessible and actionable by stakeholders (Fecher and Hebing 2021; Gerke et al. 2023; Kuipers-Dirven et al. 2022). This includes effectively communicating and utilising research findings to enhance their impact on policy, practice, and societal well-being. Some articles highlighted the benefits and challenges of interdisciplinary research approaches in addressing complex societal issues. Insights were provided on fostering collaboration across disciplines and sectors to enhance the relevance and application of research findings (Gibson et al. 2019).

The ethical dimensions of conducting and applying research were discussed extensively, including considerations of social responsibility, inclusivity (Zhang et al. 2021), and the potential adverse effects of research activities (Grünwald et al. 2022; Ricciardi et al. 2020; Verdier and Lapeyre 2023; Grünwald et al. 2022). There was a strong emphasis on the importance of ethical standards and responsible research practices in achieving positive societal impacts. Some articles explored the intersection of research, technology, and innovation (Samuel et al. 2021; Gurzawska 2021; Polyportis and Pahos 2024), particularly how technological advancements can drive societal progress and address specific challenges facing humanity and the Earth in the context of achieving the SDGs (Yaghmaei and Poel 2020). The need for more research in this area was noted, especially in the context of emerging technologies like generative AI and the governance surrounding their use.

The role of research in enhancing educational practices, curriculum development, and capacity building for the SDGs (Nel et al. 2024) within and beyond academic institutions was another significant theme. Articles highlighted the contribution of research to knowledge advancement and skill development, underscoring the integral role of research in educational settings (e.g., Nel et al. 2024; Al-Bahi et al. 2021).

However, although our findings indicate that while there is a robust body of literature addressing the societal impact of research, a significant emphasis remains on traditional academic success metrics such as publication in high-impact journals and citation counts (Holbrook 2017; Vicente-Saez et al. 2021). This focus often detracts from pursuing innovative, interdisciplinary research with substantial societal benefits (Biermann 2022; Park 2024). For example, the studies highlight how pressure to publish in prestigious journals can dissuade researchers from engaging in high-risk high-reward projects or interdisciplinary collaborations that might yield significant societal impacts but are not easily publishable in conventional outlets (Franzen 2021; Purvis et al. 2023; McKenna 2021; Tiokhin et al. 2021).

Discussions also extended to the methodologies and frameworks for assessing the societal impact of research, pointing to the need to develop tools and criteria that evaluate how research contributes to societal goals encompassing economic, social, environmental, and well-being dimensions (Biagetti et al. 2020; Peruginelli and Pölönen 2023). Despite the rapidly approaching 2030 deadline, few articles addressed the contribution of research to achieving the United Nations Sustainable Development Goals. This theme was not as prevalent as expected (Fia et al. 2022). Despite this gap, the literature does suggest that academic research plays a critical role in tackling global challenges such as poverty, inequality, climate change, and sustainable development. Rodenburg et al. (2021) proposed an alternative research assessment tool designed to measure the alignment of business school research with the SDGs.

2. *To what degree do current frameworks for academic research foster the translation of scholarly findings into practical applications and policies that address global challenges effectively?*

The current frameworks for academic research exhibit a mixed effectiveness in translating scholarly findings into practical applications and policies that address global challenges (e.g., Macht et al. 2020; Ulnicane 2022; Ricciardi et al. 2021; Van Tulder et al. 2021). While there is a clear intention within the academic community to produce research with tangible societal benefits, as evidenced by the alignment with SDGs (Jonsen 2023; Landrum 2021) and responsible research frameworks, the predominant scholar-to-scholar paradigm remains a significant barrier. This scoping review identified several gaps and opportunities in existing frameworks. For instance, the overemphasis on high-impact publications and traditional academic metrics often discourages researchers from undertaking bold, innovative projects or interdisciplinary collaborations that are crucial for addressing complex global issues. Moreover, the integration of ethical standards and responsible research practices is highlighted as essential for achieving positive societal impacts with pioneering leadership in the fields of business and management

(e.g., Al-Jayyousi et al. 2023; Dallyn et al. 2023; Doh et al. 2023; Candidatu and Leurs 2023; Thomas 2023).

7.2 | Recommendations and Future Directions

To set the stage for this section, we revisit some key findings from the scoping review. Of the 4051 articles reviewed, only 370 (9.1%) were identified for their focus on the evaluation of academic business research's societal impact. These 370 articles were further categorised to assess the extent to which they explicitly, implicitly, or did not address the identified meta-themes surrounding this topic.

The results revealed an interesting, surprising observation: only approximately 125 articles, or 33.8% of the 370, explicitly cited societal impact as a primary focus. This represents 3.1% of the total population of 4051 articles reviewed, demonstrating a significant gap in research prioritising the evaluation of research conducted in business academia targeted at societal impact. The omission of such a crucial topic from the literature reinforces the hypothesis that the broader academic ecosystem's relentless 'publish or perish' mandate (Steingard and Rodenburg 2023) diverts attention from addressing impactful and meaningful issues. 'This hyper-saturated cluster of publications [necessitated by a 'publish or perish' imperative] not only releases studies with little methodological validity but above all scarce impact on clinical practice and social transformation' (Fernandez-Cano 2021, 3675). Current frameworks fail to fully capture the societal impact of research given the limitations of the myopic scholar-to-scholar paradigm. There is a clear need for new evaluation criteria that holistically balance both rigour and relevance.

To help catalyse a sea change from a 'scholar-to-scholar' to a 'scholar-to-society' orientation within academia, we offer the following recommendations. More research focused on creating comprehensive responsible evaluation frameworks that consider factors such as the research's alignment with Sustainable Development Goals (SDGs) (Talwar et al. 2024), its impact on community well-being, and its role in driving policy changes. These frameworks should be adaptable across various disciplines and sensitive to the nuances of different types of societal contributions. Additionally, these new metrics should foster better translation of research into practice. Academic institutions should re-evaluate and expand their incentive structures to reward research that significantly contributes to societal betterment. This includes integrating measures that value the practical application and societal benefits of research alongside traditional metrics.

Future research exploring interdisciplinary methodologies that combine insights from business, science, technology, humanities and social sciences is needed. This could involve developing models for effective cross-disciplinary collaboration that leverage diverse expertise to create innovative solutions for complex societal problems (Baldassarre et al. 2024). Encouraging interdisciplinary collaboration and stakeholder engagement at all levels—from policymakers to local communities—can enhance the relevance and application of research findings (D'Este and Robinson-García 2023; Hubbart 2023).

While responsible research practices were mentioned, there is room for deeper exploration into the ethical dimensions of conducting research with the intent of societal impact. Future research could look to ethical frameworks specific to conducting impactful research, especially in sensitive areas like healthcare, environmental conservation, and digital privacy. Future research directions could specifically focus on leveraging technology to address societal challenges. This could include developing and assessing technology-driven solutions to ensure that technological innovation aligns with ethical standards and promotes equitable benefits. The adoption of advanced technological tools, such as AI, should be guided by human expertise and ethical considerations to ensure responsible and impactful research outcomes (Rawas 2024).

There is a gap in understanding the long-term societal impacts of academic research. Future studies could focus on longitudinal analyses of how research influences societal outcomes over time. This would provide insights into the durability and evolution of research impacts. This could include case studies of research projects with documented societal benefits years after their completion. While the importance of research in informing policy and engaging with the public was acknowledged, more work can be done to understand how to effectively translate academic knowledge into policy action and public awareness (Arroyo-Machado and Torres-Salinas 2024). Future research could explore innovative strategies for academic-public-policy engagement, including new platforms for knowledge exchange, public dialogue and collaborative policy development. Haenlein and Jack (2025); see also Haley and Jack (2022) provide a rigorous foundation for understanding the long-term societal impact of academic research in business academia. They offer a comprehensive framework for measuring the impact of business school research on academia, teaching, society and decision makers. Their insights are generalizable to academia as a whole because the framework emphasises universal principles of impact assessment that transcend disciplinary boundaries.

Addressing the gap in knowledge and skills necessary for conducting impactful research, future studies could focus on developing educational programmes and training that equip researchers with the tools to design and implement research projects with potential societal benefits. This includes training in interdisciplinary research methods, impact assessment, stakeholder engagement and ethical considerations.

The vision for transformation is enhanced by the authors' professional experiences involved in what is commonly referred to as the 'business as a force for good' movement in the business academia ecosystem (Bellow et al. 2018; Kim 2018; McPhail et al. 2024; Mihov 2021; Steingard and Rodenburg 2023). While many disciplines pay attention to societal impacts of their research, business academia stands out as perhaps unusually committed and coordinated in its efforts to promote research that addresses the 'grand challenges' of today (Seelos et al. 2022).

Here, we offer a grounded, practicable and actionable vision for all stakeholders of the academic business and management ecosystem: faculty, administration, accrediting bodies, journal publishers and owners, policy makers, and practicing businesses. Inspired by RRBMs vision (RRBM, n.d.-a):

> ... a world where business and management research significantly contribute to improving societal well-being. It aims for research to be widely used by organizations to enhance people's lives, underlining the importance of producing credible and useful knowledge.
>
> (front page)

The insights generated in Steingard and Rodenburg's (2023) Societal Impacts of Research Institutional Ecosystem (SIRIE) and the findings of the scoping review in this paper present a compelling narrative for the societal impact of research in business. This narrative adopts a novel technique for envisioning a sustainable future in the context of the SDGs in academic disciplines known as Disciplined Vision Casting (DVC). As such, this novel method of projecting into the future offers researchers a stimulus for theory development, assisting them as they reimagine the discipline in the era of UN Sustainable Development Goals and other global sustainability initiatives (Ramirez and Tajdini 2021, 151).

7.3 | Imagining Business and Management Research as a 'Force for Good'

What would business academia look like if it were focused on and fostering societal well-being, economic flourishing, environmental sustainability, justice, equity, peace, and sustainable development?

We can imagine a future where business and management research is deeply intertwined with real-world application, driving tangible benefits for society (Gupta and Cooper 2021). Here, academic inquiry transcends traditional boundaries, engaging in interdisciplinary collaborations (Wasieleski et al. 2020) that bring together experts from various fields to address complex societal challenges (Knickel et al. 2019). This type of collaboration is in fact a hallmark of the interdisciplinarity surrounding the SDGs (Cottafava et al. 2022). Business academia can evolve to prioritise research with the potential to inform policy, guide industry practices towards sustainability and enhance societal resilience against emerging challenges (Barrington and Karolyi 2023).

We can imagine researchers adopting a proactive stance, anticipating changes in consumer behaviour (Echegaray 2020), technological advancements (Barata and Kayser 2023; Kabatangare 2021), and regulatory landscapes (Lowry 2024). This forward-looking approach enables the academic community to offer actionable insights that support sustainable economic growth, promote equitable social development, and protect the environment (Jia et al. 2019).

We can imagine the importance of engaging with stakeholders at all levels, from policymakers and industry leaders to local communities and global organisations and governments (Moon et al. 2018; Sun et al. 2023). Academic research becomes a catalyst for widespread change (Whitehead et al. 2022), influencing decision-making processes and encouraging the adoption of practices that align with the Sustainable Development Goals (SDGs) and other sustainable development paradigms (Asatani et al. 2020).

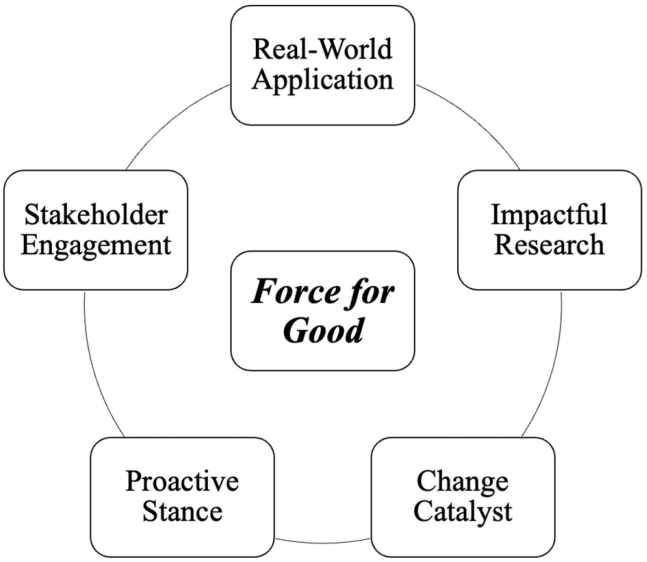

FIGURE 5 | Business and Management Research as a 'Force for Good'.

We can imagine a transformative era where research plays a pivotal role in addressing the multifaceted challenges of our time (Haley 2023). This calls for a shift towards interdisciplinary, impact-oriented research that bridges the gap between theory and practice. Business and management scholarship actively contributes to societal well-being (Dyck and Caza 2021), humanistic economic prosperity (Pirson 2021), and environmental sustainability (Hofstetter et al. 2021) (Figure 5).

8 | Conclusion

We examined how academic research frameworks could better translate scholarly findings into practical applications and policies to address societal 'grand challenges'. Our scoping review revealed how academic research is misaligned with the UN Sustainable Development Goals (SDGs) due to a 'publish or perish' culture in academia that overemphasises rigour at the expense of relevance. We advocate for shifting academia from a 'scholar-to-scholar' to a 'scholar-to-society' paradigm to inspire meaningful societal impact through business school scholarship.

Author Contributions

The authors contributed equally to all aspects of the research and manuscript preparation, including conceptualization, methodology, investigation, data creation, and the development of tables and visualizations for analysis and writing. During the revise-and-resubmit process and the production proof, query responses, and final editing phases, David Steingard contributed approximately 75%, and Kathleen Rodenburg contributed approximately 25%.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

All summary data, tables, figures, visualizations, mappings, thematic analyses, and statistics are included in the paper. Specific outputs from third-party subscription-based AI research software packages-Covidence and Leximancer-are not available due to contractual obligations with the authors' universities. Generative AI prompts used in the scoping review are available upon request from the authors.

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Appendix 1

Authors' Note on Gen AI as a Method Within Academic Research

AI is increasingly relevant in research (Cornell University Task Force 2023; Kooli 2023; Narayanan 2024; Yaroshenko and Iaroshenko 2023), enhancing the comprehensiveness and explanatory power of various methods such as systematic literature reviews (SLRs), akin to this scoping review (Ofori-Boateng et al. 2024; Van Dijk et al. 2023). AI has the potential to make research more efficient (Mohammed et al. 2024), more reliable, and convenient, offering advantages including objectivity and repeatability in research processes (Burger et al. 2023). Like any groundbreaking technology (Chaka 2023), AI is being both widely adopted and met with resistance understandably raising concerns and even fears about the potential elimination of human authors and traditional journals as we know them (Habibzadeh 2023).

AI's impact on academic publishing is a topic of concern, with justifiable worries regarding the erosion of core academic activities, the potential removal of human involvement in journal editor and reviewer roles, plagiarism, misrepresentation, and fraud. The powerful tools now available to researchers (Saeidnia et al. 2024) obligate them to uphold even greater levels of academic integrity and professional ethics, with careful consideration of societal impact: 'GenAI provides the user a sense of power in its apparent intellectual assistance on demand, which unsurprisingly also vests the user with a need to take responsibility' (Cornell University Task Force 2023, 5).

A host of ethical concerns (AlZaabi et al. 2023; Ghoz and Hendawy 2024) about the responsible use of conversational AI in research abound in myriad areas: authorship and authentication (Bozza et al. 2023; Da Silva and Tsigaris 2023; Lund and Naheem 2023; Perkins et al. 2023; Sandy 2023; Tang and Eaton 2023); explainability (Vainio-Pekka et al. 2023) academic writing (Homolak 2023; Katsanidou et al. 2016; Mahyoob et al. 2023; Miao et al. 2023); peer evaluation (Kousha and Thelwall 2023); information distortion and false truths (Hetzscholdt 2024); research generation (Khlaif et al. 2023); predatory publishing (Kendall and Da Silva 2023); data fabrication, privacy, and bias (Calvo 2022; Carobene et al. 2024; Cornuel et al. 2023). This paper makes every effort to comply with the best practices in ChatGPT research utilisation available today in higher education (Moorhouse et al. 2023). Guidance from the American Psychological Association's (APA 2023) APA Publishing Policies (APA, n.d.) is followed throughout this paper.

As a precaution, a draft of this paper was checked by ChatGPT for any unethical or hallucinatory utilisation of AI per APA protocols informing ethical professional practice for 'AI-Human Collaboration' (Li et al. 2024a, 2024b; Nah et al. 2023; Sarkar 2023; Vössing et al. 2022). ChatGPT responded with this plausible attestation as to the appropriateness of how AI is responsibly and effectively employed in the paper:

> The text [in this paper] exemplifies how AI can augment academic research by processing and synthesizing large datasets, with humans steering the conceptual framework, ethical considerations, and critical analysis. This approach aligns with emerging practices in academic research where AI aids in data analysis and draft preparation, while humans provide expertise, critical thought, and ethical oversight.
>
> (ChatGPT-4 from OpenAI, n.d.)

As this passage generated from ChatGPT itself, there is a possibility of bias when it performs AI detection. It is reasonable to be sceptical of Generative AI's ability to impartially assess its own integrity by identifying irresponsible usage of its own outputs. To combat this potential blind spot, an industry-leading AI detection software tool (Undetectable AI, n.d.) validated the same draft as 92.87% human-generated. The lack of 'clear ethical guidelines and standards' (Lin 2024; see also Prem 2023; Sanderson et al. 2024; Siau and Wang 2020) for Generative AI in scientific research makes it challenging to determine if this threshold is acceptable from an academic integrity point of view. Encouragingly, based on a review of Lin's five ethical principles for generative AI in scientific research, the authors have been arguably very compliant with Lin's guidelines, both in using AI to collect, synthesise, and analyse data, as well as in the writing and editing of the manuscript.

As AI becomes increasingly ubiquitous and capable in academic research, further inquiry into the ideal balance of AI-human collaboration is necessary. AI is not merely a powerful tool for academic researchers; it represents a fundamental game changer in how human researchers productively and ethically coexist with AI. This transformative potential necessitates a deeper understanding of the dynamic interplay between AI capabilities and human oversight to ensure ethical standards and enhance research productivity.