

From crisis to co–creation: rethinking management education in the age of Industry 5.0

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Biju Philip

La Trobe Business School, La Trobe University, Melbourne, Australia

Jon Billsberry 

Olga Tennison Autism Research Centre, La Trobe University, Melbourne, Australia, and Eva Burrows College, University of Divinity, Kew, Australia, and

Aakash Shah

La Trobe Business School, La Trobe University, Melbourne, Australia

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Abstract

Purpose – This paper aims to examine how Industry 5.0 can provide a new normative framework for rethinking the purpose, pedagogy and public role of business schools. It argues that Industry 5.0 should not be understood only as a technological or industrial shift, but as an educational opportunity to reconsider what business schools are for, what kinds of graduates they should develop and how they might contribute to more humane, inclusive and sustainable forms of organizing.

Design/methodology/approach – This paper develops a conceptual argument by bringing together critiques of management education with the emerging Industry 5.0 literature on human-centricity, sustainability and resilience.

Findings – This paper argues that some dominant features of management education remain shaped by logics of efficiency, standardization, technical competence and market responsiveness that are more compatible with Industry 4.0 than Industry 5.0. Industry 5.0 offers a different basis for legitimacy, centered on human-centricity, sustainability and resilience. On this basis, the paper conceptualizes business schools as socio-technical systems within a human–technological–educational nexus and identifies co-creation as the pedagogy most aligned with this orientation.

Practical implications – The argument invites business schools to redesign curricula, governance, stakeholder engagement and assessment around collaborative problem-solving, ethical reflection, technological responsibility and societal impact.

Originality/value – This paper contributes by moving Industry 5.0 from an industrial and technological paradigm into management education theory. It shows how Industry 5.0 can reframe business schools not as knowledge factories but as laboratories of co-creation capable of shaping more just, resilient and sustainable futures.

Keywords Industry 5.0, Management education, Business schools, Co-creation, Human-centricity, Sustainability, Resilience, Socio-technical systems

Paper type Conceptual paper



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Introduction

Business schools are at a crossroads. Despite their global popularity and the continued expansion of management degree programs, critics have questioned the fundamental value of business education in preparing students for the challenges of the modern world. Scholars have long noted the gap between theory and practice (Eichler & Billsberry, 2023; Pfeffer & Fong, 2002), the tendency to promote a narrow economic logic (Ghoshal, 2005) and the failure to produce graduates equipped with the ethical reasoning, adaptability and collaborative skills required for contemporary organizational life (Datar, Garvin, & Cullen, 2011; Fleming, 2023; Mintzberg, 2004; Thomas & Ambrosini, 2021). These shortcomings have become especially salient in light of rising climate risks, social fragmentation and rapid technological change, all of which call for a more responsive, holistic and morally grounded approach to management education.

Against this background, Industry 5.0 emerges not merely as a new technological paradigm but as a potential inflection point for management education. The concept is closely associated with the European Commission's Industry 5.0 initiative, which reframes industrial development around three pillars: human-centricity, sustainability and resilience (Breque, De Nul, & Petridis, 2021). Unlike Industry 4.0, which emphasized automation, digitalization, connectivity and operational efficiency, Industry 5.0 asks how advanced technologies can be designed and governed in ways that enhance human capabilities, support social and ecological sustainability and strengthen the capacity of organizations and societies to adapt to disruption (Adel, 2022; Gamberini & Pluchino, 2024; Ghobakhloo et al., 2023; Ivanov, 2023; Mourtzis, Angelopoulos, & Panopoulos, 2023; Xu, Lu, Vogel-Heuser & Wang, 2021). Its ethos is therefore human-centric rather than techno-centric. While debates on sustainability, responsible management education and humanistic management have long highlighted related values, Industry 5.0 is distinctive in tying these commitments directly to the trajectory of technological and industrial development. It is not merely a call for ethics alongside business, but a redefinition of technological progress around people, planet and adaptive socio-technical systems. This linkage gives Industry 5.0 integrative power as both a technological and normative paradigm, making it especially generative for rethinking the mission of business schools.

In this essay, we argue that Industry 5.0 offers business schools a timely opportunity to redefine their purpose, pedagogy and institutional values. Rather than treating technological advancement as a challenge to be met with incremental adjustments, we suggest that the underlying principles of Industry 5.0 such as collaboration, sustainability and ethical foresight, can serve as a normative framework for renewing management education. Our goal is not to offer another blueprint for skills training or curriculum reform. Instead, we seek to reframe the very foundations of management learning: from a model of instrumental rationality to one that embraces complexity, interdependence and human development.

We do not claim that management education is uniformly aligned with Industry 4.0, nor that business schools move neatly through the stages of successive industrial revolutions. Management education is heterogeneous and individual programs may contain predigital, Industry 4.0 and emerging Industry 5.0 elements at the same time. Our argument is therefore diagnostic rather than classificatory. We use Industry 4.0 and Industry 5.0 as contrasting logics through which to examine the assumptions that shape management education and to identify where programs may need to change if they are to align more fully with human-centricity, sustainability and resilience.

This essay's theoretical contribution lies in reframing management education through the lens of Industry 5.0 as a socio-technical and normative project. Whereas prior critiques have typically highlighted the misalignment between business schools and organizational realities

(Ghoshal, 2005; Mintzberg, 2004; Pfeffer & Fong, 2002), we extend this conversation by theorizing how educational institutions are themselves entangled in the technological, ecological and moral dynamics of industrial transformation. By conceptualizing business schools as nodes within a human–technological–educational nexus, we offer a framework that integrates technological change with the three Industry 5.0 pillars of human-centricity, sustainability and resilience, while showing how these pillars translate educationally into human dignity, systems thinking, inclusive innovation and co-creation (Breque et al., 2021; Ivanov, 2023; Troisi, Visvizi & Grimaldi, 2024; Yanytska, 2025). This approach moves beyond incremental curriculum reform to suggest a paradigmatic shift in the very purpose and identity of management education, positioning business schools not as knowledge factories but as civic institutions and laboratories of co-creation (Colombo, 2023; Thomas & Ambrosini, 2021). In doing so, the essay expands organizational theory by linking debates on materiality and sociotechnical entanglement (Orlikowski & Scott, 2015) with educational scholarship that emphasizes reflexivity, responsibility and human development (Cunliffe, 2016).

To develop this argument, we proceed in three stages. We begin by revisiting the enduring critiques of management education, tracing how its reliance on instrumental rationality, fragmented curricula and shareholder primacy has left business schools vulnerable to charges of irrelevance and complicity. We then situate these shortcomings against the backdrop of successive industrial revolutions, culminating in Industry 5.0 as a normative project centered on human-centricity, sustainability and resilience. This discussion highlights how Industry 5.0 reconfigures the relationship between technology, society and education, and why it demands a radical reorientation of pedagogical and institutional priorities. Building on this foundation, we then set out a future-oriented vision for management education, exploring how business schools might move toward Industry 5.0 commitments, adopt co-creation as a guiding pedagogy and strengthen their legitimacy through a renewed public purpose. Across these stages, the essay develops a theoretical reframing of business schools as socio-technical systems embedded in wider human and ecological contexts and in so doing, it invites scholars and educators to imagine business schools not as factories of efficiency but as laboratories of co-creation. What distinguishes Industry 5.0 in this context is that it does not merely invite business schools to be more ethical or sustainable in conventional terms, but to align themselves with an industrial paradigm that explicitly redefines progress around human-centricity, sustainability and resilience. In doing so, it offers a new horizon for the theory and practice of management education.

The crisis in management learning and education revisited

The critique of management education is not new. For more than two decades, scholars have raised concerns about the inability of business schools to prepare students for the realities of organizational life and the broader social responsibilities of management (e.g. Colombo, 2023; Ghoshal, 2005; Mintzberg, 2004; Pfeffer & Fong, 2002). These concerns center on several recurring themes: the overemphasis on analytical tools at the expense of moral reasoning (Hess, 2020), the persistent gap between theory and practice (Banks et al., 2016; Mason, Anderson, Black & Roberts, 2024), and the narrow economic assumptions that dominate curricula (Ghoshal, 2005; Mintzberg, 2004; Pfeffer & Fong, 2002).

One of the most widely cited problems is the dominance of instrumental rationality in management programs. Business education tends to reduce managerial practice to a set of techniques and frameworks that can be applied universally, regardless of context or values (Duchatelet, Cornelissen, & Volman, 2024; Ghoshal, 2005; Joullié & Gould, 2021; Kieser & Leiner, 2009; Mason et al., 2024; Spicer & Alvesson, 2025). This approach ignores the

inherently ambiguous, relational and political nature of organizational life (Blasco, 2012; Cunliffe, 2004, 2016). As a result, students are taught to prioritize control, prediction and performance metrics, while neglecting the human dimensions of leadership, including empathy, judgment and meaning-making.

Moreover, the structural separation of disciplines within business schools exacerbates these limitations. Students often move between siloed courses in marketing, finance and operations without developing an integrative understanding of how decisions in one area affect others. This fragmented approach inhibits systems thinking and makes it difficult for students to grasp the interdependent nature of organizational and societal challenges (Bajada & Trayler, 2013; Salgueiro, Zózimo, Cunha, & Lopo, 2025).

The widespread adoption of the shareholder value paradigm has also had a corrosive effect on management education. By valorizing profit maximization and managerial efficiency, business schools have tended to marginalize concerns with ethics, sustainability and social justice (Colombo, 2023; Fleming, 2021; Ghoshal, 2005). Even when these issues are included in the curriculum, they are often relegated to standalone courses in business ethics or corporate social responsibility, isolated from core strategic and operational content (Rasche, Gilbert, & Schedel, 2013).

Yet the crisis in management education is not simply about content or pedagogy. It is also about purpose. As some have argued, business schools risk reinforcing organizational logics and leadership behaviors that contribute to financial instability, environmental degradation and rising inequality (Fleming, 2021; Fotaki & Prasad, 2015; Bridgman, Cummings, & Ballard, 2019). The challenge is therefore not only to teach different skills, but to reorient the underlying goals of management learning itself. This means asking fundamental questions about what kind of human being a business school education seeks to develop and for what kind of world.

Recognizing this broader context is essential for any meaningful transformation. The emerging challenges of the 21st century such as climate breakdown, technological disruption, global pandemics and geopolitical instability, demand a new generation of managers who are equipped not just with analytic acumen, but also with moral courage, emotional intelligence and a capacity for reflective judgment. These attributes cannot be cultivated through traditional pedagogies alone. They require a deeper reconsideration of how management education engages with the complexity, humanity and responsibility inherent in the practice of leading.

Industrial revolution and Industry 5.0

Industrial transformations have repeatedly reshaped work, production and organization, from mechanization to digitization. Industry 5.0 represents the latest shift, repositioning human–technology relations around human-centricity, sustainability and resilience. Table 1 provides a summary of these industrial revolutions.

Industry 5.0 explained

Industry 5.0 marks not merely a progression in technological capability, but a reconfiguration of the relationship between technology, society and human values. The term is most closely associated with the European Commission's effort to complement Industry 4.0 by placing human-centricity, sustainability and resilience at the center of industrial development (Breque et al., 2021). This does not mean that Industry 5.0 rejects the technologies associated with Industry 4.0, such as artificial intelligence (AI), robotics, big data, cyber-physical systems and digital platforms. Rather, it asks how these technologies should be designed,

Table 1. Industrial revolutions

Industrial revolution	Characterizations	Approx. emergence	Focus	Key technologies
Industry 1.0	The beginning of industrialization was powered by mechanical and steam engines	1760	Mechanization	Steam power, mechanized production
Industry 2.0	Mass and fast production are based on the division of labor and technological revolution	1870	Mass production	Electricity, assembly lines
Industry 3.0	Use of electronics and information technology for automation production	1970	Automation	Electronics, IT, programmable logic controllers
Industry 4.0	Innovation through technology-driven environments and sustainability	2011	Digitization and connectivity	IoT, AI, big data, cyber-physical systems
Industry 5.0	Human-centric technological innovation for sustainable development	2020	Human-technology synergy	Cobots, sustainable tech, ethical AI

governed and used if they are to serve broader human, social and ecological purposes (Ghobakhloo et al., 2023; Ivanov, 2023; Xu et al., 2021).

There is still debate about what Industry 5.0 is and how far it differs from Industry 4.0. Some accounts emphasize collaborative intelligence, human-machine teaming and the augmentation of human capabilities (Mentzas, Hribernik, Stahre, Romero, & Soldatos, 2024; Merchán-Cruz et al., 2025). Others frame Industry 5.0 as a value-driven extension of Industry 4.0 that adds human, social and ecological priorities to the technological foundations of digital transformation (Ghobakhloo et al., 2023; Xu et al., 2021). A useful way to synthesize these discussions is to treat Industry 5.0 as a socio-technical and normative paradigm organized around three interdependent pillars: human-centricity, sustainability and resilience (Breque et al., 2021; Ivanov, 2023).

Human-centricity means that technological and organizational systems should be designed around human agency, dignity, well-being, creativity and meaningful participation. In Industry 5.0, people are not treated simply as labor inputs, sources of data or variables in systems of optimization. Instead, technology is expected to augment human capabilities and support better forms of work, decision-making and participation (Madzik, Falat, Jum'a, Vrábliková, & Zimon, 2025; Mentzas et al., 2024). For management education, this means preparing students to ask whether technologies such as AI, analytics and automation enhance human judgment, protect autonomy, reduce bias and support meaningful work.

Sustainability means that industrial and organizational activity should operate within ecological limits and contribute to long-term social and environmental value. In this sense, sustainability is not an ancillary concern added after economic goals have been defined. It is a design principle that shapes how innovation, production, consumption and governance are evaluated (Breque et al., 2021; Ghobakhloo et al., 2023). For management education, this means moving sustainability from the margins of the curriculum into the center of strategic, technological, financial, operational and leadership decision-making.

Resilience refers to the capacity of socio-technical systems to absorb disruption, adapt, learn and continue creating value under conditions of uncertainty. It is not only the ability to recover from shocks, but the ability to maintain purpose, protect people and avoid shifting risk onto weaker stakeholders or ecological systems (Folke et al., 2010; Ivanov, 2023). For

management education, this means helping students develop the judgment to respond to crises, technological failures, supply disruptions, climate shocks and institutional instability in ways that preserve adaptability, trust and responsibility.

These three pillars are interdependent rather than sequential. Human-centricity without sustainability may become a narrow concern with employee well-being, sustainability without human-centricity may become technocratic environmental management and resilience without either risks becoming little more than continuity planning or risk management. [Table 2](#) defines each pillar, provides an organizational example and identifies its implications for management education.

As [Table 2](#) shows, these pillars challenge management education to move beyond treating technology, sustainability, ethics and resilience as separate curriculum topics. Industry 5.0 calls for curricula that nurture ethical imagination, critical reflexivity, socio-ecological awareness and the capacity to work across human and technological systems. Management education must therefore become a space where future leaders are not only trained to manage systems efficiently, but are also equipped to question the ends of those systems, innovate with purpose and lead with integrity in service of collective well-being ([Abdelgaffar, 2021](#); [Bansal, Grewatsch, & Sharma, 2021](#); [Colombo, 2024](#); [Thomas & Ambrosini, 2021](#)).

The arrival of Industry 5.0 offers a timely opportunity to reconsider the role of business schools within a rapidly evolving socio-technical landscape. This shift requires a deeper engagement with the educational implications of human-centricity, sustainability and resilience. In the discussion that follows, we translate these three pillars into three educational commitments: human dignity as the educational expression of human-centricity; systems thinking as the cognitive and pedagogical expression of sustainability; and inclusive innovation as a practical expression of resilience and responsible socio-technical change.

Translating the pillars of Industry 5.0 into management education

Industry 5.0 should be understood first and foremost as a normative project: an appeal to align technological progress with human, social and ecological priorities rather than treating it as a mere extension of cyber-physical sophistication. As defined above, its formal pillars are human-centricity, sustainability and resilience ([Breque et al., 2021](#); [Ivanov, 2023](#)). For management education, however, these pillars need to be translated into educational purposes and pedagogical practices. We suggest that human-centricity directs attention to human dignity, sustainability requires systems thinking and resilience depends on inclusive innovation and co-creative problem-solving. These translations do not replace the Industry 5.0 pillars. Rather, they show what the pillars mean for the institutions that educate future managers.

Human-centricity translates educationally into a concern with human dignity. Classical industrial models often treated labor as an input to be optimized, reducing the worker to a cost variable or a unit of productivity. By contrast, Industry 5.0 reasserts the intrinsic worth of the person within socio-technical systems ([Madzik et al., 2025](#); [Yanytska, 2025](#)). Human beings are not just resources; they are ends in themselves, capable of creativity, empathy, judgment and moral agency. For business schools, this shift entails more than adopting a new rhetoric of “people-centricity.” It demands curricula that cultivate whole-person development: ethical reasoning that interrogates moral trade-offs; emotional intelligence that enables compassionate leadership; and civic sensibilities that recognize the enterprise as part of a broader social contract ([Abdelgaffar, 2021](#); [Bansal et al., 2021](#); [Colombo, 2024](#); [Colombo, Moser, Muehlfeld, & Joy, 2024](#); [Thomas & Ambrosini, 2021](#)).

Sustainability translates educationally into systems thinking. If sustainability is treated only as a topic, elective or compliance requirement, it remains peripheral to the core work of

Table 2. The Three pillars of Industry 5.0 and their implications for management education

Industry 5.0 pillar	Definition	Organizational example	Management education implications
Human-centricity	Human-centricity means that technological and organizational systems should be designed around human agency, dignity, well-being, creativity and meaningful participation rather than treating people mainly as inputs to be optimized. In Industry 5.0, technology should augment human capabilities and support better work, rather than simply replace labor or intensify control (Breque et al., 2021; Ivanov, 2023; Menzas et al., 2024)	A firm adopting AI for workforce planning would not only ask whether the system improves efficiency, but also whether it preserves employee voice, protects autonomy, reduces bias, improves work quality and supports human judgment in decision-making	Management education should teach students to evaluate technologies and organizational practices through questions of dignity, agency, inclusion and well-being. For example, students might analyze an AI-enabled decision system by asking who has authority, whose interests are represented, what forms of bias may be embedded and whether the technology augments or diminishes human judgment
Sustainability	Sustainability means that industrial and organizational activity should operate within ecological limits and contribute to long-term social and environmental value. In Industry 5.0, sustainability is not an add-on to efficiency, but a core design principle that connects innovation, production, consumption and governance to planetary and societal well-being (Breque et al., 2021; Ghobakhloo et al., 2023; Xu et al., 2021)	A manufacturer redesigning its supply chain would consider not only cost and speed, but also emissions, circularity, resource use, labor conditions, community impacts and long-term environmental resilience	Management education should move sustainability from specialist electives into core decision-making. Students should learn to assess business models, supply chains, innovation strategies and digital systems in terms of ecological consequences, stakeholder effects, intergenerational responsibility and long-term viability
Resilience	Resilience refers to the capacity of socio-technical systems to absorb disruption, adapt, learn and continue functioning without sacrificing human well-being or sustainability. Industry 5.0 extends resilience beyond operational continuity by linking it to adaptability, social robustness and responsible responses to uncertainty (Breque et al., 2021; Folke et al., 2010; Ivanov, 2023)	An organization facing a supply chain shock would not only seek a rapid return to normal operations, but would also redesign its processes to reduce future vulnerability, protect workers, maintain stakeholder trust and avoid shifting risk onto weaker actors	Management education should prepare students to lead through uncertainty, disruption and complexity. This could involve scenario-based assessments, crisis simulations, stakeholder negotiations and reflective exercises in which students must balance continuity, adaptation, ethical responsibility and long-term system health
Integrating the three pillars	Industry 5.0 is strongest when the three pillars are treated as interdependent. Human-centricity without sustainability may become narrow employee well-being; sustainability without human-centricity may become technocratic environmental management; and resilience without either may become simple survival or risk management. The value of Industry 5.0 lies in integrating all three into a broader model of responsible socio-technical development (Breque et al., 2021; Ghobakhloo et al., 2023; Nanov, 2023)	A city, university or company adopting digital platforms would assess whether these systems improve human participation, reduce environmental harm and strengthen institutional capacity to respond to shocks	Management education should therefore avoid treating the pillars as separate topics. Programs should design learning experiences in which students must consider people, planet, technology and institutional adaptability together, for example, through live projects, sustainability audits, AI governance cases or co-created community partnerships

Note(s): The three pillars follow the European Commission's Industry 5.0 framing of human-centricity, sustainability and resilience (Breque et al., 2021). The table translates these pillars into implications for management education

management education. Systems thinking places economic activity within complex ecological and social systems characterized by feedback loops, time delays, interdependencies and emergent properties (Bansal et al., 2021; Folke et al., 2010; Schad & Bansal, 2018). Decisions that optimize one part of a system, such as reducing short-term operating costs, can generate adverse ripple effects elsewhere, including resource depletion, social exclusion or weakened institutional trust. A robust Industry 5.0 pedagogy therefore trains students to map system dynamics, anticipate unintended consequences and design interventions that support long-term social and ecological viability (Abdelgaffar, 2021; Bansal et al., 2021; Wiek, Withycombe, & Redman, 2011).

Resilience translates educationally into inclusive innovation and co-creative problem-solving. Technological breakthroughs generate value, but without deliberate design, that value often accrues disproportionately to already advantaged actors. Inclusive innovation asks who participates in innovation, whose problems are prioritized, who benefits from new technologies and who bears the risks of disruption (George, McGahan, & Prabhu, 2012; Pansera & Owen, 2018). In this sense, inclusive innovation strengthens resilience because it expands the range of voices, knowledge and capabilities available to address complex problems. For business schools, this means helping students create business models and organizational practices that are economically viable, socially inclusive and robust enough to adapt under changing conditions.

When integrated, these educational translations reclaim the ethical imagination of management education. Rather than treating responsibility modules as elective add-ons or relegating sustainability to specialized tracks, Industry 5.0 positions human dignity, systems literacy and inclusive innovation as criteria by which educational excellence can be judged. Importantly, this normative reorientation is not anti-technology. Industry 5.0 values advances in AI, robotics, analytics and digital platforms precisely because, when governed by human-centric, sustainable and resilient principles, such technologies can augment human capabilities, support ecological responsibility and democratize opportunity. What shifts is the purpose of innovation: from narrowly maximizing economic surplus to enabling humans and organizations to flourish within social and planetary limits. Business schools, as custodians of managerial worldviews, should therefore equip graduates to evaluate technological trajectories through a moral and systemic lens (Noble, Mende, Grewal, & Parasuraman, 2022): Does this algorithm respect dignity? How does this supply chain platform affect sustainability and resilience? Who gains and who might be left behind?

A pedagogical commitment to these questions also aligns management education with broader democratic aspirations. In an era of polarization and mistrust, leaders who can articulate shared values, recognize system interdependence and design inclusive solutions are vital to institutional legitimacy. Industry 5.0 thus invites business schools to reclaim their public purpose: not only producing competent managers but cultivating stewards of social and ecological progress. These educational translations are not optional embellishments. They are ways of making the Industry 5.0 pillars meaningful within curriculum design, pedagogy, assessment and institutional practice. Institutions that connect human-centricity with dignity, sustainability with systems thinking and resilience with inclusive innovation will be better positioned to prepare graduates who can lead organizations capable of contributing to a just, adaptive and sustainable global economy.

Toward a co-creative future for management education

The preceding discussion has outlined the case for rethinking management education, the paradigm shift implied by Industry 5.0 and the educational implications of human-centricity,

sustainability and resilience. What remains is to consider how these insights can be synthesized into a forward-looking vision for business schools. This final act argues that the most promising path is to reconceive management education as a co-creative endeavor in which institutions, educators, students, technologies and communities collaborate to generate knowledge and shape futures. Such a move is not simply pedagogical but institutional, requiring a transformation in the identity, governance and legitimacy of business schools themselves. Industry 5.0 provides both the normative compass and the practical impetus for this reorientation, offering a framework through which schools can reclaim their public purpose and align with broader societal and ecological imperatives. In what follows, we outline how business schools might move toward Industry 5.0 commitments, why co-creation is central to their pedagogy, what theoretical contributions emerge from this reorientation and how these developments enable a renewed public purpose for management education.

From Industry 4.0 logics to Industry 5.0 possibilities

Business schools cannot be understood as uniformly reflecting any single industrial paradigm. Like other educational institutions, they contain overlapping logics, practices and assumptions, some inherited from predigital forms of professional education, some shaped by Industry 4.0 concerns with efficiency, standardization, analytics and market responsiveness and some already moving toward Industry 5.0 commitments to human-centricity, sustainability and resilience. The value of the Industry 5.0 lens is therefore not that it classifies business schools as belonging to one stage of industrial development, but that it helps identify which assumptions are being privileged in curriculum design, pedagogy, assessment, governance and stakeholder engagement. From this perspective, the challenge is to strengthen institutional forms that enable adaptability, inclusivity and integration across social, technological and ecological domains (Colombo, 2023; Colombo et al., 2024; Thomas & Ambrosini, 2021). This involves reconceiving the business school as a living system, capable of evolving in dialogue with its students, faculty, communities, technologies and wider environment.

The implications of this shift in emphasis are extensive and touch on multiple dimensions of business school life. Governance models are increasingly being asked to move beyond bureaucratic control toward structures that enable cross-disciplinary initiatives and deeper external partnerships. Faculty evaluation systems, which have long been oriented toward publication counts, rankings and managerialist forms of control (Billsberry, Ambrosini, & Thomas, 2023), could place greater weight on pedagogical innovation, community engagement and policy influence. Likewise, physical and digital infrastructures might be reimagined to facilitate interactive, project-based and interdisciplinary learning rather than remaining tied primarily to lecture-driven delivery. Accreditation systems, long associated with homogeneity and incremental improvements, also hold the potential to encourage genuine institutional experimentation and innovation. Taken together, these developments suggest the emergence of a new ecology of legitimacy in which business schools gain standing not by conforming to inherited norms, but by demonstrating their capacity to advance societal resilience and human dignity in the context of technological change. This perspective resonates with a growing body of higher education research that highlights universities as civic institutions, responsible for both knowledge creation and social stewardship (Colombo, 2023; Gioia & Corley, 2002; Thomas & Ambrosini, 2021).

Culture is often less visible than governance or curriculum, but it profoundly shapes what is valued, who is included and how decisions are made. The culture of many business schools has been marked by a competitive ethos, where prestige, rankings and market share dominate

discussions of success. By contrast, schools seeking to align with Industry 5.0 should cultivate cultures of reflexivity, collaboration and care, where the worth of an idea is judged not only by its novelty but also by its contribution to human and ecological flourishing. This cultural shift involves revising the hidden curriculum that socializes students into managerial logics, replacing it with practices that normalize ethical inquiry, inclusive decision-making and sustainability as everyday concerns. Without addressing culture, structural reforms are likely to remain fragile and cosmetic. With it, schools can begin to embody the human-centric ethos they seek to teach (Gond, Cabantous, Harding, & Learmonth, 2016; Thornton, Ocasio, & Lounsbury, 2012).

Co-creation as the pedagogy of Industry 5.0

For business schools seeking to align with Industry 5.0, co-creation should be central to their pedagogy. Unlike conventional modes of education, where faculty impart knowledge to passive students, co-creation emphasizes active collaboration among educators, learners, industry partners and communities (Bovill, Cook-Sather, Felten, Millard, & Moore-Cherry, 2016; Kaminskiene, Žydyūnaite, Jurgile, & Ponomarenko, 2020; Omland et al., 2025). This model aligns with the collaborative intelligence that Industry 5.0 envisions between humans and machines, suggesting that education itself should mirror these dynamics. Co-creation requires new pedagogical practices that treat knowledge as emergent from interaction rather than transferred from expert to novice (Bovill et al., 2016; Omland et al., 2025). Such practices include design sprints, living labs and community-engaged projects where students tackle real problems with stakeholders. Importantly, co-creation also involves partnering with technology itself, treating digital platforms and AI tools not as threats to academic authority but as collaborators in knowledge generation. When practiced consistently, co-creation disrupts traditional hierarchies of expertise, inviting students to become coauthors of their learning trajectories. This resonates with research showing that collaborative pedagogies enhance critical thinking, adaptability and creativity (Bovill, Cook-Sather, & Felten, 2011; Ramaswamy & Ozcan, 2018).

Embedding co-creation requires institutional courage. Faculty accustomed to control over curricula may resist participatory approaches that place students in positions of co-design. Likewise, industry partners may prefer transactional models of engagement, rather than the open-ended experimentation that co-creation requires. To overcome such challenges, business schools may need to invest in trust-building processes, create supportive infrastructures for collaboration and align incentives so that co-creation is recognized as academically valuable. This involves rethinking assessment practices, as conventional examinations cannot capture the collective and emergent outcomes of co-created projects. Instead, evaluative frameworks should privilege reflexive accounts of learning, evidence of collaborative problem-solving and demonstrations of societal impact. Moreover, co-creation requires cultivating humility among educators, who must acknowledge the limits of their expertise and embrace vulnerability as they learn alongside students and partners. Such humility is not a weakness but a foundation for authentic collaboration (Bovill, 2020; Cook-Sather, Bovill, & Felten, 2014).

Co-creation also reframes the relationship between business schools and society. Traditionally, schools have operated as suppliers of graduates and research outputs, providing services to employers and academic consumers. In a co-creation paradigm, business schools position themselves as hubs where diverse stakeholders collaborate to design solutions to systemic challenges. This means involving local communities, policymakers and nontraditional actors in curricular development and institutional strategy. For example, a course on sustainable innovation could be co-designed with environmental

NGOs, city councils and technology firms, ensuring that students are exposed to the complexities of real-world problem-solving. This model aligns with the civic turn in higher education, which emphasizes the responsibility of universities to contribute to social progress. By embracing co-creation, business schools can move beyond transactional relationships with society and establish themselves as catalysts for inclusive innovation.

Discussion: a human–technological–educational nexus

Industry 5.0 provides an opportunity to theorize management education as a nexus where human, technological and educational systems intersect and co-evolve. Earlier critiques of management education, while incisive, often framed their analysis within a human-only perspective, focusing on pedagogical design, institutional purpose or societal critique. What has been missing is an account of how technological paradigms and educational paradigms jointly configure one another. The emergence of Industry 5.0 makes it possible to conceptualize business schools not just as human institutions but as socio-technical systems embedded in larger ecological and societal dynamics. This nexus perspective highlights the interdependence of technological trajectories, human values and educational practices, suggesting that the purpose of management education is to mediate and shape these interdependencies. It also provides a conceptual platform for understanding business schools as sites where human creativity and machine intelligence coalesce in shaping future organizational forms.

The nexus approach has significant implications for management theory. It challenges the conventional separation between technological innovation studies and management education research, encouraging a cross-pollination that has rarely been attempted. For example, theories of absorptive capacity or dynamic capabilities are typically applied to firms, yet they may be equally relevant to business schools as they adapt to new technological landscapes (Thomas & Ambrosini, 2021). Similarly, insights from human–AI collaboration research can inform the design of management curricula, emphasizing complementary strengths rather than substitution (Atchley, Pannell, Wofford, Hopkins, & Atchley, 2024; Kim, Lee, & Cho, 2022). By theorizing education as a site of socio-technical integration, we not only generate a richer understanding of how business schools function, but also expand the relevance of organizational theory itself. In this sense, Industry 5.0 is not only a pedagogical shift but a theoretical catalyst that reconfigures how we understand the relationship between technology, learning and organizing (Faraj, Pachidi, & Sayegh, 2018; Kellogg, Valentine, & Christin, 2020; Mohamed Hashim, Tlemsani, Mason-Jones, Matthews, & Ndrecanj, 2024).

This theoretical move also positions business schools as normative agents in shaping technological futures. Too often, the role of business education is portrayed as reactive, with business schools adjusting curricula to meet labor market demands or technological disruptions. The nexus perspective insists that schools are not passive recipients of technological change but active participants in guiding its direction. By embedding dignity, inclusivity and systems thinking into their practices, business schools can influence how managers deploy technologies, which in turn shapes organizational and societal trajectories. Thus, management education is not merely about producing employable graduates, but about equipping leaders capable of steering socio-technical systems toward just and sustainable outcomes. This theoretical contribution reframes the purpose of business schools and broadens their relevance beyond education into the ethical governance of technology and society (Bansal & Song, 2017; Ghoshal, 2005; Gond et al., 2016).

Reclaiming the public purpose of business schools

Industry 5.0 also compels a reconsideration of the public purpose of business schools. Its human-centric ethos offers a powerful framework for reclaiming public purpose by insisting that institutions prioritize dignity, sustainability and inclusion. Business schools can position themselves as civic actors, engaged not only in the preparation of individual graduates but in the stewardship of societal futures. Doing so requires more than rhetoric; it requires embedding public purpose into institutional strategies, funding models and daily practices. For instance, partnerships with governments and NGOs can become core to program design, not peripheral outreach activities.

Reclaiming public purpose involves rethinking the boundaries of who counts as a stakeholder in business education. Traditionally, the primary stakeholders have been students, faculty and employers. Industry 5.0 encourages a broader stakeholder perspective that includes local communities, marginalized populations and future generations as legitimate voices in educational decision-making. This expansion of stakeholders aligns with sustainability frameworks that emphasize intergenerational equity and inclusive governance (Bell & Reed, 2022; Tasaki & Kameyama, 2024). It also requires creating institutional mechanisms for listening to and engaging with these stakeholders, such as advisory councils, participatory budgeting and community-based research initiatives. When business schools open themselves to diverse perspectives, they create opportunities to design curricula and research agendas that are more attuned to real-world complexities and injustices. Such openness is not without challenges, as it demands time, resources and a willingness to confront uncomfortable truths. Yet it is precisely this discomfort that can catalyze the transformative learning Industry 5.0 demands (Colombo et al., 2024).

Finally, reclaiming public purpose requires a shift in how legitimacy is constructed. Where Industry 4.0 logics dominate, legitimacy is often sought through alignment with corporate practices, rankings and financial outcomes. Where Industry 5.0 logics are foregrounded, legitimacy derives more clearly from alignment with societal needs, planetary boundaries, human-centricity, sustainability and resilience. Business schools that demonstrate commitment to co-creation, civic engagement and sustainable innovation will find renewed legitimacy in the eyes of students, communities and policymakers. This legitimacy is not static but must be continually re-earned through transparency, accountability and responsiveness to evolving societal challenges. Industry 5.0 does not offer a ready-made blueprint for this renewal, but it provides the normative compass by which business schools can navigate toward a more ethical and inclusive future. In this sense, the reassertion of public purpose is not an optional project but a central test of whether business schools will thrive in the next industrial era.

Guidance for academic leaders

Management education has adapted to major changes before. It has absorbed experiential learning, responsible management education, assurance of learning, online and blended delivery, employability agendas and stronger engagement with practice. These transitions have worked best when they have not been treated simply as additions to curriculum content. Kolb's (1984) work on experiential learning, for example, reshaped pedagogy by changing what counted as learning, while the Principles for Responsible Management Education (PRME) initiative of the United Nations has encouraged business schools to connect management education more explicitly to responsibility and sustainability, with empirical evidence showing that signatory schools have made measurable progress in embedding these principles into curricula, teaching methods and stakeholder engagement (Godemann, Nguyen, & Herzig, 2023). The lessons for Industry 5.0 are that change needs to involve curriculum purpose, assessment, faculty capability, partnerships and institutional priorities.

The following six suggestions translate Industry 5.0's emphasis on human-centricity, sustainability and resilience into practical actions for academic leaders. They are not intended as a fixed implementation model. Schools differ in mission, resources, accreditation expectations, student populations and local stakeholder needs. Instead, the suggestions offer starting points for leaders who want to move from broad endorsement of Industry 5.0 principles toward credible program-level change.

Audit existing curricula against Industry 5.0 pillars: Academic leaders can begin by mapping current programs against human-centricity, sustainability and resilience. This should go beyond checking whether these terms appear in course descriptions. Drawing on [Biggs's \(1996\)](#) idea of constructive alignment, leaders should ask whether learning outcomes, assessment tasks and teaching activities actually require students to practice human-centered judgment, responsible technology use, ecological reasoning and resilience under uncertainty. This kind of mapping can also reveal unevenness within programs, including areas that remain closer to predigital disciplinary silos, areas that reflect Industry 4.0 logics of efficiency, optimization and digital adaptation and areas where Industry 5.0 commitments to human-centricity, sustainability and resilience are already emerging ([Breque et al., 2021](#)).

Identify existing good practice. The transition should not assume that current management education is simply deficient. Many educators already use humanistic ([Waddock, 2016](#)), critical ([Lacerda & Sadeghi, 2026](#)), experiential and sustainability-oriented ([Adib, 2024](#)), inclusive ([Spoor, Jameson, Billsberry, & Vogus, 2026](#); [Woods, Dell, & Carroll, 2022](#)) and practice-based ([Larsen, 2025](#)) approaches that align with Industry 5.0, even if they do not use that language. Leaders should therefore identify and elevate existing examples in capstones, simulations, internships, community projects and individual teaching innovations. This reduces the risk of symbolic compliance, a problem [Rasche & Gilbert \(2015\)](#) identify in responsible management education and helps build change from credible local practice.

Revise program-level learning outcomes: Industry 5.0 should be expressed in program-level learning outcomes, not only in individual courses. These outcomes might include the ability to evaluate technology from human, ethical and ecological perspectives; to make decisions that balance productivity with well-being; and to work with stakeholders under conditions of uncertainty. [Wiek et al. \(2011\)](#) identify systems thinking, anticipatory thinking, normative competence, strategic competence and collaboration as central sustainability capabilities and these map well onto Industry 5.0 management education. Outcomes of this kind then give coherence to assessment, sequencing and curriculum review.

Support faculty development: Industry 5.0 is also a faculty development challenge. Many faculty members may support human-centricity, sustainability and resilience in principle, but need time, resources, examples and collegial spaces to translate them into teaching practice. [Gibbs & Coffey \(2004\)](#) show that sustained development can influence university teaching, while [Roxå & Mårtensson \(2009\)](#) emphasize the importance of significant teaching conversations and informal academic networks. Leaders might therefore support workshops, peer exchange, teaching pilots and shared resources rather than relying only on policy statements or curriculum templates.

Redesign assessment and partnerships: Students need opportunities to practice Industry 5.0 capabilities in complex and situated contexts. Assessment can therefore include live projects, simulations, stakeholder analyses, sustainability audits, reflective technology evaluations and capstones that require students to balance human, ecological, technological and organizational concerns. [Kolb's \(1984\)](#) experiential learning model supports this shift from abstract knowledge to practice-based learning. Partnerships should also be designed as

forms of co-creation rather than as exercises in solving predefined organizational problems, reflecting Van De Ven & Johnson (2006) argument that knowledge is strengthened when theory and practice are developed in relation to one another.

Treat the transition as iterative: Finally, leaders should treat Industry 5.0 management education as an iterative transition rather than a one-time curriculum reform. Small pilots, feedback loops, faculty reflection, student input and stakeholder review can help schools learn what works before scaling change. This approach is consistent with Weick's (1984) argument for small wins and Schön (1983) account of reflective practice. It is especially appropriate because Industry 5.0 remains an emerging concept, so schools need to keep revisiting what humane, sustainable and resilient management education should mean in practice.

Conclusion: from crisis to co-creation

The essay began by examining why management education needs to respond more directly to technological, ecological and social change. It then explored how Industry 5.0 represents a paradigmatic shift organized around human-centricity, sustainability and resilience, and showed how these pillars translate into dignity, systems thinking and inclusive innovation in management education. Building on this, the final act has argued that business schools can move toward Industry 5.0 commitments by embracing co-creation as a guiding pedagogy and positioning themselves as nodes within a human–technological–educational nexus. The theoretical contribution lies in reframing management education as a site where technological trajectories and human values intersect, demanding a new understanding of pedagogy, purpose and institutional design. If they succeed, they can help shape a generation of managers capable of co-creating resilient, just, and sustainable futures. Business schools can therefore use Industry 5.0 not as a fixed blueprint or empirical destination, but as a normative and practical framework for becoming laboratories of co-creation.

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Corresponding author

Jon Billsberry can be contacted at: j.billsberry@latrobe.edu.au