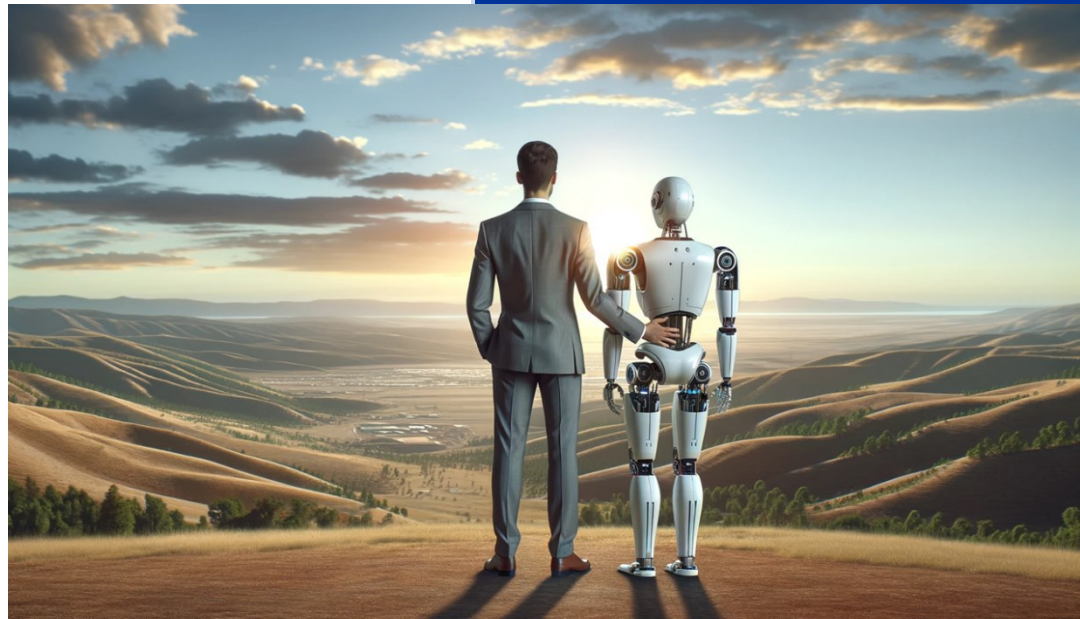


A Guide to Artificial Intelligence



Navigating the Future:
A Guide to AI in
Management Consulting

The International Council of
Management Consulting
Institutes

Navigating the Future: A Guide to AI in Management Consulting

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SECTION 1: INTRODUCTION



This section begins with greetings from the current Chair of ICMCI. He introduces us to the increasing relevance of Artificial Intelligence (AI) in the economy and its integration into the management consulting profession. It discusses the potential benefits and risks associated with AI, emphasizing the need for a responsible approach to implementation and the critical role of Management Consultants in guiding businesses through AI adoption.

Welcome to ICMCI's Guide to Artificial Intelligence in the Management Consulting Profession

Contributing Author: **Robert Bodenstein, CMC®**



Robert is a Management Consultant for more than 40 years. His extensive experience includes strategy, information technology and strategic management of sustainability. He is Chair of the International Council of Management Consulting Institutes (ICMCI) and chaired the ISO TC 280 (Management Consultancy), setting up the standard ISO 20700:2017 Management Consulting Services

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Artificial Intelligence (AI) is another megatrend that has entered the economy following developments like mainframe computers, the internet, and the Internet of Things. Experts, as well as those aspiring to become experts, predict adventurous developments but also high risks. Politicians are aiming to enact further regulations for the economy.

“AI can contribute to social and economic welfare. Risks need to be considered and mitigated.”

Participant of the International CMC Conference 2023 on AI in Management Consulting

It is time to deal with AI in a down to earth approach following the principles of economy and management. This is why the International Council of Management Consulting Institutes (ICMCI) set up this publication as a result of the CMC Global Conference 2023 in Amman, Jordan.

“Management Consultants have a leadership role to implement AI in business in a responsible way.”

Participant of the International CMC Conference 2023 on AI in Management Consulting

We shed some light on the topic from three perspectives:

1. Basic understanding of AI and it's impact on the economy in general. Our goal is not to unpack the technical architecture of AI, but to better understand its impact on businesses.
2. What does AI mean for the management consulting profession.
3. How will the economy (the clients of management consultants) be affected by AI. How can management consultants support their clients to benefit the most from AI.

“AI will not go to jail - The final responsibility for decisions is by human beings, e.g. Management Consultants and / or managers. “

Participant of the International CMC Conference 2023 on AI in Management Consulting

Throughout these three perspectives, we will consider the most relevant topics that are related to AI:

- How to deal with risks, especially ethical risks
- How is AI related to another current megatrend in economy: Sustainability
- Different regulatory frameworks in different regions around the world.

To develop this publication, we have leveraged the expertise of authors from all over the world with different cultural and professional backgrounds. This diversity is one of the strengths of ICMCI and will be visible throughout the paper. Please excuse different English language use, some repetitions and even some differing points of view in the contributions.

AI in Management Consulting: An Overview

Artificial Intelligence and Management Consulting

Contributing Author: Robert Bodenstein, CMC®



Robert is a Management Consultant for more than 40 years. His extensive experience includes strategy, information technology and strategic management of sustainability. He is Chair of the International Council of Management Consulting Institutes (ICMCI) and chaired the ISO TC 280 (Management Consultancy), setting up the standard ISO 20700:2017 Management Consulting Services

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In recent years, the integration of Artificial Intelligence (AI) in various industries has catalyzed significant transformations, and management consulting is no exception. As businesses strive to stay competitive and adapt to an ever-evolving landscape, AI has emerged as a powerful tool for enhancing decision-making processes, optimising operations, and driving strategic initiatives. This intersection of AI and management consulting represents a paradigm shift, where traditional approaches are being augmented or replaced by innovative AI-driven solutions. In this context, understanding the implications, opportunities, and challenges of AI in management consulting becomes paramount. This essay explores the role of AI in reshaping the landscape of management consulting, delving into its applications, benefits, and the considerations that accompany its adoption.

What is Artificial Intelligence

In 1956 scientists met in the Dartmouth Conference. This conference is widely considered the birthplace of artificial intelligence as an academic field. The term "Artificial Intelligence" itself was coined during this conference.

Today, when asking ChatGPT "What is Artificial Intelligence?" the following is its reply:

*"Artificial intelligence (AI) refers to the **simulation of human intelligence** processes by machines, especially computer systems. These processes include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions), and self-correction. AI encompasses a **variety of approaches**, including machine learning (where machines can learn from data), natural language processing (enabling machines to understand and generate human language), computer vision (enabling machines to interpret and understand visual information), and robotics (combining physical systems with AI to perform tasks in the physical world). AI technologies are used in **numerous applications**, including virtual assistants, autonomous vehicles, medical diagnosis, finance, and many others."*

To highlight the most important:

It is a **simulation of human intelligence**. It is not intelligence itself. It will never be intelligence itself as it is a machine that is based on mathematics and calculates available data. Data which is not available cannot be calculated. Creativity and innovation are based on values and assumptions which are not part of AI. Although sometimes the output of AI appears to be “human” like having a sense of humor or feelings, it is still a technology. How data is presented is based on a training model which might be optimised to generate “human” attitudes.

AI is a generic **term for different approaches**. Although ChatGPT appears to be a simple software tool, it combines 12 different approaches.

AI is already used in **many applications** that are used on a daily basis. But the technical development of the last few years allows new approaches and use cases that are more and more sophisticated.

In 1974 Marvin Minsky, an American cognitive scientist, computer scientist, and one of the pioneers of artificial intelligence, explains:

"In three to eight years, we will have machines with the intelligence of an average human being."

Well, it will take a little longer.

How does AI affect the Management Consulting Profession

Management Consulting projects have three phases. Like for many professions AI will not replace management consultants. But it will have an impact on the way they do business. Here are some examples as the conclusion of many discussions:

1. Contracting:
 - Semantic Technologies provide deep information about the consultant to the client.
 - Deep, fast understanding of the current situation.
 - Triggering creativity process by asking AI Services like ChatGPT.
2. Execution:
 - Human skills completed with AI.
 - (Market) surveys, trends, industry knowledge are available to everybody.
 - New business models for management consulting.
 - Know-how in AI is required along the entire process.
 - (Existing) software tools from MS Office to highly specialised software will become much more efficient and effective.
3. Closure:
 - Semantic Technologies provide deep information about the consultant to the client.
 - Deep, fast understanding of current situation.

The most important developments can be summarised as follows:

- Those who are able to adapt AI-related know-how will benefit. That means:
 - Basic understanding of AI. How does it work? What are opportunities? What are the risks? How can it be adapted to business processes?
 - Deeper know-how like prompt engineering or different technologies and training models may be required for special fields or industries.
 - Deeper knowledge about industries, technologies, market trends or general economic knowledge has been typically a competitive advantage for big consulting firms. They were able to build up their own databases on a global level. This knowledge is, to a certain extent, available for smaller firms or even individual consultants.
- AI is, like IT in general, a cross-sectional subject matter. Clients expect at least basic knowledge even if the consultant is not specialised in the field of IT.
- Clients can be supported best by understanding how AI can make them more competitive from a business perspective.

AI is also related to risks consultants should be aware of such as:

- The outcome of AI based systems is not necessarily the truth. It might give a good guess, but it cannot check the answers against reality. Depending on the specific application it might require a very robust testing system and / or organisational measures on how to react to misinterpretations.
- Ethical risks should be considered throughout the entire workflow and measures to mitigate should be in place by design.
- AI cannot replace basic consulting and business knowledge. Understanding clients needs requires experienced management consultants.

How does AI affect the client's business?

The overarching theme is competitiveness in a digitalized world. AI accelerates developments in all aspects of business management like:

- **Marketing / Communication:** The way (potential) customers search and interact with companies will change significantly.
- **Quality Assurance:** New technologies identify faulty products even faster.
- **Cost efficiency:** From predictive maintenance to AI-powered systems to automate repetitive tasks or identifying inefficiencies in processes in a vast amount of data: Before increasing selling prices companies need to double check if they are working cost efficiently.
- **Time to market:** Identifying patterns in consumer behavior as well as in supply chains at a very early stage will enable companies to amend their products at a very early stage and provide them to the market just at the right time.
- **Logistics:** Logistics is becoming more and more the key success factor for many companies. New methodologies like predictive shipping as well as methodologies to identify potential threats in the entire supply chain are already in place and evolving very fast.

- **Sustainability:** Companies committed to sustainable approaches need state of the art technologies based on AI that provide energy efficiency, sustainable supply chain management, sustainable resource management and other sustainable approaches.

How to deal with AI will be a strategic decision and may have a significant impact on the entire company. Managers need to consider change in different aspects like:

- New business models
- New strategies for higher visibility in search engines as the way customers search will change.
- Improved business processes
- New markets
- New competitors

Management consultants will have an important role by providing knowledge in terms of AI, business and change management.

SECTION 2: ETHICS AND MANAGEMENT CONSULTING



This Section of the document focuses on the ethical aspects of AI usage within the management consulting industry. It highlights the importance of responsible AI implementation, addressing potential ethical challenges such as bias, privacy, accountability, and the need for transparency, while underscoring the critical role of consultants in ensuring ethical AI integration to uphold trust and integrity in client relationships.

Ethical Aspects related to the use of AI in Management Consulting

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This chapter of the ICMCI Guide to Artificial Intelligence (AI) focuses on ethical aspects of AI use in management consulting industry.

Introduction

Artificial Intelligence (AI) is quickly developing as a useful tool in many industries as well as management consulting if it is used properly. It provides inputs from a vast amount of information and data for the users in a very short period of time. However, these inputs need to be handled in a responsible and ethical way in order not to make any negative impact or cause any negative consequences on the stakeholders of the management consulting service. As AI itself is either a machine or a software, just working in a mechanical way, is not expected to take responsibility in a way that can only be considered by the user of AI.

Why are AI ethics Important?

AI ethics are important because AI technology is aimed to reinforce or support human intelligence and all human-related ethics might become an issue during the practice of using AI. AI projects built on biased or inaccurate data can have harmful consequences, particularly for the stakeholders of a management consulting service. Furthermore, if AI algorithms and machine learning processes are built too quickly, then it can become unmanageable for engineers, product managers and relevant people of the client to correct learned biases. There might even be more complex situations related to other aspects such as intellectual property rights, conflicts of interest between stakeholders of the management consultancy service.

Some Aspects related to ethics in Management Consulting

Although AI is a powerful tool consisting of algorithms and software that can put large amounts of data together at a very high speed, it can never replace human intelligence. AI can provide misleading information when supporting the consultants work in providing added value to their customers. Consultants should always remember to check how trustworthy and reliable content is and verify it before using it in their service.

Even if AI will get more intelligent, it can not replace human consultants. AI can improve its expertise in the dimensions of data analysis, automation, and routine tasks. This fact is supported by the following facts:

- Human judgement and expertise are always necessary.
- Trust and relationship with key stakeholders are needed (AI can not replace interpersonal skills, empathy, and creativity).
- Consultants help the client to manage change and transformation including management of stakeholders to ensure sustainability in all relevant areas such as new policies, strategies, processes, and practices.

AI can only assist the consultant to do the ordinary tasks, enabling the consultant to focus on complex, strategic and high-value projects with the human touch. During all of these interactions and processes, it is the consultant's responsibility to ensure that ethical principles are considered wherever appropriate and necessary. This is especially important at the stages of decision-making or ownership in cases where legal issues, breaching intellectual property (IP) rights, fraud and conflict of interest have to be considered.

To help clients ensure safety and confidentiality of both the organisation and the client data, consultants could provide advice on ethics and data bias, copyright and intellectual property, security, data protection, privacy and legal compliance.

Regulations are another important dimension for consideration in using AI. As the areas of using AI are expanding, harmful or not-preferred consequences could emerge. In such cases, the intervention of human consultants will be necessary to make the right choice and work in line with regulations to ensure responsible use of AI. Authorities establish basic policies and rules, but AI is developing too fast for regulators to catch up.

The European Union has taken the lead by formulating the EU AI Act, the world's first comprehensive legal framework for AI. The Act provides obligations for providers and users depending on the AI risk level. There is still a need for authorities and governments to move faster to develop a code of conduct for AI developers and users.

Ethical Issues in Integration of AI in Management Consulting

A number of ethical considerations play an important role in using AI in management consulting. Consultants need to take them into account to ensure and maintain trust amongst stakeholders during their projects and management consulting services. The following is a list of commonly encountered ethical issues or problems^{1,5}.

Bias and Fairness: AI systems could lead to discriminatory practices or unfair recommendations in hiring, promotions, or strategic decision-making.

Transparency: The lack of transparency in decision-making processes makes it difficult for clients and stakeholders to understand how conclusions were reached.

Accountability: It is not easy to determine responsibility when certain advice of AI system causes harm or makes an error. It becomes very difficult to determine who is responsible, e.g., AI developers, data providers or consultant.

Data Privacy: There's a risk of breaching privacy if data-handling practices are not rigorously secure and compliant with regulatory frameworks as AI systems process large amounts of data including private or sensitive information.

Security: AI systems can be sensitive to hacking and manipulation. Ensuring the security of AI systems against such threats is vital to protect the integrity of consultant's advice.

Job Displacement: AI could automate tasks traditionally performed by humans which could lead to job displacement and the devaluation of skill sets in the workforce.

Dependence on Technology: Overreliance on AI might result in a decline in human skill levels, as consultants may defer complex analyses and decision-making to algorithms, potentially leading to a skills gap in the long term.

Consent and Autonomy: Ethical issues in relation to the consent of consultants affected by AI-driven decisions might cause issues. Without an understanding in the matter, there is a loss of autonomy over decisions.

Intellectual Property: AI can raise questions about the ownership of algorithms and insights, particularly when it generates managerial solutions. Intellectual property rights (IPR) need to be attributed and maintained during the consultancy project. Transition of the achieved results to the client should be clearly stated in the contract.

Environmental Impact: Training large AI models requires significant computational power and energy, which might have an environmental cost. The carbon footprint associated with AI can be substantial and conflict with ESG practices. Some clients might consider AI to become a devaluating factor in ESG compliance.

Manipulation and Influence: AI tools could potentially be used to manipulate market conditions, public opinion, or decision-making processes in unethical ways, especially through the use of big data analytics and predictive modelling.

Ethical Dilemmas Arising5:

The ethical issues mentioned above might cause dilemmas which need to be handled by the consultants prior to or during their consulting services engagements.

Dilemma 1: Bias in Predictive Algorithms.

- Situation: The AI system inadvertently recommends fewer staff hours for locations in lower-population and lower-income cities based on past sales data.
- Ethical Concern: This could reflect socio-economic biases, potentially discriminating against local communities by providing them with inadequate service and lower-quality food at restaurants.

Dilemma 2: Transparency and Explainability

- Situation: The client is pleased with initial results, but the AI system's recommendations are opaque, and the consulting team cannot fully explain how specific staffing levels are determined.
- Ethical Concern: Lack of understanding can lead to blind trust in the system, removing critical human judgment from the decision-making process.

Dilemma 3: Data Privacy

- Situation: The AI requires detailed employee data, including performance ratings, health-related absences, and personal information to make predictions.
- Ethical Concern: There's risk of misuse of personal data, violating employee privacy if not handled with appropriate confidentiality and security measures.

Dilemma 4: Job Displacement

- Situation: The AI system finds that the company can reduce staff by 20% without a significant drop in customer service quality.
- Ethical Concern: The recommendations could lead to the loss of jobs, affecting employees' livelihoods and potentially leading to broader socioeconomic negative impacts. Personnel can be treated more effectively within a short-time horizon but professional burn-out can ruin the team spirit and emotional involvement.

Addressing the Dilemmas⁵:

The consultants, aware of these ethical challenges, could take several actions. The followings are given just as examples:

- Remove Bias: Ensure that training data is examined for biases and that the AI's decision-making process does not unfairly target or exclude certain groups.
- Enhance Transparency: Work with AI developers to make the system's decision criteria as transparent as possible and ensure outcomes can be explained to the client.
- Safeguard Data Privacy: Implement strict data governance policies, ensuring that all data used by AI adheres to privacy laws and ethical guidelines.
- Human-Centric AI Integration: Advocate for a balance between AI recommendations and human decision-making to preserve jobs and mitigate social impacts; proposing upskilling for the displaced workforce.

Good Ethical and Professional Conduct, Standards and Best Practices

In our industry of management consultancy, good ethical and professional conduct are also applicable when using AI is implemented in relation to these aspects: Integrity and Professionalism, Confidentiality and Privacy, Conflict of Interest Management, Respect for Intellectual Property, Continuous Improvement and Self-Regulation.

To identify and handle the issues or challenges, strong understanding of ethics and social responsibility as well as technical expertise are key requirements. The following are just some examples of robust ethical guidelines and best practices^{1,5}.

- Clear ethical standards and codes of conduct specific to AI use
- Transparency and explainability in AI systems
- Human-AI collaboration models to ensure human expertise and oversight
- Accountability frameworks defining the roles and responsibilities
- Open discussions with stakeholders about the implications of AI
- Strict data governance and privacy policies
- Sustainable AI strategy that considers the environmental impact of AI

- Upholding the precautionary principle, especially in high-stakes environments where AI recommendations may have significant consequences.
- Implementation through ISO standards, competence frameworks and professional development programmes

Ethics in ICMCI Competence Framework for Management Consultants

ICMCI Competence Framework for Management Consultants has specific items related to ethics. These are considered as part of the whole set of professional standards and behavioral requirements for management consultants. Ethics is considered under item 4 of competence framework with the following competences².

Ethics and Professional Conduct (4) in relation to Society, Client and Consultancy Profession with the following details.

Society (4.1)

Sustainability and Corporate and Social Responsibility (G1) including “Recommending solutions (both output and outcome) that are compatible with the principles of sustainable development (G.1.1)” and “Demonstrating Corporate and Social Responsibility in one’s own and Client organisations (G.1.2)”.

Legality and Compliance (G2) including “Compliance with the relevant laws and regulations of the country or countries in which the work is undertaken. Taking responsibility for an applicable Code of Conduct (G.2.1)”.

Client (4.2)

Professionalism in Consultancy, Consulting & Consultant (G3) including “Handling assignments with care, integrity and conscientiousness (G.3.1)”, “Ensuring transparency in all phases of the assignment (G.3.2)” and “Understanding and fulfilling the role(s) required in the assignment (G.3.3)”.

Consultancy Profession (4.3)

Personal Values (G4) including “Having strong personal values (G.4.1)”, and Consultancy, Consulting and Consultant Competence Development (G5) including “Planning and undertaking self-development of competence in the use of consultancy tools, techniques and methodologies and showing track record of personal growth (G.5.1)”.

ICMCI Code of Conduct for Management Consultants

The general code of conduct for management consultants also applies in cases with the use of AI through the following main dimensions³.

- Serving the interests of **Clients**
- Serving the interests of **Society**
- Serving the interest of the **Organisation** that the management consultant works for
- Serving the interests of **Those** who the management consultant works with
- Serving the interests of the **Consultancy Profession**

Stakeholders in relation to Ethical Principles

Within the context of integration of AI with management consulting services, stakeholders of the service have an important place in relation to ethical concepts⁴. Developing ethical principles for responsible AI use requires industry actors to work together. In addition, this dimension is also important from the sustainability point of view. Stakeholders are expected to examine how social, economic, and political issues intersect with AI, and determine how machines and humans can coexist harmoniously. Each of the stakeholders has an important role in ensuring less bias and risk during the use of AI technologies. At this point, the role and responsibility of management consultant is vital to consider ethical aspects from 360-degree perspective.

Depending on the subject of management consultancy service, the following stakeholders can be taken into consideration by the management consultant in relation to ethics: academics, government, intergovernmental entities, non-profit or non-governmental organisations and private companies. Involvement or role of these stakeholders are different for each of them in each case of use of AI.

For example, while, academics are responsible for developing theory-based statistics, research and ideas for other stakeholders, government can establish the fundamental aspects of ethics in relation to public outreach, regulation, governance, economy and security at national level. Similarly, intergovernmental entities raise awareness and draft agreements for AI ethics globally.

There are some good initial examples in this respect. Such approaches create standards and principles for organisations to follow. UNESCO's 193 member states adopted the first ever global agreement on the Ethics of AI in November 2021 to promote human rights and dignity⁷. Amongst non-profit organisations, The Future of Life Institute created 23 guidelines that are now the Asilomar AI Principles, which outline specific risks, challenges, outcomes for AI technologies. Examples of private companies playing a similar role are Google, Meta, and other tech companies, similarly, banking, health care, and other industries that uses AI technology. They develop guidelines, establish ethics teams and define codes of conduct.

Conclusion

AI is just another tool but a powerful one for management consultants. Ultimately, it is the responsibility of the management consultant to work in line with ethics and professional standards when using AI in delivering the management consulting service. Throughout the project, the management consultant is expected to consider/navigate ethical matters carefully and responsibly, maintaining a clear and open dialogue with the client and other stakeholders of the project as necessary about the potential trade-offs and ethical implications of using AI.

The management consultant should pay attention that aspects of ESG (environment, society and governance) are equally considered with economic ones, ensuring decisions made by or with AI are not just profitable but also socially responsible and sustainable.

On the other hand, there is a need for ethical standards for AI development and not only in the issues of discrimination and intellectual property, but the viability of implementation, meaning the standard to which we hold the AI in comparison to the solution: Does AI perform better than the

best people in the cases where it is brought in to replace functions previously performed by people? Does AI solve problems that otherwise could not be addressed and if so, what possible negatives can arise from it⁹?

While these questions have to be answered by each development team and entity, the weights, considerations and questions have to be there as a framework for decision makers and developers to be a baseline for their ethical considerations. An ethical framework could be considered as the minimum standard that we adhere to as a profession, and any AI tool developed or used must at the bare minimum comply with the framework's standards.⁸

Implementing AI in consultancy should be provided under supervision of highly qualified professional consultants aware not only of management consultancy methodology, technological issues of IT, Big Data, AI, etc. but also of ethical values and attitudes of the client company and the impact on consulting industry as a whole.

The following could also be considered as further recommendations.⁶ Many organisations are hesitant to rely on AI because they don't fully understand. Consultants can provide education and training to build trust in AI powered solutions. Rather than seeing AI as a replacement for human intelligence, consultants can help clients achieve value creation and competitive differentiation but avoid overreliance to minimise biased findings and loss of tailored quality.

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SECTION 3: THE LEGAL AND REGULATORY ASPECTS OF AI



This Section of the document addresses the legal and regulatory aspects of artificial intelligence in management consulting. It outlines current regulations, the need for a clear and adaptable legal framework, and discusses how varying international standards impact the deployment and use of AI technologies in the consulting industry, emphasising the importance of compliance and ethical considerations in AI applications.

Legal and Regulatory Frameworks and Standards

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Introduction

Management Consulting, unlike Accountancy, Law and Medicine, is an unregulated profession. That is, there are no internationally enforceable regulations, or sanctions for breach of regulations. This extends to the use of AI by management consultants. Management consultants can use AI in several ways to enhance their own work as well as advising clients on using AI. AI is a powerful tool for management consultants by helping them work more efficiently, make better-informed decisions, and provide more value to their clients but, without conformity to standards and compliance with regulations, there is the danger of misuse, whether deliberate or unintended, that could lead to unwelcome consequences for client, consultant, the profession and society as a whole.

Given below are some examples of the use of AI in management consulting and the regulatory considerations linked to them.

Data analysis: AI can help consultants analyse vast amounts of data to identify trends, patterns, and insights that can inform their recommendations to clients.

- Privacy and data security: There is a risk of unauthorised access or data breaches when handling vast amounts of sensitive client data for analysis.
- Fairness and bias: AI algorithms used for analysing data may inadvertently perpetuate biases present in the datasets, leading to skewed recommendations.

Predictive modelling: AI can be used to create predictive models that help consultants forecast business outcomes and develop strategies based on those predictions.

- Fairness and bias: Bias in historical data may lead to biased predictive models, potentially resulting in unfair or discriminatory business strategies.
- Accountability and transparency: Lack of transparency in the predictive models may make it difficult to explain the basis of the forecasts to clients, leading to potential ethical concerns.

Automation: AI can automate repetitive tasks, such as data entry, report generation, and analysis, freeing up consultants to focus on more high-value work.

- Job displacement: The automation of repetitive tasks through AI could lead to concerns about job displacement for human consultants, impacting their livelihoods.

Natural language processing: AI-powered natural language processing tools can help consultants sift through large volumes of written material to extract valuable insights and trends.

- Privacy and data security: Extracting insights from large volumes of written material may raise privacy concerns, particularly if the material contains sensitive information.

Decision support: AI can aid consultants in making better decisions by providing data-driven recommendations and insights based on complex datasets.

- Fairness and bias: Like predictive modelling, decision support systems may inadvertently perpetuate biases present in the data, leading to potentially unfair or discriminatory recommendations.
- Dependence on AI: Overreliance on the data-driven recommendations provided by AI may diminish consultants' critical thinking and judgment skills.

Personalised insights: AI can be used to provide personalised insights to clients, helping consultants tailor their recommendations to specific business needs.

- Client understanding and consent: It is essential to ensure that clients understand how AI-generated personalised insights are produced and used to tailor recommendations, fostering transparency and trust.

What is AI for the purpose of regulation?

It is important to understand that effective regulation of AI must consider, and be applied to, all aspects of AI. There is currently no universally accepted definition of AI in regulatory terms but the definitions of the elements comprising the AI universe given below are generally the ones in common use, albeit sometimes expressed using different wordforms:

AI system: a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment.

AI system lifecycle: AI system lifecycle phases involve:

- design, data and models, which is a context-dependent sequence encompassing planning and design, data collection and processing, as well as model building.
- verification and validation.
- deployment.
- operation and monitoring. These phases often take place in an iterative manner and are not necessarily sequential. The decision to retire an AI system from operation may occur at any point during the operation and monitoring phase.

AI ecosystem: the complex network of actors and processes that enable the use and supply of AI throughout the AI life cycle (including supply chains, markets, and governance mechanisms).

AI knowledge: the skills and resources, such as data, code, algorithms, models, research, know-how, training programmes, governance, processes, and best practices, required to understand and participate in the AI system lifecycle.

AI actors: those who play an active role in the AI system lifecycle, including organisations and individuals that deploy or operate AI. Includes AI suppliers - any organisation or individual who plays a role in the research, development, training, implementation, deployment, maintenance,

provision or sale of AI systems and the AI user - any individual or organisation that uses an AI product.

Stakeholders: encompasses all organisations and individuals involved in, or affected by, AI systems, directly or indirectly. AI actors are a subset of stakeholders.

UK approach: The UK Government takes a different approach to the regulatory definition of AI as outlined in the paper “A pro-innovation approach to AI regulation”¹ presented to Parliament by the Secretary of State for Science, Innovation and Technology in March 2023.

“Defining Artificial Intelligence

39. To regulate AI effectively, and to support the clarity of our proposed framework, we need a common understanding of what is meant by ‘artificial intelligence’. There is no general definition of AI that enjoys widespread consensus.² That is why we have defined AI by reference to the two characteristics that generate the need for a bespoke regulatory response.

- The ‘adaptivity’ of AI can make it difficult to explain the intent or logic of the system’s outcomes:*
 - i. AI systems are ‘trained’ – once or continually – and operate by inferring patterns and connections in data which are often not easily discernible to humans.*
 - ii. Through such training, AI systems often develop the ability to perform new forms of inference not directly envisioned by their human programmers.*
- The ‘autonomy’ of AI can make it difficult to assign responsibility for outcomes:*
 - i. Some AI systems can make decisions without the express intent or ongoing control of a human.*

40. The combination of adaptivity and autonomy can make it difficult to explain, predict, or control the outputs of an AI system, or the underlying logic by which they are generated. It can also be challenging to allocate responsibility for the system’s operation and outputs. For regulatory purposes, this has potentially serious implications, particularly when decisions are made relating to significant matters, like an individual’s health, or where there is an expectation that a decision should be justifiable in easily understood terms, like a legal ruling.

41. By defining AI with reference to these functional capabilities and designing our approach to address the challenges created by these characteristics, we future proof our framework against unanticipated new technologies that are autonomous and adaptive. Because we are not creating blanket new rules for specific technologies or applications of AI, like facial recognition or LLMs, we do not need to use rigid legal definitions. Our use of these defining characteristics was widely supported in responses to our policy paper, as rigid definitions can quickly become outdated and restrictive with the rapid evolution of AI. We will, however, retain the ability to adapt our approach to defining AI, if necessary, alongside the ongoing monitoring and iteration of the wider regulatory framework.”

¹ <https://www.gov.uk/government/publications/establishing-a-pro-innovation-approach-to-regulating-ai/establishing-a-pro-innovation-approach-to-regulating-ai-policy-statement>

² <https://carnegieendowment.org/2022/10/06/one-of-biggest-problems-in-regulating-ai-is-agreeing-on-definition-pub-88100>

Current global position on regulation

There are currently no recognised international regulations controlling any of the elements of AI as described above. Different countries and regions are generating their own means of regulation and there is wide diversity in their approaches. Some representative examples are given below:

The European Union

The legislative bodies within the European Union (EU) have embarked on a strategic direction towards AI regulation, adopting a comprehensive legislative framework approach. The EU Artificial Intelligence Act (hereinafter referred to as the "EU AI Act") unfolds a legal framework for AI, distinguishing itself through a tiered, risk-based methodology. This model incorporates universal transparency mandates applicable across all AI models, whilst imposing additional requisites on models identified as posing systemic risks.

The genesis of the EU AI Act can be traced back to the resolution passed by the European Parliament on February 12, 2019, regarding a holistic European industrial strategy on artificial intelligence and robotics (2018/2088(INI)). Subsequently, in April 2021, the European Commission took a pioneering step by proposing the inaugural EU regulatory framework tailored for AI. This proposition articulates a systematic process where AI systems, given their versatility across various applications, are scrutinised, and categorised based on the potential risks they present to users. This classification into different levels of risk translates into corresponding regulatory measures, varying in stringency.

A significant milestone was achieved on December 9, 2023, as highlighted by an EU Parliament Press Release, marking the provisional consensus between the Parliament and the Council on the AI Act. Following this development, on February 2, 2024, the Committee of Permanent Representatives concurred with the political agreement established in December 2023. The text is now poised to proceed towards formal ratification, anticipated to occur around April 2024.

The full text of the EU AI Act is available on the internet.³

The EU AI Act not only represents a pioneering regulatory mechanism but also has the potential to serve as a quintessential model for global AI governance frameworks.

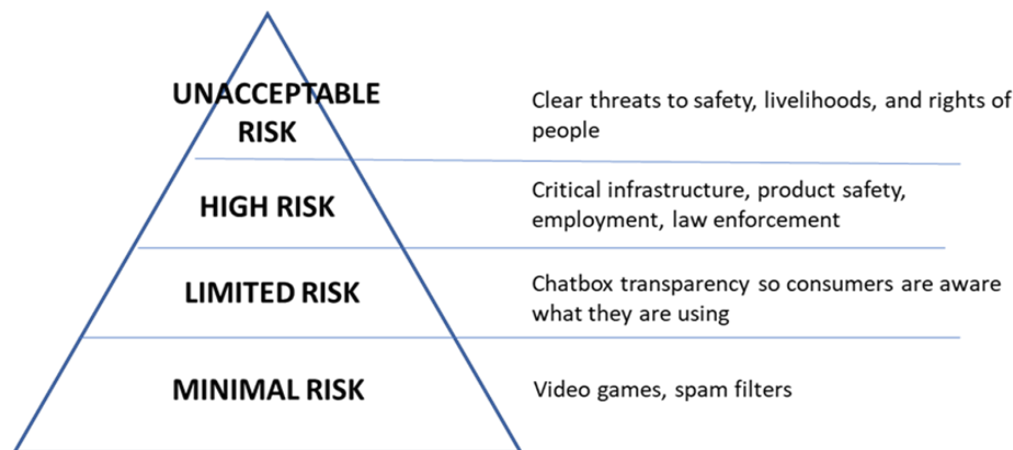
In alignment with its overarching digital strategy, the EU aspires to cultivate a regulatory ecosystem conducive to the nurturing and deployment of AI technology. It is motivated by the conviction that meticulously crafted regulation can catalyse a myriad of societal advantages, including but not limited to, advancements in healthcare, safer and more eco-friendly transportation options, improvements in manufacturing efficiency, and the facilitation of more cost-effective and sustainable energy solutions.

Parliament's priority is to ensure that AI systems used in the EU are safe, transparent, traceable, non-discriminatory, and environmentally friendly. AI systems should be overseen by people, rather than by automation, to prevent harmful outcomes. Parliament also wants to establish a technology-neutral, uniform definition for AI that could be applied to future AI systems.

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0206>

The new rules establish obligations for providers and users depending on the level of risk from artificial intelligence. While many AI systems pose minimal risk, they need to be assessed.

Risk-Based AI Regulatory Framework



Unacceptable risk

Unacceptable risk AI systems include:

- Cognitive behavioural manipulation of people or specific vulnerable groups: for example, voice-activated toys that encourage dangerous behaviour in children
- Social scoring: classifying people based on behaviour, socio-economic status or personal characteristics
- Biometric identification and categorisation of people
- Real-time and remote biometric identification systems, such as facial recognition

Some exceptions may be allowed for law enforcement purposes. “Real-time” remote biometric identification systems will be allowed in a limited number of serious cases, while “post” remote biometric identification systems, where identification occurs after a significant delay, will be allowed to prosecute serious crimes and only after court approval.

High risk

AI systems that negatively affect safety or fundamental rights will be considered high risk and will be divided into two categories:

1) AI systems that are used in products falling under the EU’s product safety legislation. This includes toys, aviation, cars, medical devices and lifts.

2) AI systems falling into specific areas that will have to be registered in an EU database:

- Management and operation of critical infrastructure
- Education and vocational training
- Employment, worker management and access to self-employment
- Access to and enjoyment of essential private services and public services and benefits
- Law enforcement
- Migration, asylum and border control management

- Assistance in legal interpretation and application of the law.

All high-risk AI systems will be assessed before being put on the market and also throughout their lifecycle.

General purpose and Generative AI

Generative AI, like ChatGPT, would have to comply with transparency requirements:

- Disclosing that the content was generated by AI
- Designing the model to prevent it from generating illegal content
- Publishing summaries of copyrighted data used for training

High-impact general-purpose AI models that might pose systemic risk, such as the more advanced AI model GPT-4, would have to undergo thorough evaluations and any serious incidents would have to be reported to the European Commission.

Limited risk

Limited risk AI systems should comply with minimal transparency requirements that would allow users to make informed decisions. After interacting with the applications, the user can then decide whether they want to continue using it. Users should be made aware when they are interacting with AI. This includes AI systems that generate or manipulate image, audio or video content, for example deepfakes.

The Act is the result of long and complex negotiations and, speaking after the deal was completed co-rapporteur Brando Benifei (S&D, Italy) said, “It was long and intense, but the effort was worth it. Thanks to the European Parliament’s resilience, the world’s first horizontal legislation on artificial intelligence will keep the European promise - ensuring that rights and freedoms are at the centre of the development of this ground-breaking technology. Correct implementation will be key - the Parliament will continue to keep a close eye, to ensure support for new business ideas with sandboxes, and effective rules for the most powerful models”.

Brando Benifei also spoke at the ICMCI annual conference in October 2023 in Amman, Jordan, when he explained some of the principles behind the EU AI Act including the fact that it is not just a regulation but a hard law. It is aimed at reducing risks and making the use of AI safer by implementing a fair and balanced chain of responsibility from developer to deployer in the use of AI while avoiding over-regulation. It is expected to be the springboard for geopolitical debate given that there can be a political will across all democratic countries. In response to questions Brando stated that the Act will not contain a definition of AI but will give a definition of the AI system. He did not expect it to cause any competitive delay in Europe but to have impact and influence at a global level. The Act would be brought into force gradually over two years to allow enough time for all players to make adequate preparation. A video of Brando’s speech at the conference can be seen on YouTube.⁴

⁴ <https://www.youtube.com/watch?v=CqVuBGBZNtA>

United Kingdom (UK)

The UK's approach to AI regulation focuses on balancing innovation with ethical considerations and ensuring that AI is used responsibly and in the best interest of society. The UK government has established the Centre for Data Ethics and Innovation to provide guidance on the ethical use of AI and data-driven technologies. Additionally, there are ongoing discussions about creating a regulatory framework that addresses issues such as transparency, accountability, and the potential impact of AI on jobs and society. Regulations are being developed to ensure that AI systems are safe, fair, and transparent while promoting innovation and growth in the AI sector. The proposed regulatory framework in the UK aims to address various aspects of AI governance. This includes ensuring transparency and accountability in AI systems, managing potential biases in AI algorithms, and establishing standards for AI safety and reliability. The framework also seeks to provide clear guidelines for data protection and privacy in AI applications, as well as addressing potential ethical concerns related to the use of AI in sensitive domains such as healthcare and criminal justice.

The UK government is considering a risk-based approach to AI regulation, which means that regulatory requirements would be proportionate to the level of risk posed by different AI applications. This approach acknowledges that not all AI systems carry the same level of risk, and regulators should tailor their oversight accordingly.

The regulatory framework is also expected to consider international standards and collaboration to ensure consistency and harmonisation with global AI regulations. This approach seeks to facilitate international cooperation in AI governance while maintaining the UK's position as a leader in AI innovation and technology.

Overall, the proposed regulatory framework aims to strike a balance between fostering AI innovation and ensuring that AI technologies are developed and deployed in a responsible, ethical, and safe manner. It's worth noting that these proposed regulations are still under development, and stakeholders from various sectors, including industry, academia, and civil society, are being consulted to shape the final framework.

The UK approach, set out in the white paper “Establishing a pro-innovation approach to AI regulation”⁵ rests on two main elements: AI principles that existing regulators will be asked to implement, and a set of new 'central functions' to support this work. Following the publication of the White Paper the UK Government went out for consultation and, in February 2024, published a response paper. The new strategy will take a three-pronged approach across “activity drivers” in industry, government and public research; “people and communities”, which include talent; and “infrastructure and environment” to provide an effective and trusted environment for AI innovation.

The proposed framework outlined five cross-sectoral principles for the UK's existing regulators to interpret and apply within their remits and also proposed a new central function to bring coherence

⁵ <https://www.gov.uk/government/publications/ai-regulation-a-pro-innovation-approach/white-paper>

to the regime and address regulatory gaps. The Government claims that this flexible and adaptive regulatory approach enables it to act decisively and respond to technological progress.

But the UK's current activity-based approach to regulation relies on individual regulators all maintaining internal expertise and keeping pace with current and future developments in AI technology as models become more capable.

China

China's approach to AI regulation involves a combination of guidelines, standards, and laws aimed at managing the development, deployment, and use of AI technologies. The country has released national plans and strategies for AI development, including initiatives to establish industry standards, promote ethical AI, and ensure data security. Additionally, China has implemented regulatory frameworks focusing on data protection, algorithmic transparency, and the responsible use of AI in various sectors. It's important to note that AI regulation is a complex and evolving area, so staying informed about up-to-date policies and developments is crucial.

China has implemented various guidelines, standards, and laws to regulate AI development and usage covering the following key aspects:

1. **National AI Development Plan:** China has released comprehensive plans for AI development, outlining specific objectives and strategies for advancing AI in various sectors.
2. **Data Security Regulations:** China has established laws and regulations to govern data security, including the Cybersecurity Law, which addresses data protection and security requirements for AI systems.
3. **Ethical Guidelines:** The country has also introduced ethical guidelines for AI, emphasizing fairness, transparency, accountability, and the responsible use of AI technologies.
4. **Industry Standards:** China has been actively involved in setting industry standards for AI technologies, covering areas such as interoperability, safety, and security.
5. **AI Governance Framework:** There are ongoing efforts to establish a governance framework for AI, addressing issues such as algorithmic transparency, accountability, and risk assessment.
6. **International Collaboration:** China is also engaging in international collaboration on AI governance, seeking to align its regulatory approach with global standards and practices.

It is important to note that China's approach to AI regulation is evolving, and staying updated on the latest developments is essential for understanding the regulatory landscape.

Matt Sheehan, a fellow of the Carnegie Endowment for International Peace, has published an overview of the AI regulations in China⁶.

USA

On the 30th of October, President Biden enacted a comprehensive executive mandate (Executive Order or EO) concerning artificial intelligence (AI), with the aim of fostering the development and utilisation of AI in a manner that is safe, secure, and reliable. This directive marks a pivotal advancement in the realm of AI accountability, addressing the processes through which AI is both crafted and implemented across diverse organisations. Owing to its wide-ranging

⁶ <https://carnegieendowment.org/2023/07/10/china-s-ai-regulations-and-how-they-get-made-pub-90117>

recommendations and prescribed actions, this executive order is poised to significantly influence entities across all economic sectors, ranging from those deeply embedded in AI implementation to entities newly adopting AI technologies. The definition of AI systems within this order is notably broad, encompassing not merely generative AI or systems based on neural networks but also including systems that have been developed in recent years.

The assessment of how this executive mandate impacts an organisation necessitates a meticulous analysis. This includes evaluating the organisation's application of AI, as well as the degree to which its products and services depend on or utilise AI capabilities provided by external vendors.

Crucially, the National Institute of Standards and Technology (NIST) is designated as a central figure in the formulation of guidelines and best practices for the creation and deployment of AI systems that are deemed to be safe, secure, and trustworthy. Companies might find it advantageous to compare their current AI risk management frameworks with the NIST AI Risk Management Framework. This comparison could serve as a benchmark and facilitate preparatory steps for adhering to forthcoming guidance issued by pertinent regulatory authorities.

This executive order is underscored by eight foundational principles and priorities, aiming to ensure that AI systems are not only safe and secure but also foster responsible innovation, competition, and collaboration. It emphasises the importance of supporting American workers through education and training, ensuring AI policies advance equity and civil rights, safeguarding Americans' interests, privacy, and civil liberties, and managing the federal government's use of AI. Furthermore, it advocates for the United States to lead international efforts in advancing societal, economic, and technological progress through AI.

Importantly, this order employs a definition of "artificial intelligence" as found in 15 U.S.C. 9401(3), "a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments."

So, the scope of the EO is not just about generative AI; the EO impacts any machine-based system that makes predictions, recommendations or decisions.

The NIST plays a pivotal role in realising the objectives set forth in the order, leading the development of essential AI guidelines. However, the order exemplifies the Biden administration's approach, engaging various governmental agencies and offices to address AI technology application within their specific areas of expertise.

As Congress continues to deliberate on the policy implications of AI technologies, this executive order, alongside subsequent actions, will anchor the federal regulatory strategy in the AI domain for the foreseeable future. Nonetheless, the capacities of this executive order are bounded by the executive branch's authority, focusing on program mandates for federal agencies, requirements for AI systems utilised by the federal government, and potential rulemaking regarding regulated entities. It is crucial to understand that, while executive orders can set regulatory processes in motion, they do not possess the authority to create new laws or regulations independently.

A White House Fact Sheet summarises the actions directed by the Executive Order.⁷

⁷ <https://www.whitehouse.gov/briefing-room/statements-releases/2023/10/30/fact-sheet-president-biden-issues-executive-order-on-safe-secure-and-trustworthy-artificial-intelligence/>

Japan

The Japanese government adopts a nuanced regulatory strategy towards artificial intelligence (AI), characterised by a risk-based and soft-law framework, concurrently pursuing legislative advancements from a regulatory perspective oriented towards AI. In the year 2019, the government promulgated the Social Principles of Human-Centric AI⁸ (hereinafter referred to as the "Social Principles"), delineating guiding principles for the integration of AI within societal contexts. These Social Principles articulate three foundational philosophies: the preservation of human dignity, the promotion of diversity and inclusion, and the commitment to sustainability. It is essential to underscore that the overarching aim of the Social Principles transcends mere protective measures against potential AI misuse; rather, it seeks to harness AI to actualise these core principles. This approach finds resonance with the Organisation for Economic Cooperation and Development's (OECD) AI Principles⁹, particularly its inaugural principle which advocates for “inclusive growth, sustainable development, and well-being” via AI applications.

Forwarding these objectives, the Social Principles enumerate seven cardinal principles relevant to AI: (1) human-centricity; (2) education and literacy; (3) privacy protection; (4) security assurance; (5) fair competition; (6) fairness, accountability, and transparency; and (7) innovation. Noteworthy is the inclusion of principles aimed at fostering the active utilisation of AI - such as education, fair competition, and innovation - alongside those principles traditionally associated with protective measures, like privacy and security.

The regulatory ethos pertaining to AI within Japan is encapsulated within these Social Principles. Such regulations are bifurcated into two distinct categories (Here, the term “regulation” encompasses both statutory laws or 'hard law' and non-statutory guidelines or 'soft law'):

First, Japan presently lacks overarching regulations that explicitly limit AI utilisation. The "AI Governance in Japan Ver. 1."¹⁰ report, issued by the Ministry of Economy, Trade, and Industry (METI) in July 2021, articulates a comprehensive overview of Japan's approach to AI regulation (hereinafter referred to as the "AI Governance Report"). According to this report, the current absence of "legally binding horizontal requirements for AI systems" is deemed appropriate, attributed to the challenges regulations may encounter in keeping pace with the rapid evolution and complexity of AI technologies. An overly prescriptive and inflexible regulatory framework could inadvertently hinder innovation. Consequently, the METI report advocates for a governance model predicated on the voluntary initiatives undertaken by corporations, supplemented by nonbinding governmental guidance that fosters or directs such initiatives. This guidance should emerge from a multistakeholder dialogue and be subject to regular updates to remain relevant. This model, dubbed “agile governance,” epitomises Japan’s foundational approach towards digital governance.

There exists a category of legislation that, while not directly governing AI systems, is fundamentally pertinent to the development and application of AI. The Act on the Protection of Personal Information (APPI)¹¹ illuminates the mandatory obligations for entities that collect, utilise, or transfer personal data. With the APPI’s latest amendment, which was implemented in 2022, the

⁸ <https://www.cas.go.jp/jp/seisaku/jinkouchinou/pdf/humancentricai.pdf>

⁹ <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>

¹⁰ https://www.meti.go.jp/shingikai/mono_info_service/ai_shakai_jisso/pdf/20210709_8.pdf

¹¹ <https://www.japaneselawtranslation.go.jp/en/laws/view/4241>

introduction of the "pseudonymised personal data" concept aims to mitigate the obligations associated with personal data handling. This regulatory adjustment is anticipated to stimulate enterprises to leverage greater data volumes for AI innovation.

In addition to the regulation on AI, emphasis on regulation for AI holds substantial importance, aiming to enhance AI's beneficial societal impacts. Japanese legislators have embraced regulatory reform, informed by a judicious consideration of associated risks, to facilitate AI's application across various domains.

Brazil

Brazil has been making significant strides towards establishing a comprehensive AI regulatory framework. An expansive legislative bill regarding AI is presently under consideration in the Congress, originating from a draft that was meticulously prepared by a commission comprised of legal experts. This commission, which was constituted in February 2022, undertook the formidable task of shaping AI regulation that aligns with Brazil's unique context. Their efforts culminated in a legislative proposal that caters to the specific challenges and opportunities offered by AI within the nation.¹²

The commission embarked on a series of in-depth discussions, engaging with various stakeholders including civil society representatives and numerous experts. This collaborative process was instrumental in formulating a proposal that not only reflects a deep understanding of the local context but also addresses the international discourse on AI regulation.

The significance of this regulatory initiative in Brazil is emphasised by the widespread adoption of AI technologies across both private and public sectors in a country marked by profound inequalities. The technological landscape in Brazil presents a complex scenario where the pervasive use of AI technologies potentially exacerbates existing disparities across income, race, gender, and regions. The deployment of predictive algorithms and facial recognition technologies, in particular, has been implicated in incidents of wrongful arrests, underscoring the urgent need for regulatory oversight.

The legislative proposal crafted by the commission made its way to the Brazilian Congress and is presently being reviewed by the Senate under Bill No. 2338/2023.¹³

This proposed legislation aims to delineate clear principles, rules, and guidelines that will govern the development, deployment, and application of AI technologies in Brazil.

Interestingly, the Brazilian bill echoes many elements found in the European Union's AI Act, indicating a convergence towards a shared understanding of AI regulation that is informed by the OECD's comprehensive definition of AI systems.¹⁴

¹² <https://www.stj.jus.br/sites/portalp/Paginas/Comunicacao/Noticias/2022/07122022-Ministro-Cueva-entrega-proposta-de-regulacao-da-inteligencia-artificial-ao-presidente-do-Senado.aspx>

¹³ <https://www25.senado.leg.br/web/atividade/materias/-/materia/157233>

¹⁴ <https://oecd.ai/en/ai-principles>

This definition extends beyond simple decision-making processes to encompass the creation of models and the training of datasets.

Furthermore, both the Brazilian and EU propositions adopt a risk-based regulatory approach. This approach differentiates regulatory requirements based on the assessed risks associated with specific AI technologies, categorising certain applications as high-risk and outrightly prohibiting others deemed to pose excessive or unacceptable risks, including those related to social scoring systems. Such a nuanced approach to AI regulation underscores a global movement towards safeguarding societal wellbeing while fostering the responsible innovation and deployment of AI technologies.

International Standards for AI

There are a number of international standards relating to AI, notably those published by the International Standards Organisation (ISO):

ISO/IEC 42001:2023 - Information technology - Artificial intelligence - Management system

ISO/IEC 23894:2023 - Information technology - Artificial intelligence - Guidance on risk management

ISO/IEC 23053:2022 - Framework for Artificial Intelligence (AI) Systems Using Machine Learning (ML)

ISO/IEC 22989:2022 - Information technology - Artificial intelligence - Artificial intelligence concepts and terminology

ISO/IEC 5338:2023 - Information technology - Artificial intelligence - AI system life cycle processes

ISO/IEC 38507:2022 - Information technology - Governance of IT. Governance implications of the use of artificial intelligence by organizations

ISO/IEC 27001:2013 – Information Security Systems

ISO/IEC 25024:2015 - Systems and software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE) - Measurement of data quality

Other ISO AI related documents and guides

ISO/IEC 5339:2024 - Information technology. Artificial intelligence. Guidance for AI applications

PD ISO/IEC TR 24027:2021 - Information technology - Artificial intelligence (AI) - Bias in AI systems and AI aided decision making.

ISO/IEC/TR 24028:2020, Information technology — Artificial intelligence — Overview of trustworthiness in artificial intelligence

ISO/IEC/TR 24029-1, Artificial Intelligence (AI) — Assessment of the robustness of neural networks — Part 1: Overview

PD ISO/IEC TR 24368:2022 - Information technology - Artificial intelligence - Overview of ethical and societal concerns

PD ISO/IEC TR 27563:2023 - Security and privacy in artificial intelligence use cases. Best practices

ISO/IEC TS 4213:2022 Information technology — Artificial intelligence — Assessment of machine learning classification performance

ISO Standards currently under Development:

ISO/IEC FDIS 5259 - Artificial intelligence - Data quality for analytics and machine learning (ML)

Part 1: Overview, terminology, and examples

Part 2: Data quality measures

Part 3: Data quality management requirements and guidelines

Part 4: Data quality process framework

ISO/IEC CD 27090 – Cybersecurity - Artificial Intelligence - Guidance for addressing security threats and failures in artificial intelligence systems.

ISO/IEC DIS 42006 - Information technology - Artificial intelligence - Requirements for bodies providing audit and certification of artificial intelligence management systems.

European Commission Joint Research Centre Report

A technical report¹⁵ issued by the Joint Research Centre (JRC), the European Commission’s science and knowledge service provides an analysis of the standardisation roadmap in support of the AI Act (AIA). The analysis covers standards considered by CEN-CENELEC Joint Technical Committee (JTC) 21 on Artificial Intelligence (AI) in January 2023, evaluating their coverage of the requirements laid out in the legal text. The report indicates that the international standards researched already partially cover the AIA requirements for trustworthy AI defined in the regulation and many of the identified remaining gaps are already planned to be addressed by dedicated European standardisation. The report contributes to the debate on the AI standards and supports the work of standardisers by presenting an independent expert-based analysis and recommendation, by highlighting areas deserving further attention of standardisers, and pointing, when possible, to additional relevant standards or directly providing possible additions to the scope of future European standards in support of the AI Act.

(adapted from the Abstract of the report – with acknowledgement to : Soler Garrido, J., Fano Yela, D., Panigutti, C., Junklewitz, H., Hamon, R., Evas, T., André, A. and Scalzo, S, Analysis of the preliminary AI standardisation work plan in support of the AI Act, Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/5847, JRC132833.)

Other Directives and Guides

General Data Protection Regulation (GDPR)

The GDPR¹⁶ is a data privacy regulation from Europe that describes the rights individuals based in the EU/EEA have over their personal information processed by businesses (or natural persons outside of their personal use) and explains what guidelines businesses worldwide must follow to process their personal data legally.

¹⁵ <https://publications.jrc.ec.europa.eu/repository/handle/JRC132833>

¹⁶ <https://gdpr-info.eu/>

There are eight principles found right at the outset of the GDPR and inform and permeate all other provisions of that legislation – Lawfulness; fairness and transparency; Purpose limitation; Data minimisation; Accuracy; Storage limitation; Integrity and confidentiality; and Accountability.

There are four key components of GDPR - Data Protection Principles; Rights of Data Subjects; Legal Bases for Data Processing; Responsibilities and Obligations of Data Controllers and Processors.

OECD Recommendations on AI

A critical document outlining the international principles and standards has been set forth by the Organisation for Economic Co-operation and Development¹⁷. The OECD.AI Network of Experts developed the OECD Framework for Classifying AI Systems as a tool for policy-makers, regulators, legislators and others so that they can assess the opportunities and risks that different types of AI systems present and to inform their national AI strategies. The Framework links the technical characteristics of AI with the policy implications set out in the OECD AI Principles.

The framework allows users to zoom in on specific risks that are typical of AI, such as bias, explainability and robustness, yet it is generic in nature. It facilitates nuanced and precise policy debate. The framework can also help develop policies and regulations, since AI system characteristics influence the technical and procedural measures they need for implementation. In particular, the framework provides a baseline framework to help support and advance a common understanding of AI, and metrics; registries or inventories of AI systems; sector-specific frameworks, e.g. in healthcare; and risk assessment, incident reporting and risk management.

NIST AI Risk Management Framework

The NIST AI Risk Management Framework is a set of guidelines developed by the National Institute of Standards and Technology (NIST) to help organisations identify and manage the risks associated with artificial intelligence (AI) technologies. It provides a structured approach to assess and mitigate potential risks related to AI implementation, including considerations for data quality, security, transparency, interpretability, reliability, and accountability. The framework aims to support organisations in effectively integrating AI systems into their operations while minimising potential negative impacts.

The National Institute of Standards and Technology has published a comprehensive guide to understanding and managing AI-related risks.¹⁸

Centre for Information Policy Leadership (CIPL)

The Centre for Information Policy Leadership (CIPL) is a global privacy and data policy think and do tank based in Washington DC, Brussels and London. CIPL works with industry leaders, regulatory authorities and policy makers to develop global solutions and best practices for privacy and responsible use of data. In October 2023 CIPL published a white paper entitled Ten Recommendations for Global AI Regulation¹⁹.

¹⁷ <https://oecd.ai/en/wonk/classification>

¹⁸ <https://nvlpubs.nist.gov/nistpubs/ai/nist.ai.100-1.pdf>

¹⁹ https://www.informationpolicycentre.com/uploads/5/7/1/0/57104281/cipl_ten_recommendations_global_ai_regulation_oct2023.pdf

The challenges of AI regulation

AI regulation faces several challenges, including the rapid pace of technological advancement, the complexity of AI systems, and the need for international cooperation due to the global nature of AI development and deployment. Additionally, there are concerns about the ethical and societal implications of AI, such as bias in AI algorithms, privacy violations, and job displacement. Striking a balance between fostering innovation and ensuring responsible use of AI is a key challenge for regulators. Moreover, the lack of universal standards and differing regulatory approaches across countries further complicates the task of creating effective AI regulation.

The rapid pace of technological advancement presents challenges for AI regulation because laws and regulations often struggle to keep up with the fast-evolving capabilities of AI. As a result, regulators may find it difficult to anticipate and address potential risks and societal implications of new AI applications.

The complexity of AI systems also poses a challenge, as understanding and effectively regulating these systems can be daunting. AI technologies often involve intricate algorithms and are capable of autonomous learning, making it challenging to predict their behaviour and potential consequences. Because AI is a multi-faceted capability, “one-size-fits all” regulation will over-regulate in some instances and under-regulate in others. The use of AI in a video game, for instance, has a different effect—and should be treated differently—from AI that could threaten the security of critical infrastructure or endanger human beings. AI regulation, thus, must be risk-based and targeted.

The ability to implement universal regulation on a global basis is yet another challenge but the need for international cooperation is essential due to the global nature of AI development and deployment. Coordinating regulation across different countries and regions is critical to ensure consistency in standards and address cross-border issues, such as data privacy and international AI governance.

There is a first mover advantage to regulation. Thanks in large part to the interconnected nature of 21st century networks, the government that establishes the first set of rules defines the discussion from that point forward for all nations. The classic example of this is the European Union’s 2018 General Data Protection Regulation (GDPR), which has become the standard for privacy policy around the world. It also appears as though the EU, which has been in the lead in establishing digital platform policy with its Digital Markets Act and Digital Services Act, is also in the lead on establishing AI policy with the EU AI Act.

The lack of universal standards and differing regulatory approaches across countries further complicates the task of creating effective AI regulation, as harmonising these standards and approaches is crucial for addressing global challenges associated with AI technologies.

Ethical and societal implications of AI, including bias in AI algorithms, privacy violations, and job displacement, are significant regulatory challenges. Addressing these concerns requires careful consideration and potentially new regulatory frameworks to ensure the responsible and ethical development and deployment of AI technologies.

Balancing the promotion of innovation with the need for responsible use of AI is a key challenge for regulators. Striking this balance requires regulation that fosters innovation while also safeguarding against potential harms and ensuring that AI benefits society as a whole.

The ecological impacts of AI and potential regulation

AI has both positive and negative impacts on the global ecology. On the positive side, AI can help monitor and manage ecosystems more effectively, leading to better conservation efforts. It can also optimise resource use, leading to more sustainable practices in various industries like agriculture and energy.

However, there are also concerns about the potential negative impacts of AI on the environment and if AI systems are not implemented thoughtfully, there is a risk of exacerbating existing environmental issues or creating new ones.

Overall, the impact of AI on the global ecology depends on how it is developed, deployed, and regulated. It will be important to consider the environmental implications of AI technologies and manage them in a way that benefits both society and the planet. Some potential negative impacts of AI on the global ecology include:

Energy Consumption: Training and running AI models require significant computational power, which in turn consumes a large amount of energy. This could lead to an increase in carbon emissions, especially if the energy used comes from fossil fuel sources.

E-waste: The rapid advancement of AI technology leads to a shorter lifespan of devices as newer, more efficient models are developed. This can contribute to an increase in electronic waste, which if not managed properly, can harm the environment through pollution and resource depletion.

Unintended Consequences: AI systems may not always consider the long-term environmental impacts of their decisions. For instance, an optimisation algorithm focused on maximising productivity in agriculture may lead to overuse of resources like water and soil, ultimately harming ecosystems.

Data Centre Impact: Data centres that power AI computations can have a significant environmental impact. They require cooling systems to prevent overheating, leading to high energy usage. Additionally, the disposal of electronic components from data centres can pose environmental challenges.

Biodiversity: AI systems used in industries like mining, logging, or fishing can impact biodiversity if not properly regulated. Automated processes may lead to overexploitation of natural resources, disruption of ecosystems, and loss of habitats for various species.

Addressing these potential negative impacts requires careful consideration, regulation, and the development of AI technologies with sustainability and environmental consciousness in mind. Striking a balance between technological advancement and ecological preservation is essential for mitigating these risks.

To prevent the negative environmental impacts of AI, various regulations and guidelines can be implemented including:

Energy Efficiency Standards: Implementing energy efficiency standards for AI hardware and data centres can help reduce the energy consumption associated with AI technologies. This can include requirements for energy-efficient design, use of renewable energy sources, and proper cooling mechanisms.

E-waste Management: Regulations on e-waste management can ensure proper disposal and recycling of electronic components used in AI systems. This can help reduce the environmental impact of discarded AI hardware and minimise the harm caused by electronic waste.

Sustainable Development Goals: Aligning AI development with the United Nations Sustainable Development Goals can guide the use of AI technologies toward more sustainable practices. This includes goals related to climate action, sustainable cities, responsible consumption, and life on land and in water.

Transparency and Accountability: Regulations that promote transparency and accountability in AI development and deployment can help mitigate unintended environmental consequences. This can include requirements for disclosing data sources, algorithms used, and potential environmental impacts of AI systems.

Environmental Impact Assessments: Requiring environmental impact assessments for AI projects, especially those with potentially significant ecological consequences, can help identify and address environmental risks before implementation. This can ensure that AI technologies are developed and deployed in a way that minimises harm to the environment.

By implementing these and similar regulatory measures, policymakers can help mitigate the negative environmental impacts of AI and promote the development of sustainable and environmentally conscious AI technologies.

The impact of regulation on Management Consultant AI activities and tools

AI regulation will have a significant impact on the tools and techniques used by management consultants. For example:

Limitations on Data Usage: Regulations may restrict the types of data that can be collected and used, potentially affecting the depth and breadth of data available for analysis by management consultants.

Transparency and Explainability: Regulations may require AI systems and algorithms to be transparent and explainable, which could impact the use of certain complex AI models that are difficult to interpret.

Compliance and Ethical Considerations: Management consultants may need to ensure that their AI tools and techniques comply with regulations related to privacy, security, and ethical use of AI.

Adaptation and Innovation: As regulations evolve, management consultants may need to adapt and innovate their AI tools and techniques to meet compliance standards, potentially leading to new approaches and developments in the field.

Overall, AI regulation is likely to influence the development and application of AI tools and techniques in management consulting. As has already been shown in this paper, there will need to be a balance between innovation and compliance with legal and ethical requirements.

Management consultants will need to adapt to these changes by acquiring new skills, understanding the capabilities and limitations of AI, and integrating AI seamlessly into their consulting frameworks. This may involve training in data science, AI technology, and continuous learning to stay abreast of AI developments and best practices. Ultimately, the effective integration of AI can position management consultants to deliver more impactful and value-added services to their clients. [\(extract from a ChatGPT conversation\)](#)

Correlation between AI regulation and ICMCI Code of Conduct

The ethical standards required for the deployment of AI are interconnected with the ICMCI (International Council of Management Consulting Institutes) Code of Conduct in several ways. Both emphasise the importance of transparency, accountability, and fairness in decision-making processes. The ICMCI Code of Conduct promotes ethical behaviour, integrity, and the responsible use of knowledge and skills, which aligns with the ethical considerations for AI. Additionally, ethical standards for AI deployment often involve considerations related to privacy, security, and the impact on individuals and society, which are also addressed in the ICMCI Code of Conduct. Ultimately, both ethical standards for AI deployment and the ICMCI Code of Conduct aim to ensure that the use of technology and consulting services benefits individuals and organisations while upholding ethical principles. [\(extract from a ChatGPT conversation\)](#)

Self-regulation recommendations for the profession and ICMCI

The International Council of Management Consulting Institutes (ICMCI) could regulate the use of AI for management consultants by establishing guidelines, standards, and accreditation criteria specific to AI-enabled consulting practices. Here are some potential approaches for ICMCI to regulate the use of AI:

AI Ethics Code: ICMCI could update its Code of Conduct to specifically address the responsible and ethical use of AI in management consulting. The code could outline principles for ensuring transparency, fairness, privacy protection, and accountability in AI-driven consulting services.

Certification and Training: ICMCI could introduce specialised certifications for management consultants who incorporate AI into their practice. This could involve training programs that address the ethical considerations, best practices, and potential pitfalls of using AI in consulting engagements.

Quality Assurance Standards: ICMCI could establish quality assurance standards for AI-powered consulting engagements, encompassing criteria related to data privacy, bias mitigation, explainability of AI-driven insights, and client transparency.

Oversight and Compliance Review: ICMCI could implement oversight mechanisms to review and ensure compliance with their AI regulations. This might involve periodic audits of AI-driven consulting projects to assess adherence to ethical guidelines and standards.

Industry Collaboration: ICMCI could collaborate with AI and ethics experts, industry stakeholders, and regulatory bodies to stay informed about emerging best practices and regulatory developments in the AI space, updating its guidelines, as necessary.

By taking these steps, ICMCI could play a pivotal role in promoting the ethical and responsible use of AI within the management consulting profession, fostering trust among clients while ensuring that consultants leverage AI in ways that align with the highest ethical standards.

Final thoughts

AI regulation and standards are crucial aspects in the development and deployment of artificial intelligence technologies. Regulations should address ethical concerns, prevent potential harm, and ensure accountability in AI systems. Key areas of focus include data privacy, transparency, bias mitigation, and accountability.

Governments and international organisations have started implementing regulations to govern the use of AI. For example, the European Union's General Data Protection Regulation (GDPR) has already set guidelines for data privacy and protection, impacting AI development and the EU AI Act provides the baseline for hard law to regulate AI systems. Additionally, organisations like the IEEE and ISO work on developing standards for AI systems to ensure interoperability and safety. But there is a great need for international cooperation to make regulation effective, especially in the areas of monitoring and enforcement.

Challenges in AI regulation include the fast pace of technological advancements, the complexity of AI systems, and the need for global cooperation. Issues like bias in algorithms, data security, and autonomous decision-making raise concerns that need to be addressed through appropriate regulations. However, there needs to be a balance between innovation and regulation and regulations will be more acceptable and adopted if based on principles rather than prescription.

Overall, AI regulation and standards play a crucial role in shaping the responsible and ethical use of artificial intelligence to maximise its benefits while minimising risks to society.

As far as the work of management consultants is concerned AI just converts large volumes of data into useful information and generates outputs very quickly, which can enable better decision making and advice. AI can be seen as a multiplier and it's neutral. If basic ethical and professional systems are effectively and robustly in place, AI is not a potential enemy but a useful tool. Conformity to Standards and Compliance with Regulations is the watchword!

SECTION 4: USE CASES - AI IN ACTION



This Section of the document, entitled "Use Cases - AI in Action," explores various practical applications of artificial intelligence within the field of management consulting. It delves into scenarios where AI has the potential to replace or augment human roles, with specific examples across different industries such as energy, financial services, and healthcare, illustrating AI's impact on enhancing efficiency, decision-making, and service delivery. The section also discusses the potential risks and ethical considerations, highlighting the balance between technological advancement and human expertise, and emphasises the ongoing need for management consultants to adapt and learn from AI-driven transformations in the industry.

Is AI Technology on the Verge of Displacing Humans?

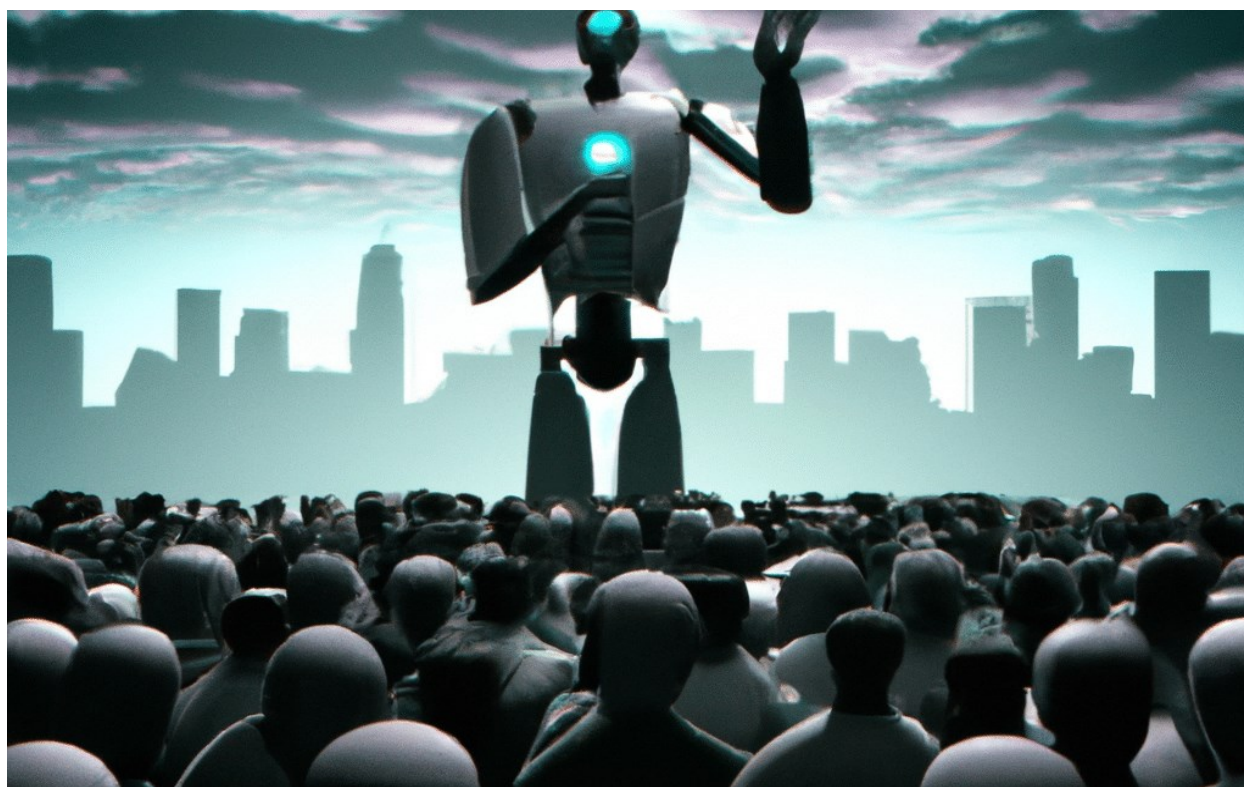
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According to headlines and news commentators, life as we know it is about to change dramatically. AI would seem to be on the verge of displacing humans completely. Check these out:

- Global AI experts sound the alarm in unique report – University of Cambridge
- The AI Arms Race Is Changing Everything – Times Magazine
- How to Survive the A.I. Revolution – Stanford University
- The AI Revolution Is Happening Now – Forbes

- The AI industrial revolution puts middle-class workers under threat this time – The Guardian

Perhaps most startling, Digitaltrends published an article, GPT-5 could soon change the world in one incredible way, which claims that the next iteration of ChatGPT will achieve AGI, or ‘artificial general intelligence’.

Now hang on a minute!!!

First let’s get some terminology in place.

AI is the abbreviation for Artificial Intelligence. AI describes a form of intelligence demonstrated by machines. In other words, intelligence that is not human.

AI is therefore a very broad term that can describe everything from my Waze App telling me to change routes to avoid a traffic slowdown, to the science-fiction-described, self-aware robots that rule a galaxy far, far away.

AGI, Artificial General Intelligence, sometimes referred to as General Artificial Intelligence, describes a form of intelligence that would be indistinguishable from human intelligence.

Augmented Intelligence?

My own personal preference for a term for the artificial forms of intelligence we see now is Augmented Intelligence. Humans have done an incredible job of designing software and hardware components that bring information to one’s fingertips in amazing ways. The availability of information is augmenting our human intelligence.

- What time is it in Singapore?
- Where is the closest pizza place that is open?
- How old was Elvis when he died?
- How many US dollars are there in 197 Euros?
- What is the fastest way to drive home?

I no longer have to remember phone numbers, addresses, or carry a briefcase full of papers.

Research for a term paper? Google can find the latest and most relevant research papers.

ChatGPT is a huge step forward. It has taken the world by storm because it has moved the information gathering and presentation to the next level.

Rather than serve up a list of available information sources, as do search engines, it uses deep machine learning to predict, based on your question, the most likely responses to that question. ChatGPT uses LLM (Large Language Model) to determine the most likely order of words that would be related to a question asked. Because of the size of the ChatGPT 3 model, a database of over 500 billion words passed through 175 billion parameters, the answers sound very human-like.

There is no question that the results are spectacular. Any piece of work that has been prepared based on the data set on which ChatGPT was trained is bound to be thorough.

But there is a catch. And it’s a big one.

Yes, ChatGPT has been trained on a very large data set. Yes, it can respond with accurate and extensive responses. But can also get things very wrong.

ChatGPT serves up the best answer to your question based on the way words have been used previously. After each word in its answer, it determines the next most likely word. The answer sounds human because the totality of words in the answer have been used that way before. The most common usage of those words is replicated in an order based on the analysis of the data from which the AI draws.

Of course, this is a simplification of a very sophisticated and complex process. But the bottom line is that the AI will follow the most predictable path based on the usage of words in the context of the question. That path may sometimes go down a rabbit hole.

Let us keep in mind – humans can also be very wrong.

Just as a professional should not blindly trust the report of a junior analyst, one should not blindly trust that the AI will get it right.

That brings us to the heart of this article.

As helpful as ChatGPT and related LLMs can be, will they replace humans for some or all work?

To answer this question, we need to first understand work.

The complexity of work

The starting point is that work can be classified by complexity.

Entry-level, salaried work is procedural work. It is work that can typically be done on a day-to-day basis. The work is either documented in a procedure or could be documented in a procedure. This is Level 1 work.

Think technical work: taxi driver, laborer, mechanic, baker, assembler, bookkeeper, brick layer, carpenter, call center operator, receptionist, and so on. Of course, the work required by these jobs varies in complexity as well. For example, unskilled work such as day labourer also fits in this category. They all have the common denominator that the work follows a pattern and can be documented in a procedure. The worker has a finite number of choices to successfully complete the work.

The number of choices can be large, but they are part of a decision tree. Think of that big old oak tree – it has many, many branches but there is a path to the end of each. There are a finite number of choices.

The next level of work is not concerned with following a procedure. It is concerned with creating and continuously improving procedures. The choices available to the worker are not finite – they are infinite. This is level 2 work.



Workers at this level must use their diagnostic capability to identify the information they will draw upon for decision-making, analyze this information, and use their judgment and creativity to find the best solution for their unique situation.

This work is carried out by managers of front-line workers and professionals: nurses, doctors, engineers, lawyers, management consultants, people-managers, teachers, architects, detectives, dentists.

The [science of organization design](#) describes up to eight levels of complexity of work, which can be found in the world's largest, most complex organisations. For our purposes in this article, we

need to only think about the first two levels, which demonstrate the difference between procedural work with finite choices and diagnostic work with infinite choices.

Understanding the science of [organization design](#) is important to understanding how complexity of work can be used to create layers inside organisations.

To date, AI has made inroads into the work of front-line workers, in other words, work with finite choices that can be documented into a procedure.

Many assembly lines that had been staffed with workers doing mindless, repetitive work have been replaced by robots.

Much of the highly procedural work of bank tellers has been replaced by automated tellers and online banking.

Many bookkeeping tasks have been automated by apps that manage receipts and documents, capturing the relevant information and preparing it for accounting systems.

Are LLMs such as ChatGPT about to now take over work carried out by professionals? This is the big question before us. To answer this, we need to think about the capability of humans to do work.

Human Capability.

For work to be successfully completed, people need to have the capability to do that work.

As a management consultant, my work includes helping my clients put in place systems that will help hiring managers match the capability of people to the complexity of work.

The most common mistake in hiring is made when the most successful front-line employee is promoted to be the manager of the team. For example, the sales manager of a sales team leaves the organisation. The common assumption is that the best salesperson should manage the team because that 'magic' will be used to transform the remaining team members to be better salespeople.

That best salesperson doing level 1 sales may have been ideally suited to following the sales procedures. They may not have the diagnostic capability to creatively solve problems that have an array of infinite solutions. If they do not have this diagnostic capability, they will not be successful as the manager of the team.

Managing a team of front-line workers is more complex than doing the front-line work.

Managing a function comprising several teams of frontline workers is more complex than managing one team of workers.

Managing a department comprising several functions, is more complex than managing a function.

Managing a whole organisation is even more complex.

This human capability – I call it [problem solving capability](#) – describes how one processes information to successfully work at higher levels of complexity. The level at which one can successfully solve problems is attained through a maturation process that all humans go through.

Each of us at any point in our lives has the capability to solve problems at a certain level of complexity. To solve problems in a higher order of complexity our brains must mature ability to be able to solve problems at that level.

We cannot be taught to successfully work at a higher level of complexity. Just as we cannot decide how tall we will be, we cannot simply decide to solve problems at a higher order of complexity. The clerk in the mailroom may mature over time to have the capability to run the company, and this does happen. But not all clerks become CEOs.

The best salesperson may not be successful as the team manager this year, but next year they may be. It is a matter of maturation. (And, of course, many other factors that we are not discussing in this article.)

The Limits of AI

What we have seen so far is that AI is very, very good at analysing and ordering vast amounts of data. All of the data in an AI's data set is available to it at the same time, and the AI can access and use that data in appropriate ways.

ChatGPT was trained on a 45 terabyte database. This is equal to over 500 billion words. The access to knowledge is amazing. Every time I use ChatGPT I am impressed by its ability to bring human-sounding text together in a helpful way.

ChatGPT is not new. The algorithms behind ChatGPT have been around for a long time and have been implemented commercially in many forms. But ChatGPT 3 is leading edge, and ChatGPT 4 is going to be another big step forward.

The ability of AIs like ChatGPT to gather and arrange information in increasingly human-like ways will continue. The tool will therefore become even stronger as time goes on.

But can an AI be taught to solve problems at the higher order of complexity? Can an AI be trained to use a diagnostic capability?

My answer is - No, not in the foreseeable future.

ChatGPT has been trained on a finite amount of data. Whether it was trained on 500 billion words or ten times that, it has been trained on information that currently exists.

It is impossible for ChatGPT to provide a response that has not already been thought of and written down. ChatGPT cannot provide new information. It can only package and produce information in ways that the information is typically thought of and used.

By the very nature of the fact that the data it trains on needs to be identified and compiled, the data is at least a year old. ChatGPT 3, released in 2022, was trained on data collected in 2020.

So, at this point, an LLM model not only cannot provide a new way of thinking of things, it can only provide you with the latest thinking that is a year or two out of date.

AI and the Professions

What does this mean to professionals?

The essence of professional work cannot be replaced by AI. It cannot be replaced by an algorithm such as ChatGPT in any of its iterations because the algorithm cannot create knowledge. It cannot come up with anything new.



The creation of new knowledge is in the domain of humans. Humans can take existing knowledge, and using their diagnostic capability come up with different and new ways of thinking about things.

ChatGPT is ground-breaking because it serves up information in easy-to-understand language and presents (usually) the best way of doing something or thinking about something. It is existing knowledge that has been developed and used previously. But to the extent that this knowledge is new to us, it can be very helpful.

Stories abound on how ChatGPT:

- wrote programming code in minutes that would take a programmer days.
- created a branding solution and strategic plan for a new business concept.
- wrote the code for a web site based on a sketch.
- Wrote a PhD thesis.

These are all great starting points. But we must remember that all of this information already existed. The questioner is being fed a compilation of the most likely responses to the question based on the data on which it has been trained.

So yes, this can be extremely helpful to the person asking the question. Instead of getting thousands of hits from Google that need to be reviewed and sorted, ChatGPT does the tedious work of sorting through the information for you and organising it into human-sounding language.

This technology can also be helpful to the professions.

Those repetitive, procedure-driven parts of a profession can and should be automated so that professional services are more readily available and inexpensive.

For example, most wills are already available online. But the professional expertise of a lawyer is needed for complex estates when there is no straight forward solution.

AI diagnostics can help people understand their medical symptoms. Some can be self-treated, but some need the diagnostic expertise of a medical professional if the array of symptoms is not straight forward.

The CEO of an organisation may be able to get some insights into performance issues, but complex problems can be addressed by a management consultant who can recommend solutions in that unique situation.

What does ChatGPT have to say?

It seems only fitting that ChatGPT should have a say in this article. Here is what ChatGPT answered when I asked this question:

Is ChatGPT capable of replacing the work that is carried out by professionals such as doctors, lawyers and management consultants? Please take into account the diagnostic capability required for root cause analysis vs automating work that can be documented in procedures.

“As an AI language model, I can provide information and insights on a wide range of topics, including those related to professions such as medicine, law, and management consulting. However, I cannot replace the work of professionals in these fields as they possess unique skills and expertise that cannot be replicated by an AI system.

“In the case of doctors, the diagnostic process requires not only knowledge of medical procedures but also the ability to analyze a patient’s symptoms, history, and test results to arrive at a diagnosis. This requires not only technical knowledge but also empathy and communication skills that are critical for building trust and understanding with patients.

“Similarly, lawyers and management consultants must use their expertise and judgement to identify and solve complex problems. This requires not only technical knowledge but also strong analytical and communication skills, as well as the ability to work collaboratively with clients and stakeholders.

“While some tasks within these professions can be automated and documented in procedures, such as administrative tasks like data entry and record-keeping, the more complex tasks require a human touch. For example, legal and management consulting services involve advising clients on strategic decisions and providing recommendations that take into account the unique circumstances and context of the client’s situation.

“Moreover, root cause analysis is a complex process that requires deep understanding of the problem and the underlying factors that contributed to it. While AI can provide data and insights, it cannot replicate the experience and expertise of a human professional in identifying the root causes of a problem and developing effective solutions.

“In summary, while AI systems like ChatGPT can provide assistance and insights, they cannot replace the work of professionals in fields such as medicine, law, and management consulting. These professions require a combination of technical knowledge, critical thinking, and human judgement that cannot be replicated by an AI system.”

The Dangers of AI

You have a problem. You describe it to ChatGPT and ask for a solution. The solution sounds pretty good. So, you implement it. All good, right?

Maybe yes. But maybe not.

As a professional management consultant, I would probably be stretched to improve on what ChatGPT says about the problem solution. This shouldn’t be a surprise. The answer should reflect the most common thinking that has been written down about that particular problem.

We all like to think that our problems are unique, but generally there are a lot of other people that have struggled through the same issues.

In most cases hundreds, or maybe thousands, of people have dealt with the same set of symptoms that have led to your problem. Their solutions are reflected by the algorithm which reflects the most common solutions documented in the over 500-billion-word dataset that ChatGPT trained on.

The danger comes in what ChatGPT did not say.

The answer to the problem will reflect the typical response.

Will that typical response apply in your unique situation?

More to the point, have you correctly described the problem you are facing, or have you described the symptoms of a problem?

This is what root cause analysis is all about. Rather than deal with solving the symptoms, the analysis needs to take into account what is happening beneath the surface to identify causal issues.

This is analogous to a person with a fever taking an aspirin. The aspirin will reduce the fever. But has the underlying cause been treated? If not, the fever will return.

If you go to a doctor because you are really unwell, do you want the doctor to give you the typical solution that was applied to most people a couple of years ago? Or do you want the doctor to listen to your description of the symptoms, ask questions to get below the surface, combine this information with your unique background and recent activities, and then provide you with a personal diagnosis uniquely suited to you?



It is exactly the same in organisations.

Too often, the symptoms are identified and treated, often at great expense, only to reappear a few weeks or months later.

For example, teams of people are often sent away on retreats to get to know each other in order to reduce interdepartmental tensions. But the lack of clarity in cross functional accountability and authority will continue to cause workflow issues and the resulting conflict. The root cause is not that employees don't get along. The root cause is that the accountability workflow systems and transitions are not set up properly. The team members may come back knowing each other better. Perhaps even liking each other. But the work conflict will still be there.

The Ethics of AI

We need to understand what these tools are and how they can be used. There are tremendous efficiencies that can be gained from the use of this technology.

On March 29, 2023 a group of over 1,000 artificial intelligence experts and industry executives published an open letter asking for a six-month pause in developing systems more powerful than OpenAI's newly launched GPT-4.

This fear is not about AI overtaking human intelligence. This fear is about how this extremely powerful technology may be misused. The letter asks this question: "Should we let machines flood our information channels with propaganda and untruth?" and asks for investments in AI governance systems.

The next day, March 30, 2023, the Centre for AI and Digital Policy in the US has asked the FTC to stop OpenAI, the developers of ChatGPT from releasing new GPT models. They state that the

models are “biased, deceptive and a risk to public Safety”. They also seem to be concerned about malicious code and propaganda.

There continues to be ongoing discussion in the media about AI. Some of it provides good information on what AI is and how it can be useful. Unfortunately, much of it is inflammatory. This type of misinformed and exaggerated information about the evils of AI are unfortunate.

Recently I saw a video where the videographer showed highlights of a lengthy conversation where the Chatbot begin to threaten the author. Remember – a Chatbot cannot come up with anything new. It can only reflect that which has been said by humans in the training material. As much as those who select the training material try to keep it clean and helpful, it is bound to reflect to some degree the dark side of humanity.

If an author can trigger a threat response from a Chatbot, it is because the Chatbot in its algorithm identified the most likely response to “those words” (an aggravating statement) was “these words” (a threat). The Chatbot is incapable of creating a new thought – it can only generate the most likely response that a human would give based on the training material.

Going forward, we as a Society need to think carefully about this good vs bad argument.

Can I use ChatGPT to write a blog? **Yes**. Most people probably wouldn’t be aware.

Should I use ChatGPT to write a blog? **Absolutely not**. I earn my respect as a professional because of the value I add, not because I know how to operate an AI. My job is not to regurgitate the ‘what is’. My job is to figure out how to impact the ‘what will be’.

It is the same for other professions. Should a lawyer use ChatGPT to generate advice for a client? Should a medical doctor use ChatGPT to generate a prescription for a patient? Should a PhD student use it to generate the text for a thesis? Obviously not. These are ethical breaches.

The good or bad of the use of this tool comes down to the ethics of the person using the tool.

People are already using information in unethical ways. I have seen many cases where a politician’s interview has been edited to completely alter the meaning. Software exists to put words into someone’s mouth that have never been said.

The increasing power of AI will give more ability to these bad actors to do things they should not.

We should be worried about ethics in society. We should be able to trust people to tell the truth. We should expect people to do the honorable thing. So yes, we should invest in governance systems around the ethics of conduct. But this is a broader issue than the governance of AI.

In Conclusion

AI has not reached a state of General Artificial Intelligence where machine-based algorithms can solve problems that are indistinguishable from humans.

Nor is it likely to.

Can AI help profession to be more effective?

Absolutely!

If I am suffering writer's block, I happily use my AI tool for inspiration.

If I am lost, I am very happy that my phone can guide me home.

If I am looking for inspiration, ChatGPT can be a good partner for brainstorming.

It would be wonderful, when it becomes affordable, to train a Chatbot on my firm's body of knowledge to answer the typical questions that a visitor to my web site might have.

AI and other advances in technology are enabling me to offer some services to clients at a fraction of the price of just a few short years ago. AI can be used in professions to automate certain aspects of services and many aspects of their back offices to provide greater value to clients.

These same advances in AI can be used to benefit Society at large. Partly through the way in which professional services can be offered more efficiently, i.e. better and cheaper. But also directly to make everyone's life easier.

Is there room for harm?

Yes.

It falls to us, as professionals, to lead the way. We need to set the example by using our ethical frameworks and codes of conduct to guide us in how these tools can be used to improve society.

ChatGPT AI mapped to the Digital Marketing Process

Contributing Author:



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Mapping AI to business models and processes in an effort to identify practical opportunities for AI to be implemented within SMEs in Ireland.

Business Process Transformation

In November 2022, AI was unleashed into the world via Open AI's deep learning model ChatGPT. Previous to this, Artificial Intelligence had been the domain of the few. Whilst AI consists of a wide range of technologies, Chat GTP has captured the imagination of the zeitgeist, for the first time it was open to any business, big or small, to leverage the advantages of AI. The issue was mapping where it could be used across the business model and how it might add value. (Enholm et al., 2022). Ransbotham et al (2018) divide AI adopters into four groups; 'Pioneers' (enterprises with extensive understanding and adaption rates), 'Investigators' (understand the subject but have limited adaption), 'Experimenters' (have limited understanding but have adapted) and 'Passives' (limited understanding and adaption). The focus of early corporate adaption was on operational efficiency. (Ransbotham et al 2018) For smaller organisations AI is yet another 'thing' to get to grips with. Whilst large business digital intensity across Europe is at 98% in 2022, the share for small business was 20 points lower than the EU pre-set 2030 targets at 69%. (Eurostat: 2022) Most European small businesses reported low or very low digital intensity levels. The same report recorded 8% of EU businesses using AI but with only 7% of small businesses using it. It is against this backdrop that the author decided to map AI to business models and processes in an effort to identify practical opportunities for AI to be implemented within SMEs in Ireland.

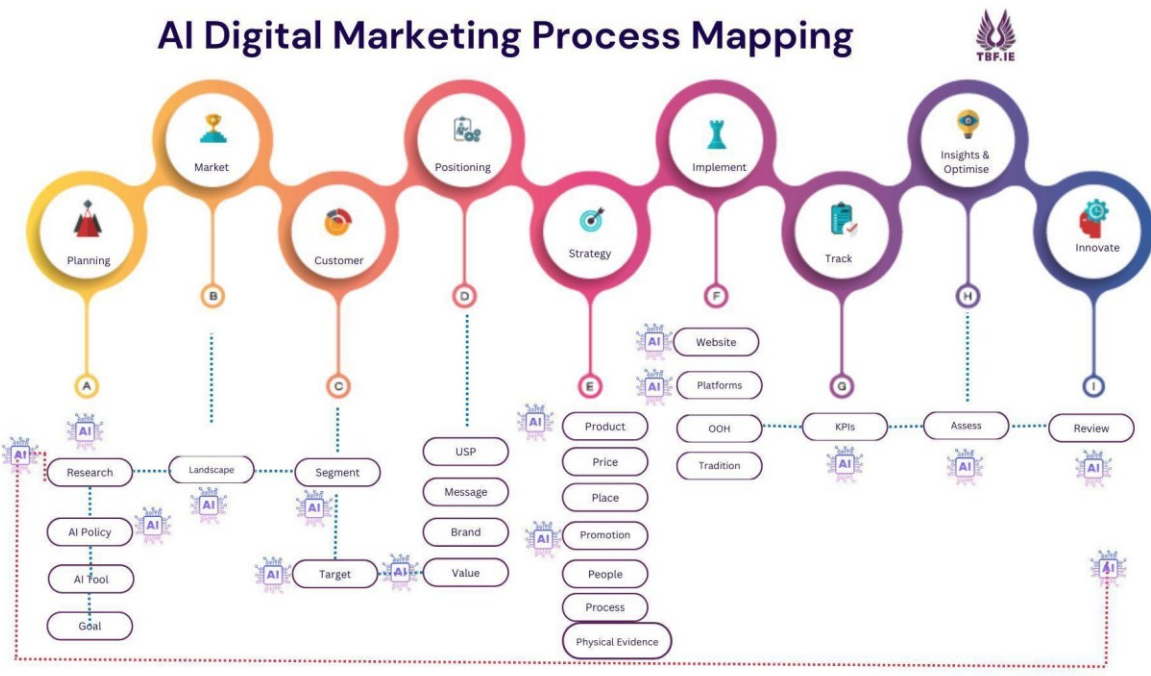


Fig 1 Mapping ChatGPT to the Digital Marketing Process

In many smaller traditional businesses, the mindset culture runs the opposite to the mindset required for AI. (Fountaine, McCarthy and Saleh, 2019) Part of the educational process would have to involve preparing the small business owner/team by embedding the idea of going from risk averse to agile and experimental. (Fountaine, McCarthy and Saleh, 2019)

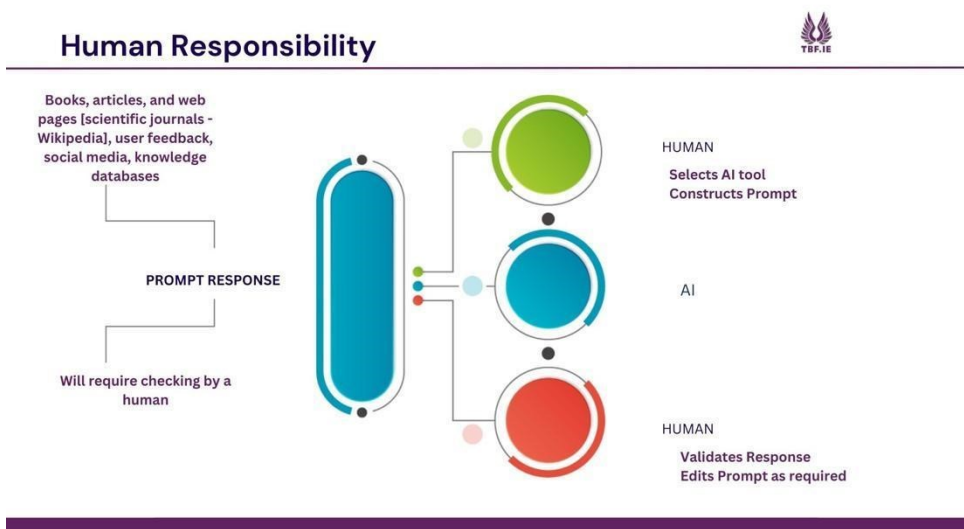


Fig 2 Human AI interaction as explained to the pilot cohort.

Research Methodology

First, following stakeholder consultation, a common tool had to be identified which was a common denominator across small SMEs. The criteria for this was to identify a technological solution that could address the needs of the cohort effectively, was cost effective, scalable, compatible with existing systems and could be adapted following training. The tool identified to be the most user friendly, adaptable, and showed the most promise for SMEs was the large language model, ChatGPT.

Protocol Development

Secondly, the system had to be tested to assess whether value could be gained by SMEs in an efficient manner. The research questions included ‘Through what mechanisms is AI value realised in an SME?’. The author first mapped and trained the system to a typical business model. Whilst it was found that there is a business use case for Marketing, Finance, Sales, HR, Operations, ESG and Growth Planning, (Enholm *et al.*, 2022) the most common need (and enabler) for the cohort was technical in digitisation and marketing. This was a feasible solution to the problem of automation and augmentation. The author then started to map the Digital Marketing Process to the ChatGPT AI system. It took 4 weeks to train the system to understand each step of the Digital Marketing Process and then another 3 weeks to train the system with prompts for each individual process. During this phase the following 5 step process was identified to ensure successful prompt responses; ‘Use Clear Language, Avoid Ambiguities, Specificity is Key, Be ethical, Be polite’.

Thirdly all answers were validated externally to ensure the data was correct and non-biased. During this time great care was taken to vote on the ChatGPT system with particular care being taken to give the ‘thumbs down’ for incorrect, biased or offensive answers. The learnings from this included the importance of educating small business owners as to the need to validate all data, check for bias, educate for limitations and hallucinations and stress the importance of ethics, morals and the need for human judgement. (Alkaissi and McFarlane, Feb 19)

ChatGPT AI Prompt Training Methodology

The ChatGPT (3.5) AI test system was prompt trained in 5 phase framework using the following process; Phase 1: market research, academic research with references (i.e the latest research on customer buyer behaviour), summarising books and articles, competitive research and analysis, audience segmentation, buyer personas, targeting audience locations (media channels). Phase 2: customer research, finding unmet customer needs, market analysis and opportunity identification, finding questions (frequently asked by the audience segment), and articles. Phase 3: the system was then trained to conduct further deeper analysis and identify market opportunities. During these phases the AI was trained to produce step by step instructions on the production of data analysis using the common tool Microsoft Excel followed by the preparation instructions for Microsoft PowerPoint (including instructions on relevant branding for various industries). Next the system was trained to produce a customer focused sales pitch, uncover customer pain points. Phase 4: the system was trained to create a business development plan and digital marketing strategy, 6 pillar content marketing plan, map the pillars to the customer journey map, 360 degree campaign, 3 month content calendar, email series of 3 follow on email campaign, LinkedIn InMail (specified to character length), website analysis, search engine optimisation, google knowledge panel.

Customer Journey Mapping

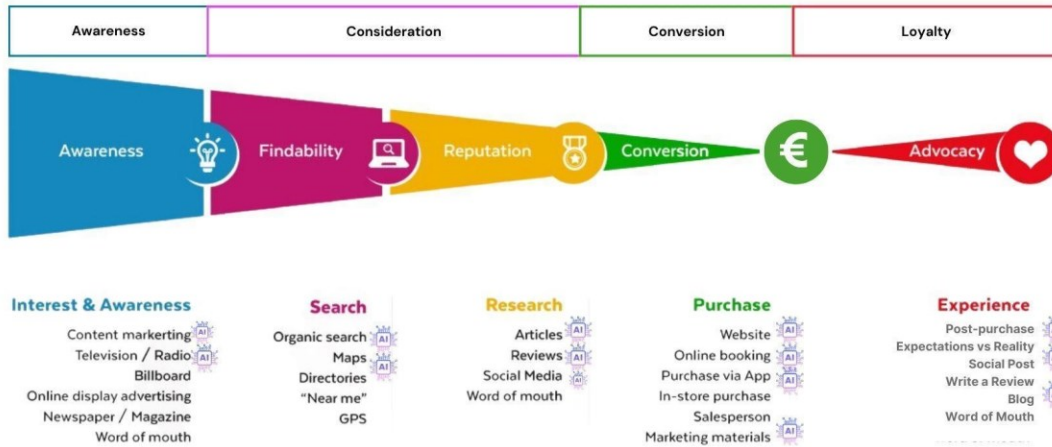


Figure 3 Customer Journey mapping to ChatGPT AI

Phase 5: For this phase the system was trained to create professional advertising campaigns for a specific target audience, advertising copy, advertising scripts, Facebook ads, Facebook hooks, Google Ads, Google Ads Headlines and hooks, Callout and Sitelink extensions, Hashtag strategy generation.

Chat GPT 3.5 Expanding Prompting Exercise



Thank you, this is my business: <http://www.hynesquinn.com/>. We want to attract more HGV learner drivers from the Dublin area.

Not specific enough prompt

Thank you for sharing your website and your specific goal of attracting more HGV (Heavy Goods Vehicle) learner drivers from the Dublin area. Here are some steps you can consider for your digital marketing strategy:

- Website Optimization:**
 - Ensure your website is user-friendly and mobile-responsive.
 - Optimize your website's speed and performance.
 - Create a dedicated landing page for HGV learner drivers in Dublin with clear and compelling content.
- Search Engine Optimization (SEO):**
 - Research relevant keywords related to HGV learner drivers in Dublin and incorporate them into your website's content.
 - Build high-quality backlinks from relevant websites in the transportation and edu.

Leads to high level type answers

Regenerate

Fig 4 Example of an early 'bad' prompt with high level answers.

Initially results were poor, with high level answers, but as the prompts were adapted and tweaked the system started to understand the prompts and produced detailed answers. It was tested with 12 different business types and use cases.





I want to start an online organic beauty line for teenagers (age group: 13-19 years) residing in Ireland. I am looking for specific information about their demography, both residents and foreigners. Act as a marketing research assistant and furnish all the information about the teenagers residing in Ireland.

Prompt Breakdown:

Business type:	Organic Beauty Line
Demographic:	Teenagers [13-19]
Location:	Ireland
Tell Chat GPT how to behave:	Act as a Market Research Assistant

Figure 5 Successful prompt for market research in a specific business context.

Results

SME Group 1

The process was then replicated with a training programme conducted remotely using Zoom and ChatGPT 3.5 over 5 by 2 hour sessions. Participants reviewed their business model to identify the roles and processes that can increase efficiency and productivity through the adaption of AI technology with regard to their Digital Marketing process. The author assisted participant companies with the mapping and training of their ChatGPT AI systems to allow the creation and adaption of new strategies, market research and implementation of tactics. There were 10 participant SME organisations that came from a range of industries including engineering, financial services and healthcare.

- The programme facilitated experimentation with AI and allowed participants to leverage its potential to drive growth, increase efficiency, reduce costs and gain a competitive edge for their business/organisation.
- Participants developed the skills to successfully prompt ChatGPT for digital marketing key processes enabling increased workload efficiency and potentially reducing staff costs.

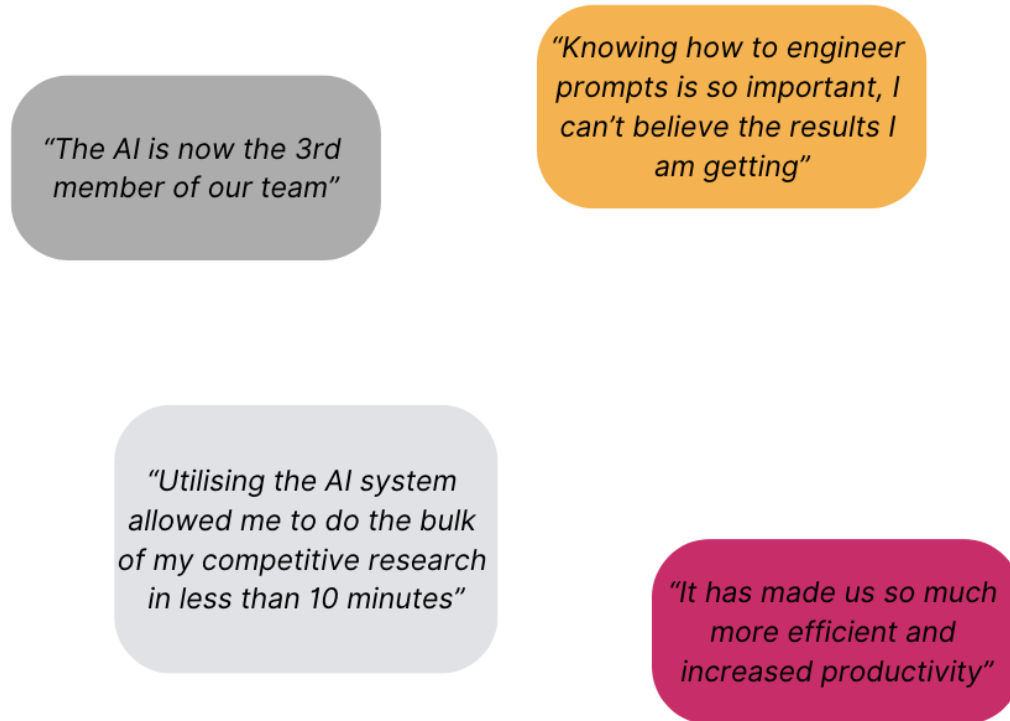


Fig 6 Participant Feedback

SME Groups 2 and 3

Following the success of the pilot programme another 20 companies were put through the same process. These groups included a mix of company size with 4 being considered micro or small and the remainder a mix of SMEs trading domestically and internationally. By session 4 all the ChatGPT AI systems had learned the instruction set and were producing the required information for each company size and type.

Key findings

- In today's dynamic digital landscape, harnessing the power of Artificial Intelligence (AI) has become paramount for achieving marketing success. By the end of the programme 100% of companies had introduced AI as an innovative process into their Digital Marketing Process.
- 83.4% of participants had implemented or were in the process of implementing an AI strategy with the other 16% doing so in the near future.
- AI offers a transformative approach to digital marketing process by seamlessly integrating into every stage of the process.
- At the forefront, AI aids in data analysis and segmentation, enabling marketers to understand customer behaviour with unparalleled precision.
- This invaluable insight is leveraged to create hyper-personalised content and targeted advertising campaigns, resulting in improved customer engagement and conversion rates.
- It facilitates predictive analytics, allowing businesses to anticipate market trends and consumer preferences, thereby gaining competitive advantage.

- Each participant was able to map their current process to the ChatGPT AI system.
- Ireland is a small market and for the smaller companies it was more difficult to get the system to understand and research niche markets. In some instances, this required editing the prompt to look at a bigger market in the UK and then asking it to compare it to the Irish market. This strategy worked.
- By session 4 all the ChatGPT systems had learned the instruction set and were producing the required information.

Conclusion

Overall, the research project underscores ChatGPT's AI's transformative potential in enhancing digital marketing practices for SMEs, contributing to their growth and adaptation in the digital landscape. This has positive implications for increase digital intensity across Europe as the replication of the process with SMEs through remote training sessions, resulting in increased efficiency and cost reduction in digital marketing processes.

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Deloitte AI Institute – Generative AI in Industries

The Deloitte AI Institute has published a document which explores the applications and benefits of Generative AI in a number of industries. Following is a summary of this document generated by ChatGPT.

Acknowledgement to the authors and leads of the publication:

- Beena Ammanath Global Deloitte AI Institute Leader, Deloitte AI Institute United States, Lead Deloitte Consulting, LLP
- Francisco Barroso Global Generative AI Market Activation Leader Deloitte Consulting LLP
- Sulabh Soral Deloitte AI Institute United Kingdom, Lead Deloitte United Kingdom

The full document can be accessed on the deloitte.com web site.

Consumer Industry

1. Content Generation (Marketing Content Assistant):

AI Use: Generative AI creates product descriptions, imagery, videos, and more, much faster and consistently. It can draw from multimodal data for personalized content and ensure regulatory compliance across geographies.

Benefits: Drives customer satisfaction and loyalty through tailored content based on language, region, and preferences. Enhances revenue growth through higher engagement and conversions, and cost efficiency in content development.

2. Market Intelligence:

AI Use: AI synthesizes extensive material for rapid market research, simulates market scenarios, generates synthetic data to fill gaps, and predicts customer preferences with cross-cultural insights.

Benefits: Cost-effective market research, reduction in traditional research methods' costs, and mitigation of risks. Identification of new market segments and improved understanding of consumer behavior and preferences.

Energy, Resources & Industrials

1. Supply Chain and Grid Efficiency:

AI Use: AI models predict supply chain risks, simulate and optimize scenarios, and enhance grid efficiency. They support conscious customer behavior in energy consumption and enable querying drone footage for monitoring.

Benefits: Improves supply chain resilience, reduces costs, enhances operational efficiency, supports integration of renewable energy sources, and provides dynamic demand response for better grid management.

2. Resource Exploration:

AI Use: AI identifies resource-rich areas using geological data and optimizes exploration efforts through seismic data analysis and reservoir characterization.

Benefits: Increased resource extraction efficiency, minimized environmental impact, and support for sustainable practices.

3. Asset Maintenance Planning:

AI Use: AI reconciles lessons from prior maintenance, develops strategies to minimize system impact, and optimizes maintenance schedules based on operational factors.

Benefits: Improved equipment uptime, reduced maintenance costs, and enhanced operational efficiency, supporting greater health and safety outcomes.

Financial Services

1. Automated Claims Reporting and Integrity Checks:

AI Use: AI automates the processing and verification of claims, using data analysis for fraud detection and processing integrity.

Benefits: Streamlines claim processing, enhances accuracy and customer satisfaction, and detects fraud, leading to cost savings and operational efficiency.

2. VR-Enabled Retail Banking Centers:

AI Use: Virtual reality and AI enhance customer interaction in banking, providing a more personalized and immersive service experience.

Benefits: Improves accessibility and customization of banking services, leading to better customer satisfaction and more efficient service delivery.

Government & Public Services

1. Open-source Intelligence Reporting (OSINT Reporting):

AI Use: AI synthesizes and summarizes vast amounts of open-source information, turning it into actionable intelligence.

Benefits: Saves time and resources, allowing analysts to focus on higher-level tasks, and improves the quality and speed of intelligence reporting.

2. Virtual Public Servant (Citizen Engagement):

AI Use: AI-powered virtual assistants provide personalized responses to citizen inquiries, improving information accessibility and decision-making.

Benefits: Enhances citizen engagement and service quality, provides efficient data-driven decision-making, and improves overall public service delivery.

Life Sciences & Health Care

1. Operational Performance Improvement:

AI Use: AI automates claims processing, optimizes R&D processes, and accelerates market readiness of healthcare products.

Benefits: Increases efficiency in healthcare operations, speeds up innovation, and enhances patient care.

2. Hyper-Personalized Patient and Customer Experience:

AI Use: AI tailors patient engagement content, offering innovations like virtual therapy and personalized care.

Benefits: Improves patient outcomes and care quality through targeted, personalized healthcare experiences.

Technology, Media & Telecommunications

1. Accelerating Efficiencies through Digitization:

AI Use: AI optimizes operational processes, aligns offerings with customer demands, and enhances customer engagement capabilities.

Benefits: Drives customer-centric business strategies, increases operational productivity, and introduces new customer engagement methods.

2. Risk Management in Networks:

AI Use: AI analyzes network data in real-time for anomaly and pattern detection, enabling automated responses.

Benefits: Enhances network stability, reduces downtime, and automates responses to network irregularities.

Each of these AI applications reflects a deeper integration of technology into core business processes, significantly impacting efficiency, customer experience, and innovation across industries. AI's transformative role is evident in optimizing processes, enabling data-driven decisions, and contributing to sustainability and safety in diverse sectors.

CEOs Explain How AI Will Super Charge Independent Management Consulting

In [this article](#) written by Jon Younger and published by Forbes, a total of 14 CEOs provided their perspectives on the near-term impact of AI on independent management consulting. They discussed client growth, client mix, projects, and implications for consultant skills and fees.

Here are the top takeaways from the article, focusing on the competitive landscape, pricing, service quality, and other common themes as summarized by ChatGPT:

1. Leveling the Competitive Field

AI is seen as an equalizer in the consulting industry, enabling independent consultants to compete effectively with larger firms. By providing tools and capabilities previously available only in well-resourced firms, AI allows independent consultants to deliver services at a comparable level.

2. Impact on Pricing and Fees

The introduction of AI in management consulting is expected to alter pricing structures. It may reduce the premium traditionally charged by larger consulting firms and enable independent consultants to adjust their fees competitively. This change is driven by the increased efficiency and capability brought about by AI.

3. Enhancement of Service Quality and Delivery

AI's role in automating administrative tasks and data processing allows consultants to focus on higher-value activities. This shift is anticipated to improve the quality of services offered, as consultants can spend more time on problem-solving, strategy development, and client interaction.

3. Need for Continuous Learning and Adaptation

There is a strong emphasis on the necessity for consultants to continually adapt and learn, keeping pace with the advancements in AI. This continuous learning approach is vital for leveraging AI tools effectively and staying competitive in the evolving market.

5. Human Expertise Remains Crucial.

Despite AI's growing role, the human element in consulting – such as critical thinking, creativity, and complex problem-solving – remains irreplaceable. Successful integration of AI in consulting will likely involve a synergistic relationship between AI tools and human skills.

6. Ethical Considerations and Collaboration

The growing prominence of AI also brings to light the importance of ethical stewardship and global collaboration. As AI reshapes consulting, there's a call for responsible use and management of AI tools, ensuring they are used to enrich knowledge and collaboration ethically and effectively.

In summary, AI is set to transform the consulting industry by leveling the competitive field, influencing pricing strategies, and enhancing service delivery. While it brings efficiency and new capabilities, the need for human insight and ethical considerations in AI implementation is also emphasized. The industry is moving towards a more collaborative model where AI tools supplement human expertise.

The Singularity — When We Merge with AI — Won't Happen

Thanks again to ChatGPT for this engaging summary of an article by Erik Larson at Mind Matters AI, he outlines several key points challenging the Singularity concept. Read the [full article here](#).

1. Incomparability of Human Brain and Machines.

Larson argues that the human brain and a machine are fundamentally different, implying that the analogy between brain and machine is flawed. This leads to an over-reliance on computer-based solutions which might not be the most effective approach for certain problems.

2. Era of Minimal Innovation:

He observes that recent technological advancements are largely extensions of existing technologies rather than groundbreaking new inventions. This suggests a stagnation in truly innovative thinking.

3. Misconception of Computing Power Leading to Consciousness:

Larson warns against the assumption that increasing the computational power of machines will eventually result in them becoming 'alive' or conscious. He emphasizes the uniqueness of human consciousness.

4. Malicious Use of AI as a Real Threat:

The article highlights the danger not in machines gaining consciousness but in their powerful capabilities being used maliciously by humans.

5. Critique of the Machine Model of the Mind:

Larson critiques the prevalent model of the mind that likens it to a machine, arguing for the need to acknowledge the distinctive qualities of human thought and culture.

For a detailed understanding of each of these points, you can read the full article [here](#).

100+ AI Use Cases & Applications: In-Depth Guide for 2024

Cem Dilmegani, Principal Analyst at AI Multiple Research published a guide of use cases [here](#).

Following is a summary of this comprehensive article generated by ChatGPT.

Based on the document "100+ AI Use Cases & Applications: In-Depth Guide for 2024," here is a summary of AI use cases, benefits, and examples for each of the 18 functions listed:

1. AI Use Cases for Analytics

Use Cases: Advanced data analysis, conversational analytics, e-commerce analytics, geo-analytics, image recognition, real-time analytics.

Benefits: Enhanced data interpretation, quick problem identification, meaningful insights, and time-efficient processes.

Examples:

- Automated Machine Learning (AutoML) streamlines model optimization.
- Image Recognition for deriving insights from image and video data.

2. AI Use Cases for Customer Service

Use Cases: Call analytics, chatbots for customer service, customer contact analytics, intelligent call routing.

Benefits: Improved customer satisfaction, efficient service, automated response systems, and better call management.

Examples:

- ING Bank observed a 15% increase in sales quality score after AI integration in contact systems.
- Chatbots handling customer queries and reducing service costs.

3. AI Use Cases for Data

Use Cases: Data cleaning & validation, data integration, data management, data preparation, synthetic data creation.

Benefits: Improved data quality, efficient data management, and enhanced data analysis capabilities.

Examples:

- Automated data validation using external sources.
- Synthetic data creation for testing and privacy protection.

4. AI Use Cases for Finance

Use Cases: Automated invoicing, employee monitoring, predictive analysis for finance management.

Benefits: Reduced human error, improved productivity measurement, better financial decision-making.

Examples:

- AI-enhanced invoicing procedures.
- Predictive analytics for financial trends and behaviors.

5. AI Use Cases for HR

Use Cases: Employee monitoring, hiring processes, HR analytics, performance management.

Benefits: Better hiring decisions, enhanced employee satisfaction, effective performance management.

Examples:

- AI-assisted recruitment processes.
- Analytics-driven HR decision-making.

6. AI Use Cases for Marketing

Use Cases: Marketing analytics, personalized marketing, context-aware marketing.

Benefits: Revenue growth, improved customer targeting, and efficient marketing strategies.

Examples:

- AI systems analyzing media activity for insights.
- Personalized marketing campaigns based on customer data.

7. AI Use Cases for Operations

Use Cases: Cognitive automation, robotic process automation (RPA), predictive maintenance, supply chain optimization.

Benefits: Increased efficiency, cost reduction, operational continuity, and better resource management.

Examples:

- Combining RPA with AI for process automation.
- AI-driven predictive maintenance systems.

8. AI Use Cases for Sales

Use Cases: Sales forecasting, lead generation, predictive sales scoring, sales content personalization.

Benefits: Enhanced sales accuracy, improved lead identification, and efficient sales processes.

Examples:

- Hewlett Packard Enterprise's 5x increase in forecast accuracy with AI tools.
- AI-based lead generation for targeted sales approaches.

9. AI Use Cases for Tech

Use Cases: No-code AI development, security analytics, knowledge management, natural language processing, image recognition.

Benefits: Accessible AI solution development, enhanced security measures, improved data retrieval, and processing.

Examples:

- AI tools for in-house development teams.
- Advanced security analytics for cyber threat detection.

10. AI Use Cases for Automotive & Autonomous Things

Use Cases: Driving assistants, vehicle cybersecurity, vision systems, self-driving cars.

Benefits: Improved safety, enhanced vehicle security, better driving experiences.

Examples:

- AI-powered vehicle perception solutions.
- Cybersecurity systems for autonomous vehicles.

11. AI Use Cases for Education

Use Cases: Course creation, tutoring.

Benefits: Enhanced educational content, personalized learning experiences.

Examples:

- AI-assisted course design.
- Customized tutoring systems using AI.

12. AI Use Cases for Fashion

Use Cases: Creative design, virtual try-on, trend analysis.

Benefits: Innovative fashion design, improved customer experience, market trend identification.

Examples:

- AI-driven fashion trend forecasting.
- Virtual try-on solutions for fashion retail.

13. AI Use Cases for FinTech

Use Cases: Fraud detection, insurance & insurtech, financial analytics, travel & expense management.

Benefits: Reduced fraud, efficient insurance processing, accurate financial analysis.

Examples

- AI-based system to monitor real-time transactions
- Robo-advisor platform for personal investment

14. AI Use Cases for HealthTech

Use Cases: Patient data analytics, personalized medications, drug discovery, real-time prioritization and triage, assisted diagnosis.

Benefits: Improved diagnostics, tailored treatments, efficient healthcare management.

Examples:

- Assisted diagnostics leading to lower mortality rates and higher patient satisfaction.
- Personalized treatment plans based on genetic profiles.

15. AI Use Cases for Manufacturing

Use Cases: Manufacturing analytics, collaborative robots (Cobots), robotics for factory floors.

Benefits: Enhanced production efficiency, reduced costs, automation of repetitive tasks.

Examples:

- Industrial analytics for optimized manufacturing processes.
- Implementation of Cobots for flexible automation.

16. AI Use Cases for Retail

Use Cases: Cashierless checkout systems.

Benefits: Enhanced customer experience, reduced operational costs.

Examples:

- Advanced AI sensors and systems for automated merchandise identification and billing.

17. AI Use Cases for Telecom

Use Cases: Network investment optimization.

Benefits: Improved Quality of Service (QoS), reduced churn, increased sales.

Examples:

- Machine learning for identifying high ROI investments in network infrastructure.

18. Other AI Use Cases

Use Cases: Various applications in diverse industries.

Benefits: Broad impact across sectors, innovation, and efficiency improvements.

Examples:

- AI in enterprise software automation.
- Data science applications for business insights.

This guide illustrates the vast and varied applications of AI across different functions and industries, showcasing how AI is revolutionizing the way businesses operate and delivering significant benefits in efficiency, effectiveness, and innovation.

Examples of Ethical Uses of AI in Management Consulting

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Incorporating Artificial Intelligence (AI) into management consulting heralds a transformative era in cognitive processes such as decision-making, problem-solving, and strategic planning. Through the combination of AI with traditional consulting methods, organisations can harness cognitive power for more informed and effective strategies. In other words, management consultants can let AI accomplish mundane tasks such as repetitive information processing, data scanning, and trend analysis while consultants focus on value added activities such as critical thinking and customer relationship development.

Enhanced Decision-Making through Data Analysis

AI revolutionises the range of decision-making by empowering consultants with swift and precise data analysis capabilities. For example, in the past, human interpretation was required to sift through and analyse data in a market research project. With the use of AI tools such as Jasper.ai, a consultant can combine human intuition and AI-driven insights to analyse the data which can advance the data analysis. AI can discern patterns and extract insights from vast datasets, such as hundreds of pages of research output. These insights create a data-driven foundation for decision-making processes that exceed the limitations of human judgment and incomplete information.

Automated Cognitive Tasks

Management consultants can automate routine cognitive tasks using AI tools so they can focus on higher order thinking endeavors. Routine tasks such as customising a client proposal or refining a project deliverable can be automated, affording consultants the bandwidth to immerse themselves in strategic ideation and innovative problem-solving. This cognitive shift fosters a climate of intellectual rigor and creativity within consultancy practices. Consultants can spend more time on value-added activities in their work.

Efficiency in Problem-Solving

Generative AI tools like ChatGPT can enhance problem-solving by evaluating multiple scenarios and potential outcomes. This can inform the consultant's thinking and approach. Consultants can explore different solutions in a fraction of the time it would traditionally take, using AI-driven models to navigate intricate business dilemmas. This acceleration in problem-solving efficiency empowers consultants to devise agile and adaptive strategies.

Real-Time Insights for Competitive Agility

In dynamic market environments, cognitive adaptability is paramount for maintaining a competitive edge. Generative AI tools can provide consultants with real-time insights and competitive input, enabling swift and evidence-based strategic adjustments. Combining AI with other tools such as a CRM can provide input about a firm's customers, their purchase patterns and competitive position. With these insights, consultants can guide their clients in operational, marketing and product development projects.

Navigating Challenges of AI

As AI tools and technology become increasingly embedded in existing technologies, there will be grey areas to consider. Certified Management Consultants (CMC®) agree to abide by a Code of Ethics and agree to be self-disciplined to monitor their behavior. The Code of Ethics is a framework that guides ethical and acceptable conduct in a way that upholds the values and integrity of the CMC® designation and ensures that the ethical expectations of the profession and its members is preserved. Acting with integrity and exercising diligence in the consulting services that they provide and the clients that they serve, management consultants should consider their AI usage policy. Developing clear AI frameworks and guidelines is a first step to addressing ethical and transparency concerns.

Finally, the incorporation of AI strengthens the cognitive foundation of management consulting by increasing the capacity for sound decision-making, effective problem-solving, precise forecasting, and real-time insights. But in order to fully capitalise on these cognitive advantages, consultants need to carefully manage obstacles and accept AI as a fundamental component of contemporary consulting processes.

Global Perspectives and Cross-Cultural Considerations

The article, "Overcoming Barriers to Cross-cultural Cooperation in AI Ethics and Governance," by Seán S. ÓhÉigeartaigh, Jess Whittlestone, Yang Liu, Yi Zeng, and Zhe Liu, explores the challenges and opportunities in fostering international cooperation in the realm of AI ethics and governance.

The full article [can be reviewed here](#). Following is a short summary prepared by ChatGPT.

The authors emphasize that the global benefits of artificial intelligence (AI) require collaborative efforts in setting governance and ethical standards while acknowledging cultural diversity.

Main Point

The primary argument is that achieving the full potential of AI globally necessitates international cooperation, particularly in establishing governance and ethical standards. However, there are significant barriers to this cooperation, including mistrust and practical challenges of coordination across different cultures, particularly between North America and Europe on one side and East Asia on the other.

Key Ideas

Barriers to Cross-cultural Cooperation on AI:

The article identifies mistrust between different regions, especially between the USA and China, as a significant barrier. This mistrust is attributed to political tensions, different philosophical traditions, and divergent views on issues like data privacy.

Practical barriers include language differences, lack of physical proximity, and immigration restrictions, hindering effective communication and collaboration.

Overcoming These Barriers:

The authors propose building greater mutual understanding, including around disagreements, to reduce mistrust. They argue that many conflicts are due to misunderstandings or lack of information rather than fundamental value differences.

They suggest that it is possible to cooperate on practical aspects of AI ethics and governance even where there are fundamental differences in values or principles.

Role of Academia in Promoting Cooperation:

Academia can play a crucial role by engaging in cross-cultural research collaborations, contributing to a global understanding of AI's impact, and developing frameworks for international sharing of AI research and data.

Recommendations include translating key documents into multiple languages, holding major AI conferences in different regions, and establishing joint research or exchange programs.

Looking Towards the Future

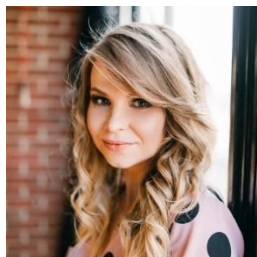
The authors call for further research on the barriers to cooperation, especially those related to power dynamics and political tensions, and the challenges posed by more advanced AI systems in the future.

Summary

In conclusion, the authors of "Overcoming Barriers to Cross-cultural Cooperation in AI Ethics and Governance" argue for the critical need for international collaboration in AI ethics and governance to fully harness AI's global benefits. While recognizing the challenges, including cultural mistrust and practical issues, they emphasise the potential for cooperation through building mutual understanding, engaging in academic collaboration, and focusing on areas where consensus is possible. The article highlights the importance of academia in bridging cultural gaps and contributing to a globally inclusive approach to AI development.

AI and Management Consulting: Revolutionizing Business Strategy

Source Author:



Anastacia Zharovskikh, Content Manager, InData Labs

Anastacia is a results-driven website copywriter and content manager. She's skilled in writing about AI and Data Science.

This summary, generated by ChatGPT has been reviewed by the author and approved for publication. published with the permission of the author. Read the [original article here](#).

The intersection of artificial intelligence (AI) and management consulting marks a revolutionary shift in strategic business guidance. AI excels in dissecting intricate datasets, offering consultancies enhanced analytical prowess and customised advice. This trend is accelerating, as organisations seek AI-aligned strategies to complement their unique objectives. AI's integration goes beyond mere tech adoption, playing a critical role in automating tasks and unearthing insights from extensive data, previously obscured.

The synergy of AI in consultancy is increasingly crucial for businesses requiring support in technology integration, focusing on amplifying operational efficiency and facilitating workforce adaptation to AI-centric environments. This technology's influence spans multiple consulting aspects, democratising service access and enriching methodologies. AI tools, especially in CRM and NLP, revolutionise client interaction and understanding, driving better outcomes.

However, AI hasn't eclipsed the human touch in consulting. Its contributions are more collaborative than substitutive, enhancing data analysis while consultants steer strategic decision-making and relational aspects. The amalgamation of AI insights and human ingenuity promises enhanced efficiency and client service.

Looking to 2024, management consulting is poised to further embrace AI, reshaping workflows and deepening insights, while retaining the indispensable human element in fostering client relationships. AI's ascendance streamlines tasks, allowing consultants to focus on high-level strategy and interpersonal engagement.

In summary, AI's foray into management consulting signifies a transformative era of augmented analytical capabilities and personalised strategies. While AI revolutionises data processing and solution generation, the nuanced, empathic qualities of human consultants remain vital. The industry's future lies in harmonising AI's analytical strengths with human consultants' strategic and relational skills, shaping a more adept, client-centric consulting landscape.

How Generative AI is Reshaping the Future of Business Management Consulting.

The following article is published by NeuralPit, without a specified author.

The company develops and deploys AI applications specifically fine-tuned for business professionals across a variety of domains.

Read the [original article here](#).

The article discusses the transformative impact of Generative AI on the business management consulting sector, highlighting its rapid growth and potential for revolutionising industry practices. The Generative AI market, valued at \$13.7 billion in 2023, is projected to soar to \$165 billion by 2032, demonstrating its increasing significance fueled by a 425% surge in venture capital investment from 2020 to 2022.

In the consulting industry, the adoption of Generative AI is redefining traditional roles by equipping consultants with advanced AI algorithms that enhance data analysis, streamline processes, and offer personalised client solutions. This shift moves the focus from merely offering recommendations to implementing actionable, strategic solutions across various domains such as digital transformation and cybersecurity.

Key inquiries within the sector include practical applications of AI tools like ChatGPT in routine consulting tasks, strategy development, and even in preparing for consulting interviews. These tools are not just facilitating the usual tasks but are also addressing challenges like data overload and the need for rapid, personalised client interactions, thereby enhancing the efficiency and effectiveness of consulting services.

The article outlines several benefits of integrating Generative AI in consulting:

AI-powered Data Analytics: This involves using AI to parse vast datasets quickly to uncover actionable insights, significantly reducing the time consultants need to spend on data analysis.

Process Inefficiency: AI tools help in streamlining analysis and reporting, which accelerates the decision-making process.

Personalisation Demand: Generative AI meets the growing need for customised client experiences by allowing for personalisation at scale.

Moreover, the potential impact of Generative AI in consulting is assessed across three dimensions: Immediate Integration, Strategic Implementation, and Long-haul Adoption, with varied levels of impact from low to high.

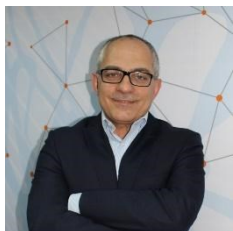
Generative AI's potential in consulting extends to automating complex data analysis, enhancing client onboarding and retention by personalising strategies, and streamlining operational efficiency. This integration represents a significant leap towards expanding the capabilities and scope of consulting practices.

The article also highlights the importance of navigating ethical considerations such as biases, accuracy, and intellectual property rights, ensuring that the adoption of Generative AI in consulting aligns with ethical standards and legal compliance.

In conclusion, by embracing Generative AI, consulting firms can position themselves at the forefront of a new era in digital transformation, empowering C-suite leaders with tools that enhance decision-making and strategic planning, thus reshaping the future of business management consulting.

The Transformative Impact of Artificial Intelligence

Contributing Author: **Ziad Al-Masri**



Marketing and business development professional with 20+ years of experience in product development and go to market strategies for mobile & internet products and services. Strategist and business developer, with a deep knowledge of the ICT sector including mobile operators, mobile apps/browsers, portals and technology startups.

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Artificial intelligence (AI) is reshaping the landscape of global industries, offering unprecedented opportunities for innovation and efficiency. As businesses across sectors integrate AI into their core operations, they unlock new potential for growth and competitiveness. The capabilities of AI extend from automating routine tasks to providing complex analytical insights that drive strategic decisions, fundamentally altering the way businesses operate.

According to the McKinsey Global Institute, AI has the potential to deliver additional global economic activity of around \$13 trillion by 2030, which would boost global GDP by about 1.2 percent annually. This growth is driven not only by productivity enhancements but also by the creation of new products and services that redefine markets.

Moreover, the adoption of AI is creating substantial competitive advantages, enabling companies to outpace their rivals in efficiency, innovation, and customisation. Industries such as agriculture, health, tourism, and consultancy are witnessing profound changes due to AI applications, which are tailored to meet specific operational and strategic needs. The following case studies illustrate the diverse applications of AI across these sectors and highlight the tangible benefits being realised.

Examples of AI in Use

AI in Crop and Soil Management: AI technologies linked with Internet of Things (IoT) help in analysing soil data to optimise planting strategies and enhance crop yields. For example, IBM's AgroPad is a technology that uses AI to perform real-time soil analysis. This tool provides farmers with data about soil conditions, helping to tailor fertilisation and irrigation practices that lead to increased productivity.

AI in Diagnostic Assistance: AI systems are increasingly used to assist in diagnosing diseases from imaging data. Google Health's AI model helps detect breast cancer from mammography images with a higher accuracy than human radiologists. Enhanced diagnostic accuracy and faster patient throughput resulting in significantly impacting patient outcomes and healthcare efficiency.

AI in Personalised Travel Recommendations: Travel platforms like Expedia and Booking.com use AI to analyse user behavior and preferences to offer personalised travel recommendations. AI algorithms consider factors such as past bookings, search history, and reviews to tailor suggestions that are unique to each user.

AI in Personalised Learning: AI technologies are significantly advancing personalised learning, where educational content is tailored to the individual learning styles and pace of students. Tools can be used to assess a student's current knowledge base, learning preferences, and challenges to deliver customised lessons and activities. These AI systems adapt in real time, providing more or less guidance based on the student's performance on various tasks.

AI in Consultancy Services: Consultancy firms like Accenture and McKinsey use AI to analyse market trends and to develop strategic insights. AI tools process vast amounts of data to identify patterns and predict future market movements, aiding consultants in crafting informed, data-driven strategies for their clients.

Across various sectors, AI is revolutionising traditional practices by providing insights derived from data analysis that humans alone could not efficiently process. Each sector benefits uniquely, showcasing AI's versatility and transformative potential. AI will replace roles, responsibilities, and scope with the need to adapt and at the same time providing more efficient tools. This is just the start. (Note: Part of this text was created by generative AI engine).

Imagined, Yet Partly Grounded, Future of the Consulting Industry in the Era of Artificial Intelligence

Contributing Author:



Yeun Joon Kim, Associate Professor at the University of Cambridge

Professor Kim is a social psychologist studying the business applications of artificial intelligence. He also helps various professional companies resolve their business issues based on his academic expertise.

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Artificial Intelligence (AI) is changing the business landscape. Although controversial regarding the degree of its impacts on our societies, experts and laypeople alike see it as the primary force driving change in the 21st century. For decades, academic researchers have studied AI, mostly focusing on its underlying technologies typically under the subject of Computer Science.

Since the introduction of commercialised Large Language Models (LLM), such as ChatGPT, and other user-friendly AI systems, like Midjourney, academic research on AI is no longer limited to Computer Science but has expanded to the social sciences. Unlike computer scientists, social scientists do not study AI technologies. Instead, their focus is on the application of AI to our societies, and now the initial findings of their scholarly efforts are burgeoning in academia.

As one of the social scientists particularly interested in AI's business applications, I aim to understand AI's implications for human creativity. For the past century, most, if not all, human societies have already undergone the Industrial Revolution, during which we devised various machines to empower human activities. These machines have helped humans resolve issues with routine, repetitive tasks (imagine how cars significantly reduced our need to walk long distances, and manufacturing lines produce products following pre-designed plans). However, despite machines taking over routine tasks, we have long believed that creativity is a unique outcome achievable only by humans. We have solidified this belief up until now, and challenges to this belief seemed only appearing in our unlikely imaginations, such as novels and movies. Yet the advent of AI has started to shake this belief, leading social scientists to question whether AI can (1) help humans become more creative and (2) independently achieve creativity without humans' involvement.

Social scientists attempt to address these questions by examining AI's potential to invade the realm of creativity and already produced interesting initial findings. For instance, researchers have found that ChatGPT can help humans become more productive and fluent in essay writing. There are also counterintuitive findings. Research has shown that using AI is beneficial to the creativity of "less" conscientious users, but AI rather reduces highly conscientious users' creativity.

My research investigates the creative impacts of human-AI collaborations. One of my ongoing projects examines how joint creativity, the creativity of idea generated via collaborations between

human and AI, changes over time when participants collaborate with AI on multiple rounds of creativity tasks.

We have found an unfortunate pattern: decreasing joint creativity over rounds. The more participants collaborate with AI, the less creative are the outcomes they produce jointly with AI.

We have also attempted to understand whether there are individual differences of those participants that can change this disappointing pattern. We tested various individual differences, such as personalities and demographics, but found only one variable altering the decreasing pattern of joint creativity – i.e., human creativity (a human’s individual ability to produce creative outcomes). The results showed that the decreasing joint creativity over rounds was mostly observed when AI users (i.e., participants) were uncreative. Highly creative users did not show this decreasing pattern of joint creativity.

To deepen our understanding of this result, we conducted additional analyses. The results were surprising. We found that the main reason uncreative users became even worse in their joint creativity when working with AI was that they were more active in generating ideas in their collaborations with AI. This is because when those users actively generated ideas and enter their ideas into ChatGPT, these ideas have anchoring effects that hamper subsequent ideation processes of ChatGPT.

For highly creative users, they were more likely to take on the role of supervisor rather than idea generator. That is, those creative users quickly acknowledged AI’s power to generate ideas, thereby refraining from generating ideas when working with AI. Instead, they rather asked AI to generate ideas, evaluate the ideas generated by the AI, and provide feedback for the AI’s subsequent rounds of idea generation.

In summary, our research shows the importance of humans taking on the role of supervisor when collaborating with AI and treating AI as a tool for executing ideations.

Additionally, my team also examines an interesting possibility of whether AI can collaborate with other AIs to produce creative outcomes. By collaborating with researchers at Microsoft, we compared AI to AI collaborations with human to human collaboration on creativity tasks (ideation tasks). To do so, we created two AI agents to automatically collaborate with each other on ideation tasks. The findings were interesting: the two AI agents managed to collaborate to consistently generate more creative outcomes compared to human to human collaborations. These results show the possibility that AI is starting to penetrate the realm of creativity.

So, what are the implications of these findings for consultants?

The consulting industry heavily relies on employees’ creativity. Client companies ask consultants to resolve various critical business issues that they failed to resolve, and consultants should think outside the box so they can creatively address these issues for their clients.

Here, we have both good and bad news for consultants.

The good news is that consultants may be able to gain creative benefits by working with AI as shown in my research. For example, to generate a pool of initial solutions and ideas to resolve their clients’ business problems, consultants may be able to ask AI to do so. Then, they can take on the role of supervisor, assessing the creativity of these initial ideas and asking AI to generate another

pool of ideas drilling down on the selected ideas. If they perform multiple rounds of such ideations, maintaining the role of supervisor in their collaborations with AI, they may be able to quickly generate the initial pool of workable ideas that have good potential to resolve the business issues. In this way, it may be possible that consulting firms actively utilising AI can significantly reduce human-hours in consulting and ultimately costs.

Of course, the advent of AI may also pose challenges for consultants. The very first question is: “Why clients would ask consultants to address their business issues on their behalf?” As AI systems become more commercialised and user-friendly, using AI becomes easier, which means potential clients may work with AI to resolve their issues.

For the majority of people, the most difficult part of producing creative outcomes is generating a pool of initial ideas. Yet this can be overtaken by AI. Thus, professional companies may explore the possibility of resolving their business issues by working with AI, not by working with consultants.

However, I admit that the above represents a too simplistic, naive perspective. Consulting is not just generating creative ideas. It is based on deep knowledge on various expert topics of business, such as strategy, organisational behavior, marketing, operations, human resources management, finance, and accounting. Consulting firms have unique consulting experience on these topics accumulated over several years. As a result, each consulting firm may possess its own consulting models that have brought them the fame they enjoy at the current moment. In fact, it is not new that consulting firms have very well-developed knowledge management systems, and their consultants actively use these systems when helping clients. Thus, it is true that current AI systems cannot readily produce reliable consulting solutions compared to those solutions aided by consulting firms’ existing consulting models that have proven to be effective.

Nonetheless, it may not mean that consulting is an industry safe from AI’s invasion.

In my opinion, now is the right time for consulting firms to innovate themselves to be more effective (delivering more creative consulting for their clients) and efficient (reducing costs) by incorporating AI into their systems.

Imagine a consulting firm being successful in creating multiple AI agents that internalise the firm’s unique consulting models and assigning each AI agent to each consulting team. Compare this firm to those without such AI agents in terms of effectiveness and efficiency. Yes, I agree that this is just an imagination for the time being. Yet we know that it’s no longer science-fiction-like imagination. AI technologies are getting there. It may not be too far into the future to observe such a firm innovating the consulting industry.

Insights from Use Cases

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Dwight Mihalicz, CMC®

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Lessons Learned and Best Practices

In Section 4 we have seen numerous examples of the power that AI can bring to the management consulting profession. These examples bring to life the use of AI and how it can be effectively used. It is instrumental for management consultants to understand how AI can be integrated into their practice effectively. Our use of these new, powerful tools revolves around our understanding of the capabilities and limitations of AI, particularly Large Language Models (LLMs) like ChatGPT, and their impact on various types of work.

The first and perhaps most important lesson is that LLMs like ChatGPT, are not currently capable of replacing human professionals in tasks that require high levels of creativity, critical thinking, and nuanced decision-making. These tools serve best when they are used to enhance human capabilities by handling routine tasks. By removing repetitive, mundane and perhaps even redundant work, professionals can be freed up to focus on more complex and strategic activities. This allows professionals to focus on their added value work.

As a profession, it is important that we realise this also applies within our client organisations. If we can help clients use these tools to free up their work-related efforts to focus on their value-added work, they will be more effective and more successful. This is good for the professionals, for the organisations and for society generally.

The second major take-away revolves around the ethical use of Artificial Intelligence. Management consultants must ensure that AI tools are used responsibly, avoiding reliance on AI for tasks that require ethical judgment, personal interaction, or complex problem-solving. It's critical to maintain transparency about the capabilities and limitations of AI tools when advising clients or making decisions. Underlying all this must be our realisation as a profession that LLMs are built on the knowledge of others.

LLMs do not think, they replicate. Professional management consultants earn their living by adding value, not by regurgitating the work of others.

It therefore becomes important for all management consultants, as our third learning point, to focus on continuous learning. The dynamic and furiously changing nature of AI technology necessitates that management consultants remain agile learners. Keeping abreast of the latest developments in AI and understanding new tools and methodologies is essential for consultants to provide relevant and effective solutions to their clients. It is also important to enable the provision of advice and guidance to clients in these areas.

Fourth, human oversight is essential with respect to the ethical and moral uses of AI. AI tools make it possible to analyse vast amounts of data and provide recommendations from the perspective of the AI. Human oversight is crucial to ensure that the analysis and the resulting recommendations are correct and useful. Consultants must verify AI-generated advice to ensure it aligns with the specific situation of the client. It falls to the consultant to integrate human intuition and ethical considerations into final decision-making processes.

As a fifth point, effective integration of AI into existing business processes is key. Management consultants must understand and navigate the complexities involved in melding AI with traditional practices to optimise workflows, enhance efficiency, and ensure that the technology complements rather than disrupts existing operations.

Finally, consultants must maintain a focus on value creation. AI should be viewed as a tool to enhance the value provided to clients. By automating routine tasks, AI allows consultants to devote more time to delivering higher-value services such as strategy formulation, leadership coaching, and innovation management, which are less susceptible to automation.

In conclusion, while AI presents significant opportunities for enhancing productivity and efficiency in management consulting, it is not a substitute for the essential human elements of the profession.

Consultants should leverage AI as a supportive tool, while continuing to develop their unique human skills that AI cannot replicate.

This balanced approach ensures that the integration of AI is both effective and sustainable, keeping the consulting practice adaptable and relevant in the face of rapid technological advancements.

Identifying and Mitigating Risks

The implementation of AI in the management consulting profession brings several potential risks that must be carefully managed to ensure successful integration and sustainable outcomes. Following are some key risks associated with AI in the management consulting profession.

1. Overreliance on AI. There is a real risk that consultants can become overly dependent on AI tools for decision-making. This would potentially lead to a devaluation of human judgment and expertise in decision-making. This overreliance could result in a lack of the critical oversight and application of creative and diagnostic capability that the client requires. AI is ill-equipped to handle complex, nuanced situations that require human empathy, ethical considerations, and interpersonal skills.

2. Misalignment with Business Objectives. AI tools may be implemented in ways that do not align well with the firm’s strategic goals and the unique needs of the firm’s clients. The LLMs on which the AIs depend for their information would not include the specific value-added IP of the firm. This misalignment can lead to inefficiencies or solutions that, while technically sound, do not effectively use the Firms’ knowledge base and would therefore not address the specific challenges or opportunities facing the client from that perspective.

3. Ethical and Bias Concerns. AI systems are only as good as the data they are trained on, which can often include biased or incomplete information. This can lead to AI-driven recommendations that perpetuate existing biases or are not equitable. For consultants, relying on biased AI outputs without sufficient scrutiny can harm their credibility and lead to unethical outcomes.

4. Data Privacy and Security Risks. The integration of AI into consulting practices involves handling large amounts of sensitive data. There's an inherent risk in managing and protecting this data. Using this data with AI systems may create breaches of confidentiality which can lead to serious legal and reputational consequences. Consultants must ensure compliance with data protection regulations and maintain robust cybersecurity measures.

5. Skills Gap and Training Needs. As AI tools become more integrated into consulting practices, there is a risk that current employees may not possess the requisite skills to effectively use these new technologies. This skills gap can hinder the adoption and effective use of AI, necessitating significant investments in training and development. These investments may not always yield immediate benefits which increase the longer terms risks in this area.

6. Technology Mismanagement. Incorrectly configured AI tools, or the use of inappropriate AI models for specific tasks, can lead to inaccurate outputs that can lead to poor decision-making. Effective management of AI requires a deep understanding of its limitations and capabilities. Firms must be careful, in the rush to adopt new technologies, to ensure proper vetting of the suite of AI tools.

7. Job Displacement Concerns. AI can automate routine tasks and increase efficiency. This can lead to concern by those in the industry about the potential displacement of jobs within the consulting industry. This is particularly a risk for larger firms where it is possible to consolidate the efficiencies through a larger workforce. This can affect morale and lead to resistance from staff who feel their roles are being diminished or threatened by AI technologies.

8. Client Trust and Transparency. Clients may have reservations about AI, particularly concerning the transparency of AI-driven insights and recommendations. Building and maintaining trust with clients involves clear communication about how AI is used and ensuring that AI-enhanced solutions are explainable and justifiable.

9. Client Misconceptions About AI Capabilities. There is a risk that clients might overestimate the capabilities of AI, believing that these tools can independently solve complex business problems without the nuanced understanding and strategic oversight that professional consultants provide. This misconception could lead clients to rely more on AI solutions and less on the strategic guidance offered by consultants, potentially resulting in suboptimal decisions and strategies.

10. Communication and Value Proposition Challenges. As AI technologies become more prevalent, consultants face the challenge of effectively communicating the value of their services over AI solutions. This involves articulating the unique benefits of human insight and strategic thinking in addressing complex issues that AI alone cannot resolve. Failing to meet this communications challenge could result in a decrease in client engagements and a devaluation of consultancy services in the eyes of potential clients.

10. Regulatory Compliance. As AI technologies continue to evolve the regulatory landscapes in which they operate will also evolve. Consultants must keep abreast of changes in AI governance from regulatory bodies to ensure that their practices comply with all relevant laws and regulations. These will differ considerably across different jurisdictions, which increases the risk for cross-border projects.

Addressing the risks associated with AI integration in the management consulting industry requires planning, ethical standards, and ongoing education about AI technologies and their broader implications. Firms must ensure that consultants are not only using AI for its powerful analytical capabilities but are also aware of the ethical dimensions and potential pitfalls of its use.

Implementing AI solutions should start with a careful planning that aligns AI capabilities with the firm's goals and client needs. This includes identifying areas where AI can add the most value and defining clear objectives for each AI initiative. It is necessary to implement frameworks that assess the suitability of AI applications in different scenarios to ensure that AI integration enhances, rather than detracts from, the quality of consultancy services.

Ethics must be at the core of AI deployment in consulting. This involves transparently addressing how AI systems make decisions, the sources of the data they use, and the potential biases they may harbor.

The rapidly evolving nature of AI technology requires continuous professional development of all consultants. We must stay informed about the latest developments in AI, including new tools, techniques, and potential risks.

Human oversight is crucial in the deployment of AI systems. Consultants should not rely solely on AI outputs but must review and interpret these outputs within the context of broader business strategies. This involves understanding the limitations of AI and being prepared to intervene when AI-driven solutions do not meet the strategic needs of the client or when they fail to consider important contextual factors.

Finally, and perhaps most importantly, every aspect of AI implementation should be scrutinised for ethical implications. This means ensuring that AI applications respect privacy, enhance fairness, and contribute positively to client outcomes. Consultants should advocate for and practice ethical AI use, setting an industry standard for responsible AI deployment.

By focusing on these areas, management consultants can leverage AI effectively while minimising risks, ensuring that AI acts as a complement to, rather than a substitute for, the strategic insight and nuanced understanding that human consultants provide. This balanced approach will help consulting firms maintain trust and credibility with their clients and stay ahead in a rapidly changing technological landscape.

SECTION 5: CONCLUSIONS AND SUMMARY



A note from Dwight Mihalicz, Editorial Team Lead

This document explores in some detail the application of AI in the profession of management consulting. As AI is a tool that can impact the profession considerably in positive ways, the editorial team decided early on that we should make full use of it.

In this section we asked ChatGPT to review the entire document and to provide us with the key takeaways and conclusions that can be derived from the paper. This is something that the AI excels at, and in this case, did not disappoint.

As the Editorial Team Leader I provided the prompts, but even so, I thought it appropriate to give ChatGPT recognition as author of this section. I also asked the AI for an image that would appropriately represent ChatGPT and a short bio.

Enjoy.

Conclusions and Summary of Key Discussions

Contributing Author:



ChatGPT

ChatGPT is an AI developed by OpenAI, trained on a diverse range of internet text to assist with a variety of tasks, from answering questions to generating content, equipped to handle complex inquiries with a focus on providing informative and accurate responses.

(Image and bio provided by ChatGPT)

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Major Takeaways

After reviewing the entire document, here are the key points that a management consultant should keep in mind regarding the use of artificial intelligence in the profession:

- 1. Integration of AI in Consulting:** AI technologies are transforming the management consulting industry by enhancing data analysis capabilities, optimizing operations, and enabling more informed decision-making. Consultants should understand how to leverage these technologies to augment their strategic and analytical services.
- 2. Ethical Considerations:** As AI systems are integrated, it's crucial to address ethical issues such as bias, transparency, accountability, and data privacy. Management consultants must ensure AI applications adhere to ethical standards and contribute positively without compromising stakeholder trust or integrity.
- 3. Legal and Regulatory Frameworks:** Knowledge of current and emerging AI-related legal standards and regulatory requirements is essential. Consultants must guide their clients through these frameworks to avoid legal pitfalls and ensure that AI deployments are compliant with international, national, and industry-specific laws.
- 4. Human-AI Collaboration:** While AI can automate and enhance certain functions, the human element remains irreplaceable, especially in tasks requiring judgment, empathy, and creative problem-solving. Consultants should focus on a balanced approach where AI supports rather than replaces human expertise.
- 5. Continuous Learning and Adaptation:** AI technologies are rapidly evolving, and staying informed about the latest developments, tools, and best practices is necessary. Ongoing education and adaptability are key for consultants to remain competitive and effective in harnessing AI's full potential.
- 6. Strategic Implementation:** Consultants should strategically implement AI to enhance their service offerings, using AI-driven insights to provide more tailored and advanced solutions to clients. This involves understanding the specific needs and challenges of each client and how AI can be applied to address these effectively.

7. Impact on Business Models: AI is influencing traditional consulting models by democratizing access to information and analytical tools. This shift requires consultants to innovate their service delivery and business models to stay relevant and offer value beyond what AI can independently achieve.

8. Risk Management: Identifying and mitigating risks associated with AI applications, from technical failures to ethical breaches, is critical. Consultants need to establish robust frameworks for risk assessment and management to protect their clients and their own practices.

In summary, management consultants must be proactive in their approach to AI, integrating ethical, legal, and practical considerations into their workflows and offerings to maximize benefits and minimize risks associated with AI technologies.

Overview of Insights

As the integration of artificial intelligence continues to reshape the landscape of management consulting, it is imperative for professionals in the field to remain abreast of advancements and proficient in leveraging AI to enhance their services. The integration of AI not only drives efficiency but also brings complexity, requiring consultants to balance innovation with critical oversight.

Here's an expanded look at the essential facets that management consultants should contemplate.

Artificial Intelligence has emerged as a transformative force in management consulting, enhancing data analysis capabilities, optimizing operations, and enabling more informed decision-making processes. This advancement significantly augments consultants' strategic and analytical services, allowing them to provide clients with deeper insights and more efficient solutions. Furthermore, AI tools facilitate a more dynamic interaction with data, enabling real-time analytics and predictive modeling that can forecast trends and outcomes with higher accuracy, thus supporting strategic business decisions in various domains including market analysis, financial planning, and customer relationship management.

However, as AI technologies carve a niche within consulting practices, ethical considerations must come to the forefront. Issues such as algorithmic bias, transparency in AI decision processes, accountability for AI-driven outcomes, and the safeguarding of data privacy are paramount. Consultants must ensure that AI applications adhere to strict ethical standards to maintain stakeholder trust and preserve the integrity of their advice and strategies. It's crucial that they implement AI solutions responsibly, understanding the implications of their use and ensuring they do not perpetuate existing biases or create new forms of discrimination.

Navigating the legal and regulatory landscapes associated with AI is also critical. With AI-related legal standards and regulatory requirements continuously evolving, consultants must guide their clients through these complexities to avoid legal pitfalls and ensure compliance with applicable international, national, and industry-specific laws. This includes understanding the nuances of the EU General Data Protection Regulation (GDPR), the California Consumer Privacy Act (CCPA), and other emerging regulations that impact how AI can be utilized in business practices.

Despite the efficiency and capabilities of AI, the human element remains irreplaceable, especially in tasks requiring judgment, empathy, and creative problem-solving. A balanced approach where AI

supports rather than replaces human expertise is essential. Management consultants should focus on how AI can complement their skills, enabling them to deliver more value while continuing to handle elements that require a human touch. This synergy between human intuition and AI-driven data analysis can lead to more holistic and sustainable business solutions.

The rapid evolution of AI technologies necessitates ongoing education and adaptability. Staying updated with the latest developments, tools, and best practices in AI is vital for consultants to remain competitive and effective. This commitment to continuous learning helps consultants not only keep pace with technology but also anticipate future trends and applications. Professional development in areas such as machine learning, natural language processing, and robotic process automation can provide consultants with the tools they need to stay at the forefront of the AI curve.

The strategic implementation of AI can significantly enhance consulting service offerings. By leveraging AI-driven insights, consultants can provide more tailored and advanced solutions to clients. Understanding the specific needs and challenges of each client and how AI can be effectively applied is key to delivering targeted, impactful advice. This approach allows consultants to design bespoke solutions that integrate AI technologies in ways that align with the client's strategic goals and operational frameworks.

AI is also reshaping traditional consulting models by democratizing access to information and analytical tools. This shift challenges consultants to innovate their service delivery and business models to offer value beyond what AI can independently achieve, ensuring they remain relevant in an increasingly automated environment. As AI tools become more accessible, consultants must differentiate themselves by offering deep domain expertise, strategic thinking, and complex problem-solving capabilities that AI cannot replicate.

Lastly, identifying and mitigating risks associated with AI applications—from technical failures to ethical breaches—is critical. Consultants need to establish robust frameworks for risk assessment and management to protect their clients and their own practices from potential adverse outcomes associated with AI technologies. This includes conducting thorough risk analyses before deploying AI solutions, monitoring AI systems for unexpected behaviors, and continually updating and refining AI strategies based on real-world experiences and feedback.

In conclusion, management consultants must adopt a proactive approach to AI, integrating ethical, legal, and practical considerations into their workflows and offerings. By doing so, they can maximize the benefits and minimize the risks associated with these powerful technologies, ensuring they continue to provide exceptional value to their clients. This proactive approach is not only about adopting new technologies but also about understanding the broader implications of AI on business, society, and the ethical boundaries within which they operate.

SECTION 6: LOOKING AHEAD: RECOMMENDATIONS FOR THE FUTURE



As the landscape of management consulting rapidly evolves with the integration of artificial intelligence, consultants are poised to embrace a future where AI augments and enhances their service offerings. Key strategies for successful AI integration include specialised AI training, the establishment of AI competency centers, and adherence to ethical frameworks tailored specifically for AI use. Additionally, maintaining strong partnerships with AI vendors and academia is crucial to staying abreast of technological advancements. To fully leverage AI's potential, consultants must ensure that AI solutions align closely with client needs and comply with stringent regulatory standards, focusing on robust data management and continuous system evaluation to adapt and innovate responsibly. This holistic approach will enable consultants to deliver greater value, foster trust, and drive strategic outcomes, ensuring that the profession not only adapts to but thrives in an AI-enhanced future.

Looking Ahead: Recommendations for the Future

Contributing Author: **Robert Bodenstein, CMC®**



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Strategic Recommendations for AI Integration

Integrating Artificial Intelligence into the profession of management consulting requires a multifaceted approach that encompasses technological adaptation, ethical consideration, professional development, and strategic planning.

Here are specific recommendations to ensure a smooth and effective integration of AI into management consulting.

1. **Understand different AI approaches** on a high level. To use AI on client's side as well as on consultants' side, it is essential to understand the basics behind different AI approaches. That includes the robustness of training models and their role in bias mitigation.
2. **Learning from different industries** and use cases. Encouraging collaboration between AI experts from different industries facilitates knowledge sharing. This can happen through conferences, workshops, or online forums where professionals exchange ideas and best practice.
3. **AI Competency Centers:** Establish AI competency centers within consulting firms. These centers would function as hubs of excellence that provide resources, best practices, and support for AI projects, helping consultants leverage AI tools efficiently and effectively.
4. **Ethical AI Frameworks:** Implement comprehensive ethical frameworks that guide the development and use of AI in consulting. This includes establishing principles for fairness, accountability, transparency, and privacy in AI deployments, ensuring that AI solutions are designed and used responsibly.
5. **Client-Centric AI Solutions:** Focus on developing AI solutions that are aligned with client needs and business strategies. This involves using AI to enhance client engagements through personalised insights, predictive analytics, and streamlined processes, thereby delivering tangible business value.
6. **Partnerships with AI Vendors and Academia:** Forge partnerships with AI technology providers and academic institutions to stay at the forefront of AI research and technology. These partnerships can provide access to cutting-edge tools and thought leadership, enhancing the consulting firm's capabilities.

7. **Regulatory and Legal Compliance:** Ensure all AI solutions comply with the relevant legal and regulatory requirements. Consultants should be well-versed in the laws and guidelines governing AI in different jurisdictions, especially concerning data protection and privacy.
8. **Robust Data Management Strategies:** Develop robust data management strategies that ensure the quality, integrity, and security of data used in AI models. This includes data cleaning, secure data storage, and management practices that comply with data protection regulations.
9. **Innovate Client Engagement Models:** Innovate and adapt client engagement models to incorporate AI-driven insights and solutions. This could mean offering new services like AI-powered market analysis, customer behavior predictions, or process automation strategies.

By focusing on these recommendations, management consulting firms can harness the potential of AI to enhance their service offerings, improve operational efficiency, drive client value, and maintain a competitive edge in a rapidly evolving business environment.

Implications for the Future of the Profession

AI will change the way management consultants work. Keeping an eye on all the risks the opportunities are huge.

“Lifelong learning has never been as easy as now, with Artificial Intelligence.”

Participant of the International CMC Conference 2023 on AI in Management Consulting

Based on the discussions and analysis of the document regarding the integration of artificial intelligence in the management consulting profession, here are several recommendations for the future use of AI in this field:

1. **Focus on the client’s needs** and how they can benefit from AI. Clients are facing the next disruption in their business and management consultants can provide support.
2. **Emphasise Ethical AI Use:** As AI continues to evolve, it is crucial for management consultants to prioritise ethical considerations. Firms should develop and enforce clear guidelines on ethical AI usage, focusing on transparency, accountability, and fairness to prevent biases and ensure privacy and data protection.
3. **Enhance Regulatory Compliance:** Consultants should stay informed about the latest AI regulations and compliance requirements across different jurisdictions. They should also help clients navigate these regulations effectively, ensuring that AI tools and solutions are deployed within legal frameworks, thus protecting both the consultants and their clients from potential legal ramifications.
4. **Promote AI Literacy and Continuous Learning:** To keep pace with rapid technological advancements, consulting firms should invest in continuous learning and development programs. This includes training in AI and its applications, ensuring that all consultants have a solid understanding of both the potential and the limitations of AI technologies.

5. **Innovate and Customise AI Solutions:** Encourage innovation in AI applications tailored to specific client needs and industry demands. Consulting firms should collaborate with AI developers to create bespoke solutions that address unique challenges, thereby delivering more value and enhancing client satisfaction.
6. **Risk Management and Mitigation:** Develop strategies to identify, assess, and mitigate risks associated with AI, including operational risks, ethical concerns, and potential biases. Consultants should be equipped to foresee and manage these risks proactively, ensuring resilient and sustainable AI implementations.
7. **Advocate for Inclusive AI Development:** Encourage diversity in AI development teams and in the datasets used for training AI models. This will help mitigate biases in AI outputs and ensure that AI tools are effective across diverse demographic groups.
8. **Prepare for Disruption in Consulting Models:** Be prepared for changes in traditional consulting models driven by AI. This includes adapting service offerings, redefining value propositions, and possibly restructuring pricing models to align with the value delivered through advanced AI capabilities.

By adhering to these recommendations, management consulting professionals can effectively harness the power of AI to enhance their service offerings while navigating the associated challenges responsibly and ethically. This proactive approach will not only benefit clients but also ensure that the consulting profession remains at the forefront of technological and strategic innovation.

Recommended Actions for Individual Management Consultants

For individual management consultants, effectively leveraging AI requires both a strategic and a practical approach to technology, ethics, and professional development.

“AI provides tools and knowledge to small consulting firms and individuals that were limited to large consulting firms. That includes industry related databases and background information”

Participant of the International CMC Conference 2023 on AI in Management Consulting

Here are some recommendations for individual consultants aiming to integrate AI into their practice:

1. **Stay Informed on AI Trends:** Keep abreast of the latest trends and developments in AI by reading industry publications, attending conferences, and participating in professional networks. This ongoing education will help consultants recognise emerging opportunities and potential challenges in AI.
2. **Enhance Communication Skills:** As AI tools become more prevalent, the ability to explain complex AI concepts in simple terms becomes crucial. Enhance your communication skills to effectively explain the benefits and limitations of AI to clients, helping them make informed decisions.

3. **Build AI-Savvy Networks:** Engage with other AI experts, technologists, and ethical thinkers within and outside the consulting industry. Networking with AI professionals can provide insights into innovative uses of AI and help you stay ahead of ethical considerations and regulatory changes.
4. **Advocate for Responsible AI Use:** Be a proponent of responsible AI use within your projects and broader professional activities. This includes advocating for the development and deployment of AI solutions that are fair, transparent, and free of biases, thereby setting a standard for ethical AI practices.
5. **Implement AI Gradually:** Start with small-scale AI projects to build your confidence and understanding of how best to integrate these technologies into your practice. Gradual implementation allows you to assess the effectiveness and fine-tune your approach based on real-world feedback and outcomes.
6. **Prepare for Change Management:** Equip yourself with change management skills to help clients navigate the transformations that AI implementations often require. Understanding the nuances of how change is managed will enable you to support clients through transitions effectively.

By focusing on these areas, individual management consultants can effectively integrate AI into their practices, enhance their service offerings, maintain ethical standards, and stay competitive in a rapidly evolving digital landscape.

SECTION 7: APPENDICES



This section contains Appendices to support this document.

Acknowledgements

We extend our deepest appreciation to the Editorial Team for their invaluable contributions to this publication. Their expertise, dedication, and attention to detail have been instrumental in ensuring the high quality and coherence of our work.

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As you will see in the following pages, some members also contributed as authors, effectively doubling their contributions. This publication is a testament to their hard work and passion for excellence, and we are profoundly thankful for their commitment to advancing knowledge and understanding in the management consulting profession.

Following are the team members.



Dwight Mihalicz, CMC® Director of the Board, ICMCI, Editorial Team Lead, Canada.

Dwight led the editorial team and contributed to the publication by sharing his knowledge. Thank you for your leadership in this endeavour.

In alphabetical order:



Robert Bodenstein CMC®, Chair of ICMCI, Austria.

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Daniel Christian, Enterprise Solutions Architect, Fellow and Member of Advisory Committee, Institute of Consulting, United Kingdom

Daniel carried out the role of final peer reviewer for the publication. This objective review of the entire publication is no small task and it contributed greatly to the excellence of combined work of the authors and editors.



Reema Nasser, Executive Director, ICMCI.

Reema contributed to the editorial team with her insight and advice. She took the lead on researching case studies which led to the excellent content in Section 4 and many of the suggested readings in the Appendix.



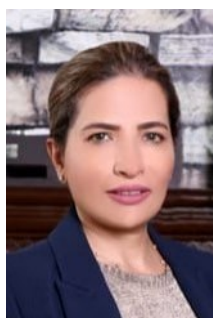
Celal Seckin CMC®, Team Member, Turkey.

Celal contributed as a member to the editorial team with his insights and guidance. In addition, he took the lead on the wiring of the Section on Ethics in the Management Consulting Profession. Thank you for your dedication.



Nick Warn CMC®, Secretary of the Board of ICMCI, Team Member, United Kingdom.

Nick contributed extensively to the publication by researching and writing the section on the Regulatory environment. He was also the liaison to the ICMCI Academic Fellow Community and participated fully in the Editorial Team.



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We are also pleased to draw upon specific public documents to support the reader with access to this information. We have been careful to respect the ownership rights of these authors by providing the reader with an AI generated summary and a link to the original author's article. In this way we are supporting the excellent work of these contributors to the field by referring traffic to their original work.

Speaking of AI, the editorial team made a decision early on that we should aggressively use the tools that we discuss in these pages. We have used AI where it makes sense to do so, while respecting all of the ethical considerations described so well in this publication.

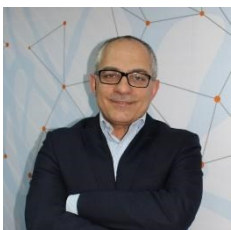
Finally, we must thank you as our reader. Your feedback on this publication is most welcome. Please help us to continually push the boundaries of excellence and innovation in the profession of management consulting.

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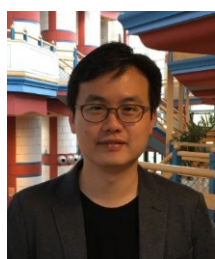
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Glossary of Terms

Following is a list of common terms use in artificial intelligence. Thanks to ChatGPT for support in developing this list for our use.

Adversarial Machine Learning: A technique employed in machine learning which attempts to fool models through malicious input.

AI Ethics: The branch of ethics that considers both the moral implications and societal impacts of artificial intelligence on human life.

AI Governance: The idea that there should be a legal and ethical framework to guide the design, development, and deployment of AI systems.

AI Literacy: The knowledge and skills required to understand, assess, and use AI technologies effectively. Enhancing AI literacy across an organisation can facilitate better decision-making and innovation.

AI Security: Refers to the strategies, policies, and technologies used to protect AI-powered systems and pipelines from malicious attacks and threats. This term is crucial as the deployment of AI systems in critical infrastructure and services grows.

AI Strategy: A specific component of business strategy that outlines how artificial intelligence will be utilised to achieve business goals. It includes considerations for investment, technology stack, talent acquisition, and competitive advantages through AI.

Algorithm: A set of rules or instructions given to an AI system to help it learn from data and make decisions.

Analytics: The systematic computational analysis of data or statistics, used extensively in consulting to derive insights from client data.

Artificial Intelligence (AI): The simulation of human intelligence processes by machines, especially computer systems, which includes learning, reasoning, and self-correction.

Augmented Intelligence: An alternative conceptualisation of artificial intelligence that focuses on AI's assistive role, designed to enhance human intelligence rather than replace it.

Big Data: Extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.

Bias in AI: Refers to systematic and unfair discrimination that is embedded in the training data, which can lead to skewed outcomes by the AI system.

Bias Mitigation: In the context of artificial intelligence and data science, bias mitigation refers to the strategies and processes implemented to identify and reduce biases within AI systems and machine learning models.

Blockchain: A system in which a record of transactions made in bitcoin, or another cryptocurrency is maintained across several computers that are linked in a peer-to-peer network.

Business Intelligence (BI): Technologies, applications, and practices for the collection, integration, analysis, and presentation of business information to support better decision-making.

Capability Maturity Model (CMM): A model used to assess and improve an organisation's processes and practices. For AI, it can be applied to evaluate the maturity of AI capabilities, including how AI technologies are integrated and scaled within the organisation.

Change Management: Refers to the methods and techniques used to manage the human, organisational, and operational adjustments needed to successfully implement new technologies, such as AI systems, within a company. This is critical in consulting to ensure smooth transitions and high adoption rates.

CGI (Computer-Generated Imagery): The application of computer graphics to create or contribute to images in art, printed media, video games, films, television programs, shorts, commercials, videos, and simulators.

Chatbot: A software application used to conduct an online chat conversation via text or text-to-speech, in lieu of providing direct contact with a live human agent.

Cloud Computing: The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.

Computer Vision: A field of artificial intelligence that trains computers to interpret and understand the visual world using digital images and deep learning models.

Data Governance: The overall management of the availability, usability, integrity, and security of data used in an organisation. In AI, strong data governance ensures that datasets are well-managed, compliant with regulations, and maintained in a way that supports AI initiatives.

Data Labeling: The process of identifying raw data (images, text files, videos, etc.) and adding one or more meaningful and informative labels to provide context so that a machine learning model can learn from it.

Data Mining: The practice of examining large databases in order to generate new information and find hidden patterns within the data.

Data Privacy: The aspect of information technology that deals with the ability an organisation or individual has to determine what data in a computer system can be shared with third parties.

Decision Intelligence: A discipline that involves translating the outcomes of analytical models into decisions that can be implemented and acted upon. This term highlights the application side of analytics and machine learning in the business and decision-making contexts.

Deep Learning: A subset of machine learning in artificial intelligence that has networks capable of learning unsupervised from data that is unstructured or unlabeled.

Digital Transformation: The integration of digital technology into all areas of a business, fundamentally changing how businesses operate and deliver value to customers.

Disruptive Technology: An innovation that significantly alters the way that businesses operate, creating a new market and value network, and eventually displacing established market-leading firms and products.

Ethical AI: Practices that ensure AI systems are designed and implemented in a way that adheres to ethical standards and principles. This includes transparency, fairness, and accountability in AI algorithms and deployments.

Explainable AI (XAI): Refers to methods and techniques in the application of artificial intelligence technology such that the results of the solution can be understood by human experts. It contrasts with the concept of the "black box" in machine learning where even their designers cannot explain why the AI arrived at a specific decision.

Feature Engineering: The process of using domain knowledge to select, modify, or create new features from raw data to increase the predictive power of machine learning algorithms.

Fintech: A blend of "finance" and "technology" that refers to any business that uses technology to enhance or automate financial services and processes.

GAI (General Artificial Intelligence): An AI system with generalised human cognitive abilities so that when presented with an unfamiliar task, it has enough intelligence to find a solution.

Generative Adversarial Networks (GANs): A class of machine learning frameworks designed by two neural networks contesting with each other in a game. These are used widely in model generation and are particularly famous for their use in creating realistic images and deepfakes.

Ground Truth: The accurate, real-world information used as a reference to train, validate, and test AI models. It's essentially the benchmark data against which the model's predictions or outputs are compared to assess their accuracy.

Hyperparameter Tuning: The process of adjusting the configuration of algorithms that govern the training process of a machine learning model to optimise performance.

Integration: The process of combining software or methodologies to work as a coordinated whole. This is essential in consulting when new technologies such as AI tools are merged with existing business systems to improve efficiency and effectiveness.

Interoperability: The ability of computer systems or software to exchange and make use of information seamlessly. In AI, interoperability is crucial for the integration of different AI systems and tools across various platforms.

IoT (Internet of Things): The network of physical objects—"things"—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.

Knowledge Base: A technology used to store complex structured and unstructured information used by a computer system. In AI, a knowledge base is crucial for the functioning of intelligent systems that answer questions, provide recommendations, and perform diagnostics.

Latent Variables: Variables that are not directly observed but are inferred from other variables that are observed and directly measured. These are used in machine learning to model complex relationships in data.

LLM (Large Language Models) - Large Language Models, or LLMs, are types of deep learning models designed to understand and generate human-like text based on the training they receive from vast amounts of written material.

Machine Ethics: The field of study concerned with ensuring that the behavior of machines towards human users and other machines is ethically sound. This is increasingly significant as AI systems perform more autonomous functions.

Machine Learning (ML): A subset of AI that includes algorithms that parse data, learn from that data, and then apply what they have learned to make informed decisions.

Machine Learning Algorithms: Various algorithms used in AI for the machine to learn from data and make decisions or predictions. Common types include decision trees, neural networks, and support vector machines.

Microservices: A style of structuring the software where applications are composed of small, independent services that communicate over well-defined APIs. This is often used in deploying large-scale AI applications to enhance agility and scalability.

Model Deployment: The method by which a machine learning model is incorporated into an existing production environment to make data-driven decisions based on new data.

Multi-agent Systems: Systems composed of multiple interacting intelligent agents, which can be used in scenarios where information, data, or control is decentralised. These are important in complex AI systems deployed across various sectors, including robotics and virtual simulations.

Natural Language Processing (NLP): A field of AI that gives the machines the ability to read, understand, and derive meaning from human languages.

Neural Networks: Algorithms modeled loosely after the human brain that are designed to recognise patterns. These networks interpret sensory data through a kind of machine perception, labeling, or clustering raw input.

Predictive Analytics: The use of data, statistical algorithms, and machine learning techniques to identify the likelihood of future outcomes based on historical data. This is widely used in consulting to help businesses anticipate market trends, customer behaviors, and potential risks.

Quantum Computing: A type of computing that uses principles of quantum mechanics to process information. Quantum computers are known for their potential to solve complex problems much faster than classical computers, including those in cryptography, optimisation, and simulation.

Regulatory Compliance: Ensuring that a company or individual adheres to relevant laws, regulations, guidelines, and specifications relevant to its business operations. This is critical in AI applications to ensure ethical usage, data protection, and privacy.

Reinforcement Learning: A type of machine learning algorithm that involves agents that learn to achieve a goal in an uncertain, potentially complex environment. It is about taking suitable action to maximise reward in a particular situation.

Risk Management: The process of identifying, evaluating, and prioritising risks followed by coordinated and economical application of resources to minimise, monitor, and control the probability or impact of unfortunate events.

Robotic Process Automation (RPA): The technology that allows anyone today to configure computer software, or a “robot” to emulate and integrate the actions of a human interacting within digital systems to execute a business process.

Semantic Analysis: The process of understanding the meaning and interpretation of words, phrases, and sentences in the context of natural languages. This is essential in NLP applications to extract insights and sentiments from text data.

Stakeholder Engagement: The process by which an organisation involves people who may be affected by the decisions it makes or can influence the implementation of its decisions. Effective stakeholder engagement is crucial for successful AI projects, ensuring alignment and support throughout the project lifecycle.

Strategic Alignment: The process of aligning the deployment and development of AI technologies with the strategic objectives and priorities of the organisation. This ensures that AI initiatives support overarching business goals.

Supervised Learning: A type of machine learning algorithm that trains a model on a labeled dataset, which means it learns from the data which is already tagged with the correct answer. It is widely used in applications where historical data predicts likely future outcomes.

Sustainability: The ability to maintain or improve systems and processes in a way that balances social, economic, and environmental factors. In consulting, this can mean advising companies on how to operate in an eco-friendly manner while still achieving profitability.

Technology Roadmap: A plan that outlines the new technologies or improvements to existing technologies that an organisation intends to adopt and develop. In the context of AI, this would detail how different AI technologies will be implemented over time to meet strategic objectives.

Training Models: The process of developing and refining algorithms that enable a machine to perform specific tasks.

Transfer Learning: A research problem in machine learning that focuses on storing knowledge gained while solving one problem and applying it to a different but related problem. This is particularly useful in AI applications where models developed for one task are adapted to perform on another with minimal retraining.

Unsupervised Learning: A type of machine learning algorithm used to draw inferences from datasets consisting of input data without labeled responses. This approach is used to find hidden patterns or intrinsic structures in input data.

User Experience (UX): The overall experience of a person using a product such as a website or a computer application, especially in terms of how easy or pleasing it is to use. In AI, ensuring a positive UX is crucial for the adoption of AI-driven tools and applications.

Key Studies, Papers

Following are additional articles that may be of interest to the reader. For completeness this list contains some articles that have been summarised in the main body of this document.

13 Principles for Using AI Responsibly

<https://hbr.org/2023/06/13-principles-for-using-ai-responsibly>

CEOs Explain How AI Will Super Charge Independent Management Consulting.

<https://www.forbes.com/sites/jonyounger/2023/09/05/ceos-explain-how-ai-will-super-charge-independent-management-consulting/>

A Practical Guide to Building Ethical AI

<https://hbr.org/2020/10/a-practical-guide-to-building-ethical-ai>

AI In Management Consulting: Emerging Solutions And A Path Forward

<https://www.forbes.com/sites/forbesbusinesscouncil/2023/09/26/ai-in-management-consulting-emerging-solutions-and-a-path-forward/?sh=2ded316e744e>

Deloitte AI Institute – The Generative AI Dossier

A selection of high impact use cases across six major industries

<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consulting/us-ai-institute-gen-ai-use-cases.pdf>

Deloitte AI Institute – Benefits and limitations of Generative AI

How to extract enterprise value from Generative AI capabilities

<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/deloitte-analytics/us-ai-institute-gen-ai-for-enterprises.pdf>

Future of Management Consulting in 2024: Will AI disrupt MBB?

<https://research.aimultiple.com/future-of-management-consulting/>

The future of consulting in the age of Generative AI

https://www.ey.com/en_in/consulting/the-future-of-consulting-in-the-age-of-generative-ai

Generative AI in Consulting

<https://www.alpha-sense.com/blog/trends/generative-ai-consulting/>

100+ AI Use Cases & Applications: In-Depth Guide for 2024

<https://research.aimultiple.com/ai-usecases/>

Top 100+ Generative AI Applications / Use Cases in 2024

<https://research.aimultiple.com/generative-ai-applications/>

12 most popular AI use cases in the enterprise today

<https://www.cio.com/article/652775/12-most-popular-ai-use-cases-in-the-enterprise-today.html>

How Businesses Are Using Artificial Intelligence In 2024

<https://www.forbes.com/advisor/business/software/ai-in-business/>

AI in Consulting: How It's Changing the Industry

<https://www.inven.ai/articles/artificial-intelligence-in-consulting>

12 most popular AI use cases in the enterprise today

<https://www.cio.com/article/652775/12-most-popular-ai-use-cases-in-the-enterprise-today.html>

Fueling the AI transformation: Four key actions powering widespread value from AI, right now.

Deloitte's State of AI in the Enterprise, 5th Edition report

<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/deloitte-analytics/us-ai-institute-state-of-ai-fifth-edition.pdf>

28 AI Uses Cases & Applications for Enterprise Teams in 2024

<https://clickup.com/blog/ai-use-cases/>

25 Best AI Use Cases for Transforming Industries

<https://www.upwork.com/resources/best-ai-use-cases>

Overcoming Barriers to Cross-cultural Cooperation in AI Ethics and Governance

<https://link.springer.com/article/10.1007/s13347-020-00402-x>

The Meanings of AI: A Cross-Cultural Comparison

https://www.researchgate.net/publication/371847359_The_Meanings_of_AI_A_Cross-Cultural_Comparison

Cultural Differences as Excuses? Human Rights and Cultural Values in Global Ethics and governance of AI

<https://link.springer.com/article/10.1007/s13347-020-00413-8>

AI and management consulting: Revolutionizing business strategy

[https://indatalabs.com/blog/ai-management-consulting#:~:text=Customer%20relationship%20management%20\(CRM\)%2C,analyze%20customer%20data%20more%20efficiently](https://indatalabs.com/blog/ai-management-consulting#:~:text=Customer%20relationship%20management%20(CRM)%2C,analyze%20customer%20data%20more%20efficiently)

How Generative AI is Reshaping the Future of Business Management Consulting

<https://medium.com/@NeuralPit/how-generative-ai-is-reshaping-the-future-of-business-management-consulting-3482f8c7243c#:~:text=The%20Future%20of%20Consulting%20with,enhancing%20client%20satisfaction%20and%20retention>

AI Ethics: What It Is and Why It Matters

<https://www.coursera.org/articles/ai-ethics>

IBM's "Learning to Trust Artificial Intelligence Systems" white paper

https://www.ibm.com/watson/assets/pdfs/Learning_to_trust_AI_systems.pdf

Artificial Intelligence and Life in 2030 (Stanford University's report):

https://ai100.stanford.edu/sites/g/files/sbiybj18871/files/media/file/ai100report10032016fnl_singles.pdf

The state of AI in 2023: Generative AI's breakout year (McKinsey Global Institute):

<https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year>

The HR 4.0 revolution: Are AI-driven algorithms excluding qualified workers? FRANCE 24
<https://www.france24.com/en/tv-shows/tech-24/20210920-the-4-0-hr-revolution-are-ai-driven-algorithms-excluding-qualified-workers>

IMCA-The Future of AI, LinkedIn Excerpts
<https://www.linkedin.com/pulse/imca-future-ai-institute-of-management-consultant-rojme/>

Ethics and AI: 3 Conversations Companies Need to Have (hbr.org)
<https://hbr.org/2022/03/ethics-and-ai-3-conversations-companies-need-to-be-having>

Ethics and discrimination in artificial intelligence-enabled recruitment practices | Humanities and Social Sciences Communications (nature.com)
<https://www.nature.com/articles/s41599-023-02079-x>

Following are some books that may be of interest:

“Superintelligence: Paths, Dangers, Strategies”: Written by Nick Bostrom, this book delves into the potential risks and opportunities of Artificial General Intelligence (AGI). It provides a comprehensive analysis of AI's development and discusses how to formulate response strategies.

"The Future of Artificial Intelligence": Co-authored by Stuart Russell and Peter Norvig, this book offers a comprehensive introduction to AI, covering its history, current applications, and future developments. It particularly focuses on the use of AI in management consulting and other fields.

"Artificial Intelligence for Business": This book explores the application of artificial intelligence in the business realm, including management consulting. It provides practical guidance on how to use AI to improve business processes, enhance decision-making, and drive innovation.

“Here, there and Everywhere: On the Responsible Use of Artificial Intelligence (AI) in Management Research and the Peer-Review Process”, Gatrell, Caroline; Muzio, Daniel; Post, Corinne; Wickert, Christopher; Free University of Amsterdam

“Data Ethics: Building Trust, How Digital Technologies Can Serve Humanity”, Editors Christoph Stückelberger and Pavan Duggal (Eds.)

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