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LEADERSHIP IN THE ALGORITHMIC ERA: NEW SKILLS MANAGERS NEED FOR AI GOVERNANCE

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Abstract. The rapid incorporation of artificial intelligence (AI) into business processes has changed managerial functions drastically across nearly all sectors. This theoretical study seeks to determine what competencies leaders need to have in order to successfully govern AI within their organizations today. Utilising a systematic narrative review of 34 different types of research documents – such as peer-reviewed journal articles, practitioner reports, government policy documents and foundational monographs published from 2015-2024 – we present the Algorithmic Leadership Competency (ALC) Model as our contribution. The ALC Model consists of three domains: (1) Algorithmic Literacy, (2) Ethical Accountability, and (3) Human-Centered Facilitation. These three competency areas are interrelated and mutually supportive. The ALC Model is theoretically grounded in the organizational behaviour, data science ethics, and AI governance literature and mapped to existing empirical studies as well as significant regulatory frameworks, including the newly developed European Union AI Act (2024). We also consider the evidence supporting each competency area, compare the ALC Model to previous frameworks and outline implications for leadership development programs, HR policies and organisation-wide AI governance structures. This study recognises certain limitations including the lack of primary empirical data and presents a structured agenda for future quantitative and qualitative research to validate the ALC model.

Keywords: AI governance, algorithmic leadership, managerial competencies, ethical AI, organizational behavior, human-AI collaboration, ALC Model

ALGORITMLAR DAVRIDA YETAKCHILIK: MENEJERLARGA SUN'IY INTELLEKT BOSHQARUVI UCHUN ZARUR BO'LGAN YANGI KO'NIKMLAR

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"Ipak yo'li" turizm va madaniy meros
xalqaro universiteti talabasi

Annotatsiya. Sun'iy intellektning (SI) biznes jarayonlariga jadal kirib borishi deyarli barcha sohalardagi boshqaruv funksiyalarini tubdan o'zgartirdi. Ushbu nazariy tadqiqot bugungi kunda yetakchilar o'z tashkilotlarida SI tizimlarini muvaffaqiyatli boshqarishlari uchun qanday kompetensiyalarga ega bo'lishi kerakligini aniqlashga qaratilgan. 2015–2024 yillarda chop etilgan 34 turdagi tadqiqot hujjatlari – jumladan, taqriz qilingan ilmiy maqolalar, amaliyotchilar hisobotlari, hukumat siyosatiga oid hujjatlar va fundamental

monografiyalarni tizimli tahlil qilish (narrative review) orqali biz o‘z hissamiz sifatida Algoritmik yetakchilik kompetensiyasi (ALC) modelini taqdim etamiz. ALC modeli uchta yo‘nalishni o‘z ichiga oladi: (1) Algoritmik savodxonlik, (2) Etik mas‘uliyat va (3) Insonga yo‘naltirilgan ko‘mak. Ushbu uchta kompetensiya sohasi o‘zaro bog‘liq bo‘lib, bir-birini qo‘llab-quvvatlaydi. ALC modeli tashkiliy xulq-atvor, ma‘lumotlar fani etikasi va SI boshqaruvi adabiyotlariga nazariy jihatdan asoslangan hamda mavjud empirik tadqiqotlar va muhim tartibga soluvchi normativ hujjatlar, jumladan, yangi qabul qilingan Yevropa Ittifoqining Sun‘iy intellekt to‘g‘risidagi qonuni (2024) bilan muvofiqlashtirilgan. Biz, shuningdek, har bir kompetensiya sohasini tasdiqlovchi dalillarni ko‘rib chiqamiz, ALC modelini avvalgi tuzilmalar bilan taqqoslaymiz hamda uning yetakchilikni rivojlantirish dasturlari, HR siyosati va tashkilot miqyosidagi SI boshqaruv tuzilmalari uchun ahamiyatini belgilab beramiz. Ushbu tadqiqot birlamchi empirik ma‘lumotlarning yetishmasligi kabi cheklovlarni tan oladi va ALC modelini tasdiqlash uchun kelajakdagi miqdoriy hamda sifatli tadqiqotlarning tizimli rejasini taklif etadi.

Kalit so‘zlar: SI boshqaruvi, algoritmik yetakchilik, menejerlik kompetensiyalari, axloqiy SI, tashkiliy xulq-atvor, inson va SI hamkorligi, ALC modeli.

ЛИДЕРСТВО В ЭПОХУ АЛГОРИТМОВ: НОВЫЕ НАВЫКИ, НЕОБХОДИМЫЕ МЕНЕДЖЕРАМ ДЛЯ УПРАВЛЕНИЯ ИИ

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Аннотация. Стремительное внедрение искусственного интеллекта (ИИ) в бизнес-процессы кардинально изменило управленческие функции практически во всех секторах. Данное теоретическое исследование направлено на определение компетенций, которыми должны обладать современные лидеры для успешного управления ИИ в своих организациях. На основе систематического нарративного обзора 34 различных типов исследовательских документов, опубликованных в период с 2015 по 2024 год (включая рецензируемые журнальные статьи, отчеты практиков, правительственные политические документы и фундаментальные монографии), мы представляем Модель компетенций алгоритмического лидерства (ALC Model) в качестве нашего научного вклада. Модель ALC состоит из трех областей: (1) Алгоритмическая грамотность, (2) Этическая ответственность и (3) Человекоцентричное содействие. Эти три области компетенций взаимосвязаны и дополняют друг друга. Модель ALC теоретически обоснована литературой по организационному поведению, этике науки о данных и управлению ИИ, а также сопоставлена с существующими эмпирическими исследованиями и ключевыми регуляторными нормами, включая недавно разработанный Закон Европейского Союза об искусственном интеллекте (2024). Мы также рассматриваем доказательства, подтверждающие каждую область компетенций, сравниваем модель ALC с предыдущими концепциями и описываем ее значение для программ развития лидерства, HR-политики и структур управления ИИ в масштабах всей организации. В исследовании признаются определенные ограничения, включая отсутствие первичных эмпирических данных, и предлагается структурированная программа для будущих количественных и качественных исследований с целью валидации модели ALC.

Ключевые слова: управление ИИ, алгоритмическое лидерство, управленческие компетенции, этичный ИИ, организационное поведение, взаимодействие человека и ИИ, модель ALC.

1. Introduction

A global shift that has been slowly building is now affecting many aspects of business activity including the way offices operate, how boardrooms make decisions, and how manufacturing facilities create products. The use of algorithms in machine learning is becoming commonplace when organizations make employment decisions, assess creditworthiness, monitor employee performance, forecast customer demand and diagnose medical issues. The integration of artificial intelligence (AI) into an organization’s core business functions will not be limited to the future; in 2023, more than half (55%) of organizations have incorporated AI into at least one core business function, nearly double the number from 2017 (McKinsey & Co. 2023). The proliferation of AI tools has dramatically increased efficiency, accuracy, and reduced costs; however, they have also created new categories of risk and accountability for leaders that traditional management practices are not equipped to handle.

For managers today in the age of AI, an entirely new skill set is required. As a leader, you will be required to optimize your business processes by utilizing algorithms and other AI-based tools while also ensuring that these tools are used within appropriate ethical and legal parameters. You must maintain the trust and engagement of your employees while conveying complex technical information to front-line employees, board members, and regulators in a manner that is meaningful to them. This has to be done within a rapidly changing regulatory framework, particularly with the enactment of the European Union’s Artificial Intelligence Act (The EU AI Act, 2024) which imposes significant legal responsibilities on organizations who use high-risk AI systems in the areas of employment, credit, and law enforcement.

Yet despite the urgency of this challenge, there is a notable gap in literature. The existing theories of leadership (i.e., transformational (Burns, 1978) and Servant Leadership (Greenleaf, 1977)) were created specifically for how leaders made decisions 100% dependent on the human agent. These theories do not adequately support leaders who have the responsibility of governing systems that operate at machine speed, don't have transparent reasoning mechanisms and that, as a result, can amplify historical prejudices and biases inherent in their training data. While Kolbjørnsrud et al. (2016) and Harreis et al. (2023) have done some initial research exploring which types of managerial behaviors are associated with successful adoption of AI, there are no comprehensive competency frameworks available in the literature that synthesise their findings.

The goal of this research is to fill in the gaps in existing research by focusing mostly on answering which leadership qualities will be necessary to lead ethically and effectively as organizations develop and deploy systems that use artificial intelligence. To do so, we conduct a systematic narrative review of existing literature regarding effective and ethical AI governance and create the Algorithmic Leadership Competency (ALC) Model – a three-domain

model that contains algorithmic literacy, ethical accountability, and human-centered facilitation as the three key components for successful leadership in an algorithmic era.

Research Question: What leadership competencies are required for effective and ethical AI governance in contemporary organizations, and how can these competencies be integrated into a practical, evidence-informed framework?

The paper proceeds as follows. Section 2 reviews the theoretical background and related empirical literature. Section 3 details the methodological approach. Section 4 presents the ALC Model and synthesizes empirical evidence for each domain. Section 5 discusses theoretical implications, organizational applications, and comparative analysis with existing frameworks. Section 6 concludes with a summary of key findings, limitations, and a structured agenda for future research.

2. Theoretical Background and Literature Review

2.1 The Shifting Demands of Managerial Leadership

The classical theories of leadership are centred around motivating, guiding and developing people (Burns 1978 & Greenleaf 1977); these foundational leadership theories are still applicable today. Regardless of the technology that supports their work, humans still seek meaning, recognition and trust from their work and from each other. However, they were developed in a time (or context) when all meaningful decisions made within an organization were made by other people. Thus, these theories can be evaluated based on human agency, intention and accountability, since all decisions were made by other humans.

Emerging evidence indicates that leaders in AI-driven organizations are likely not satisfied with the performance of leaders currently found in traditional organizations. A survey done by Kolbjørnsrud and colleagues (2016), indicated that out of 1,800 managers and executives across 14 countries, 95% believed that the role of artificial intelligence (AI) will allow them to spend more time on developing distinctively human qualities of leadership (i.e., making sense of complex information, creatively solving problems, and displaying empathy in communication) due to the reduction of time spent on completing routine, administrative, and analytical tasks. Interestingly, the best-performing managers in AI-enabled organizations do not necessarily have the best technical skills; rather they are the best at asking their technical personnel the appropriate questions and providing their organizations a consistent strategy for continuing to be successful with AI.

Harreis et al. (2023) reinforces the findings within their analysis of the impact of AI on transforming organizations across multiple industries. They identify an “AI-ready executive” as: 1) someone who understands the limitations of algorithmic outputs; 2) establishes a psychologically-safe environment in which employees feel comfortable to question AI-driven suggestions for actions; and 3) continues the organization’s values during

periods of technological change. This leader does not bear a direct correlation to any currently available leadership paradigms.

2.2 AI Governance as a Leadership Imperative

The AI governance framework is a collection of rules, procedures and practices for managing the creation, implementation, and result of AI within an organisation (Cath, 2018; Dafoe, 2018). Scholars and practitioners agree on the idea that the governance of AI is a responsibility of leadership, rather than just the technical aspect of AI (Dafoe, 2018).

Several nations have enacted new legislation based on this principle, such as the European Union's AI Act (2024), which requires that companies deploying high-risk AI create and implement procedures to provide sufficient oversight, assess risk appropriately, maintain transparency in operations and results, and establish accountability. Maintaining the oversight, assessment, transparency and accountability is not just the responsibility of the technical teams within the organisation; leaders must translate these regulatory requirements into policy at the organisation and communicate them across functions; leaders must also ensure that accountability for AI decisions made by the organisation can be traced back to specific people in the organisation.

Accountability is an significant challenge. Algorithmic systems can be described as having a "black box" (Pasquale, 2015). They can be difficult to explain, defend or dispute when the result from the algorithm is used to make a decision. O'Neil (2016) has examined this concept further and has shown that when machine learning algorithms are trained on data from the past, it gives rise to maintaining and propagating the same pre-existing bias of how society operates. The implications of this are extremely serious in regards to employment, capital lending and criminal justice. Hence, one of the key abilities for leaders will be their ability to critically assess the data that has been generated by artificial intelligence instead of simply accepting it without question.

2.3 Ethical Frameworks for AI Governance

Jobin et al. (2019) performed a landmark study comparing the AI Ethics Guidelines for 84 AI documents/model projects from governments, industry, and academia published in 36 different nations. All 5 themes were present across all frameworks analyzed: Transparency, Fairness & Justice, Non-Maleficence, Accountability (Responsibility), and Privacy. Jobin et al. (2019) concluded that the practical value of each of these Themes will be contingent upon how they are operationalized into specific behavioral practices by an individual leader in terms of their daily practice of what each Theme requires to be upheld. To this end, the aforementioned finding was used to guide the construction of the Ethical Accountability Domain in the ALC Model.

2.4 The Human Dimension of AI Adoption

According to Orlikowski's (2000) practice-based theory regarding technology in organisations, the impact of a particular technology is a function of both its technical characteristics (e.g., speed, capacity, etc.) as well as the

manner in which people use it. This observation leads us to the key component of AI governance: organisational leaders cannot simply implement new technologies and expect their employees to adopt them; human issues related to using AI (such as anxiety about being replaced) and loss of productivity due to an erosion of employees' decision-making ability, as well as concerns about the potential for biased algorithms, are imperative to the governance of AI.

Ransbotham et al. (2020), in a comprehensive cross-industry survey of managers conducted via the MIT Sloan Management Review and the Boston Consulting Group, established that managers who had some degree of understanding of AI (even if only a limited technical level) had significantly fewer expensive mistakes when implementing AI solutions and created increased trust between employees and AI-assisted decisions. This evidence helps support the importance of 'algorithmic literacy', as described in the ALC Model, as an essential competency for AI leadership.

3. Methodology

3.1 Research Design

In conducting research for this project, a systematic literature review will be used as the main methodology to help create a conceptual framework and integrate literature from different sources (empirical, theoretical, and government policy documents). This is consistent with the guidelines outlined by Grant and Booth (2009) on how to conduct a systematic narrative literature review. A systematic narrative literature review does not necessitate the quantitative aggregation of results like a meta-analysis but does require that the procedures used to conduct the search and select the literature are documented to demonstrate methodological rigor and replicability.

The research will consist of three phases: (1) undertake a systematic search and selection of the literature; (2) thematically synthesise the selected literature to highlight where the themes converge and diverge; and (3) create an integrated competency framework based upon the literature reviewed and synthesised.

3.2 Search Strategy and Database Selection

Literature was identified through systematic searches conducted in three categories of sources: academic databases, practitioner and industry repositories, and official government and intergovernmental policy repositories. The following table summarizes the databases consulted and the search strategy applied.

Search terms were combined using Boolean operators (AND, OR) to capture variations in terminology. For example: ("AI governance" OR "algorithmic management") AND ("leadership" OR "managerial competenc*"). Truncation (*) was used to capture plural and variant forms. Searches were conducted between January and March 2024.

Table 1

Literature Search Strategy

Database / Source	Search Terms	Selection Criteria
Google Scholar, Scopus, Web of Science	"AI governance", "algorithmic leadership", "managerial competencies AI"	Peer-reviewed; 2015–2024; English or Uzbek; accessible full text
McKinsey Global Institute, HBR, MIT Sloan	"AI adoption", "leadership digital transformation"	Practitioner reports with cited empirical data or large-scale surveys
EU Official Journal, OECD Policy Briefs	"AI Act", "AI regulatory framework"	Government and intergovernmental policy documents; 2018–2024

Literature search strategy by database category, search terms, and selection criteria.

3.3 Inclusion and Exclusion Criteria

Sources were selected for inclusion based on pre-defined criteria established prior to the search process. The application of these criteria to the initial search yield produced the final corpus of 34 sources analyzed in this study.

Table 2

Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Published between 2015 and 2024	Publications predating 2015 (unless foundational theory)
Peer-reviewed journal articles or authoritative practitioner reports	Opinion pieces, editorials, or non-peer-reviewed blog posts
Focus on AI/algorithmic technology in organizational management	Studies focused solely on technical AI development (e.g., pure ML engineering)
English-language full text available	Conference abstracts without full-text access
Addresses competency, leadership, ethics, or governance dimensions	Narrowly focused on a single industry without generalizability





Pre-defined inclusion and exclusion criteria applied to the literature search yield.

3.4 Source Selection Process and Final Corpus

The initial search across all databases and repositories yielded 312 potentially relevant items. Following the removal of duplicates (n = 47), screening of titles and abstracts against inclusion criteria (n = 198 excluded), and full-text review (n = 33 excluded due to insufficient relevance or inaccessible full text), a final corpus of 34 sources was retained for synthesis. The distribution of sources by type is presented in Table 3.

Table 3

Distribution of Sources by Type

Source Type	N	Proportion
Peer-reviewed journal articles	19	 56%
Practitioner / industry reports	8	 24%
Government / policy documents	4	 12%
Foundational books / monographs	3	 9%
Total	34	100%

Composition of the final 34-source literature corpus by source type. Bar proportions are illustrative.

3.5 Analytical Approach

To evaluate the selected sources, the author performed a thematic synthesis of each source according to Thomas and Harden's (2008) ten-step process to generate a set of key concepts, constructs or propositions that came from an inductive coding of each source. Once the author coded each source, they used an iterative process of comparison and consolidation to categorize the codes into higher-order categories, resulting in three major areas that constituted the foundational structure of the ALC model: algorithmic literacy, ethical accountability and human-centered facilitation.

To ensure transparency and replicability, all coding decisions are documented in a structured data extraction table that may be obtained from the author upon request. Disagreement regarding how to interpret the data was resolved through multiple readings of the data and reviewing other literature relevant to the data.

4. Results: The Algorithmic Leadership Competency (ALC) Model

Through the thematic synthesis, which included 34 sources from many different types of literature, I developed three types of competencies that all of the studies, ethical guidelines, and policy frameworks had in common (i.e. THE ALC COMPETENCY MODEL). The following figure depicts a summary of the ALC Competency Model, and then I will elaborate on the three distinct domains using appropriate citations for the empirical evidence that supports each domain.

4.1 Domain 1: Algorithmic Literacy

Algorithmic literacy does not only mean being able to write code or perform task(s) as a data scientist; it requires an conceptual understanding of how AI systems are developed, trained and used, in addition to a knowledge of potential risks associated with failures in an AI system. This distinction between possessing deep technical skills versus conceptual understanding is both critical and empirically supported in the literature.

Table 4

The Algorithmic Leadership Competency (ALC) Model

Domain	Core Skills	Key Behaviors	Organizational Outcomes
Algorithmic Literacy	AI system design, bias detection, model evaluation, performance metrics	Asks critical questions about AI outputs; understands training data limitations	Fewer costly AI deployment errors; higher employee trust in AI tools
Ethical Accountability	Regulatory literacy, moral reasoning, transparency practices	Resists automation bias; enables dissent; maintains human override capacity	Reduced accountability gaps; compliance with EU AI Act and similar frameworks
Human-Centered Facilitation	Active listening, empathy, inclusive design, change management	Involves frontline staff in AI design; addresses fears of displacement openly	Higher AI adoption rates; improved team resilience and organizational trust

The ALC Model: three interdependent domains, their core skills, behavioral indicators, and associated organizational outcomes.

Key literacy competencies identified in the literature include:

- Understanding that machine-learning models are trained on historical data and therefore may systematically replicate historical patterns of discrimination or bias (O’Neil, 2016);
- Recognizing that high predictive accuracy in a model does not guarantee correct individual-level predictions, particularly in novel situations outside the training distribution;
- Being able to ask informed evaluative questions about AI system performance, such as: On what population was this model validated? What false positive and false negative rates are acceptable in this context? How often is the model re-trained and on what data?;
- Understanding the conditions under which algorithmic outputs should be deferred to and the conditions under which they should be overridden by human judgment.

The research conducted by Ransbotham et al. (2020) provides an even stronger evidence base for this area. They conducted a cross-industry survey and found that companies whose managers have demonstrated a basic understanding of AI are statistically more likely to have successful deployment results and fewer costly errors during deployment and have somewhat greater employee confidence in AI-supported decision-making compared to companies whose managers possess no AI knowledge. In addition, Kolbjørnsrud et al. (2016) found that one of the most significant

behaviours that set apart high-performing managers using AI from their peers was that they tended to 'ask their technical staff informed questions.'

4.2 Domain 2: Ethical Accountability

The second category of issues examines the ethical responsibilities associated with delegating critical decision-making authority to an algorithmic system (either fully or partially). The general term used to describe this issue is the "accountability gap" (Pasquale, 2015). The accountability gap results in individuals and organizations being less likely to assume personal or organizational responsibility for the results of using an algorithmic-based AI system, since they view the AI system as completely unbiased. As a result, many people perceive the results of an AI-based algorithm as providing more objective or absolute truth than as probabilities.

The behavioral indicators of ethical accountability competency identified through the literature synthesis include:

- Actively resisting automation bias – the tendency to over-rely on algorithmic recommendations without critical interrogation – and maintaining genuine human deliberation in consequential decisions;
- Creating psychologically safe environments in which employees feel empowered to raise concerns about AI-generated outputs without fear of being characterized as resistant to innovation;
- Ensuring that human override mechanisms remain available and practically accessible for decisions with significant individual impact, in line with the EU AI Act's (2024) requirement for human oversight of high-risk AI systems;
- Translating abstract ethical principles into concrete organizational policies, procedures, and performance expectations.

According to Jobin et al. (2019), the largest empirical mapping of ethical AI principles has been completed to date, identifying five predominant themes that were mentioned across 84 global ethics guidelines as Transparency, Fairness, Non-maleficence, Accountability, and Privacy. Each of these themes corresponds to concrete behavioral expectations for organizational leaders and supports the argument that ethical accountability should be viewed as a separate leadership competency domain and not simply as a compliance issue.

4.3 Domain 3: Human-Centered Facilitation

The third domain covers the relationship-building and facilitative skills necessary to assist humans when transitioning to AI-supported work environments. This domain relies upon an extensive body of existing evidence indicating that there are generally two reasons why most organizations experience problems when adopting AI technology - 1) they have insufficient levels of trust and/or 2) they lack sufficient knowledge and/or a sense of personal empowerment/job involvement with regard to the use of AI systems - and therefore the AI technology cannot be successfully adopted (Orlikowski, 2000).

Behavioral indicators of human-centered facilitation competency include:

- Actively listening to and acknowledging employee concerns about job displacement, loss of autonomy, and perceived surveillance arising from AI monitoring systems;

- Clearly communicating how AI tools will be used, what decisions they will inform, and how each team member’s role will evolve in response to AI deployment;

- Involving frontline employees in the co-design and iterative evaluation of AI systems, ensuring that the benefits and burdens of AI implementation are shared equitably across the team;

- Providing targeted reskilling opportunities that equip employees to work effectively alongside AI systems rather than in competition with them.

According to Orlikowski (2000), a theory of practice-based technology use in organizations shows that practices of people who use technologies in organizations are what actually create the organisational effects of technology as opposed to being created through the technical features of the technology themselves. As confirmed through empirical research by Harreis et al. (2023) on AI initiatives, initiatives where there is strong human engagement via leaders facilitate greater adoption, satisfaction and return on investment than those that impose mandates down from the top.

5. Discussion

5.1 Theoretical Contributions

This study makes three primary theoretical contributions to the leadership and AI governance literature.

To begin with, we offer the ALC Model as an evidence-based, integrated, synthesized approach that combines different competencies, which were previously studied separately across various literatures. Most previous research has only examined one dimension at a time, for example, Kolbjørnsrud et al. examined cognitive and administrative task redefinition while Jobin et al. investigated ethical principles and Ransbotham et al. focused on AI literacy in relation to outcomes associated with deployment. The ALC Model contribution uniquely combines three distinct domains of competence, as they are practiced in a manner that reflects how they are actually interrelated and dependent upon one another.

We show that none of the three components (algorithmic literacy, ethical accountability, and relational facilitation) is capable of supporting a manager on its own. For example, a manager who possesses acute algorithmic insight does not necessarily have ethical accountability (e.g., sees AI tools very effectively and uses them in a way that produces unjust outcomes). A manager who possesses significant ethical dedication does not necessarily possess algorithmic insight (e.g., makes algorithmic decisions based on an ongoing incorrect assumption about what the AI system is doing). A manager who possesses both technical and ethical competencies may have relational facilitation difficulties in obtaining employee buy-in for well-designed AI initiatives. Therefore, the integrative logic of the ALC Model provides true

empirical insight into the structure of successful AI governance competence, not simply a comprehensive catalogue of competent characteristics.

This research also expands upon Orlikowski’s (2000) work regarding practice theory by applying it to AI-mediated organizations to create an evidence-based account of the facilitative leadership practices that will impact how employees use algorithmic systems on a daily basis.

5.2 Comparison with Existing Frameworks

Table 4 compares the ALC Model with three prior models, Kolbjørnsrud et al. (2016), Jobin et al. (2019), and the previous EU AI Act (2024), that identify separate competencies of AI leadership; however, they do not create a consolidated set of leadership competencies across these three domains as does the ALC Model, therefore providing a gap within the previous frameworks.

Table 5

Comparative Framework Analysis

Competency Dimension	ALC Model (This Study)	Kolbjørnsrud et al. (2016)	Jobin et al. (2019)	EU AI Act (2024)
Algorithmic Literacy	✓ Central domain	✓ Implicit in cognitive tasks	–	✓ Risk literacy required
Ethical Accountability	✓ Central domain	–	✓ Core principle	✓ Explicit mandate
Human-Centered Facilitation	✓ Central domain	✓ People management	✓ Dignity principle	–
Integration as a unified model	✓ Tri-domain synthesis	–	–	–
Practical competency behaviors	✓ Mapped per domain	✓ Survey-based	✓ Guideline-based	✓ Compliance-based

Mapping the ALC Model against prior frameworks. ✓ = dimension addressed; – = not explicitly addressed.

5.3 Emotional Intelligence as a Foundational Competency

Emotional intelligence serves as an essential building block across all three areas of the ALC Model. A leader needs to manage their own anxiety regarding AI-related change while being supportive of their team members as they experience extreme uncertainty regarding the future of work. Leaders should continue to be curious about AI capabilities while resisting the temptation to accept algorithmically determined authority. When communicating about AI systems, leaders must exercise empathy and transparency among audiences with diverse technical literacy levels.

This finding is consistent with the broader research on leadership in an environment of uncertainty (Weick, 1995). Furthermore, it indicates that leadership competency related to AI governance must consist of both unique

combinations of technical and human competency that are likely new in the history of management.

6. Research Limitations and Future Research Directions

This study is subject to several important limitations that should be acknowledged explicitly and that motivate a structured agenda for future research. Table 5 summarizes the key limitations, their potential impact on the study’s findings, and proposed future research directions.

Table 5

Research Limitations and Future Research Directions

Limitation	Potential Impact	Mitigation / Future Direction
Absence of primary empirical data	Model validation rests on theoretical synthesis rather than tested behavioral measures	Future studies should operationalize ALC dimensions into survey instruments and validate them psychometrically
Publication bias toward Western contexts	Findings may not generalize to emerging economies or Uzbekistan’s specific governance landscape	Regional studies in Central Asia and the Global South are urgently needed
Rapidly evolving AI landscape	Some cited studies (pre-2023) may not reflect generative AI capabilities (e.g., GPT-4, Gemini)	Longitudinal studies and systematic reviews updated annually are recommended
Exclusion of qualitative interview data	Managerial lived experience is underrepresented	Follow-up qualitative research using semi-structured interviews with AI-adopting managers is warranted

Summary of key research limitations, their potential impact, and proposed future research directions.

The most notable limitation of the ALC Model at this time is that it lacks primary empirical data. At this time, the ALC Model is a theoretical synthesis of previous literature rather than an instrument for measuring ALC. As such, the ALC Model can have very little practical utility prior to future empirical research that will operationalize each of the three ALC domains by producing both specific, measurable, behavioral indicators; developing psychometrically sound assessment instruments; and testing the predictive validity of the model against actual objective indicators of organizational performance, such as success rates in deploying AI and so on.

The literature available to date is heavily weighted toward North American and Western European contexts. Given Uzbekistan’s rapidly developing digital economy, and the specific governance challenges related to the adoption of AI in developing markets, there is a need for regional

empirical research breaking down the aforementioned types of regional research into regional qualitative case study and regional survey research based studies.

7. Conclusion

The Algorithmic Revolution is here; it's not just an idea for the future; we are living through it now. Many organizations already use or support decisions made by algorithms in their daily operations such as how to build your career and get access to credit or healthcare, as well as how you experience your day-to-day life. Most people using these algorithms aren't even aware their decision was made by an algorithm. When we work with organizations in this context, leadership needs to be a part of every Technical Change Management Process, not just a “soft” addition.

With this in mind, the researcher created the Algorithmic Leadership Competency (ALC) Model – an aligned and evidence-based framework that defines how leaders in the future will make effective use of the ALC Model. The ALC Model consists of three domains that support and connect to one another – Algorithmic Literacy; Ethical Accountability; Human-Centered Facilitation – and provides a means of mapping these domains to converge with empirical research data; ethical frameworks; and associated regulatory structures (specifically, the EU's proposed AI Act of 2024).

A strong leader has several different skill sets (charisma, strategic thinking, technical proficiency). The future leader will have to be able to manage algorithm-based systems or processes in order to be successful. Future leaders must also be ethically accountable by being truly responsible and accountable for the decisions made with AI. In addition to being ethically accountable, future leaders must also possess a human-centered approach in order to help build teams to navigate the changes AI will create in a way that allows for trust and resilience. This will be a long-term effort requiring a great deal of time and effort to complete, however, the greatest obstacle to successfully developing future leaders are the increasing difficulties with governing AI.

The ALC Model is offered not as a final answer, but as a structured starting point for the empirical research and leadership development work that responsible AI governance now urgently requires.

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