

## **Beyond Awareness: Managing Workforce-Related AI Risks in the National Library and Archives of Iran Using Importance-Performance Analysis (IPA)**

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### **Abstract:**

As artificial intelligence (AI) technologies rapidly evolve, libraries and archives must proactively address the associated workforce-related risks to ensure sustainable and secure adoption. This study prioritizes AI workforce risks in the National Library and Archives of Iran (NLAI) using the Importance-Performance Analysis (IPA) method, offering a strategic and practical framework for institutional risk management. Through the application of the CATWOE framework, key stakeholders were identified, and 23 AI workforce risks were evaluated. Among them, the most critical risk was identified as “Inadvertent Data Exposure During AI Optimization”, highlighting the urgent need for safeguards against unintended security breaches caused by well-meaning but untrained staff. Beyond presenting a risk prioritization model, this research underscores the broader significance of adopting structured approaches like IPA in libraries and archives. Rather than waiting for disruptive technologies to dictate their trajectory, institutions such as NLAI can serve as role models by taking initiative, anticipating challenges, and shaping their own future in the AI era.

**Keywords:** Artificial Intelligence (AI), AI Risk Management, Workforce, Importance Performance Analysis (IPA), National Library and Archives of Iran (NLAI).

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## **Introduction**

Previous studies have demonstrated that while artificial intelligence (AI) offers significant benefits and future applications for the workforce, it also harbors hidden risks. Neglecting these risks may expose organizations to substantial challenges. Like other organizations, libraries are increasingly integrating AI into their operations and are therefore subject to these risks. The integration of artificial intelligence into the workplace is no longer a distant prospect but an ongoing transformation that permeates every stage of the employment relationship (Buolamwini, 2023). From streamlining human resources functions to redefining the dynamics between managers and employees, AI's expanding presence is reshaping core organizational processes (De Sio, 2024; Jacques Bughin, 2017). Advocates highlight AI's potential to enhance efficiency, enable automation, and drive productivity gains (Jacques Bughin, 2017). However, critics caution against the uncritical deployment of these technologies without a thorough examination of their underlying risks and unintended consequences (Haque, 2024; Zendeheel Nobari & Zendeheel Nobari, 2025). Safeguarding a future workforce that is not only technologically adept but also equitable and secure requires rigorous scrutiny of these latent challenges (Haque, 2024; Madinier, 2022).

Issues of trust and perception are intrinsically linked to the broader challenges posed by AI in the workplace. Factors such as misinformation, algorithmic opacity, and power imbalances between employers and employees contribute to a precarious environment where worker trust can be rapidly undermined (Buolamwini, 2023; Haque, 2024; Madinier, 2022). Ensuring transparency in AI implementation—particularly concerning data utilization and the criteria underpinning algorithmic decision-making—is critical for promoting accountability and upholding ethical standards in organizational practices (Buolamwini, 2023; Haque, 2024; Madinier, 2022).

These concerns are further exacerbated by the regulatory gaps surrounding AI in employment settings. In numerous jurisdictions, current legal frameworks fall short in addressing the unique risks associated with AI-driven workplace technologies (Madinier, 2022; Matthew Howse & Smith-Vidal, 2023). The European Union's proposed AI Act represents a constructive step forward by establishing obligations related to transparency, traceability, and human oversight for high-risk AI applications (Madinier, 2022). In addition, the active participation of labor unions, employee representatives, and other worker advocacy groups is essential in crafting robust governance structures that safeguard employee rights in the era of AI (Madinier, 2022).

In our previous research, hidden AI-related workforce risks were identified and categorized through literature reviews and input from key stakeholders into five main groups: (a) Ethical and Social, (b) Organizational, (c) Technical, (d) Legal, and (e) Societal (Zendehdel Nobari & Zendehdel Nobari, 2025). Prioritizing AI-related risks allows organizations to concentrate their efforts on threats with the highest potential impact and likelihood, thereby minimizing the inefficient use of resources on lower-priority concerns. The U.S. National Institute of Standards and Technology (NIST) AI Risk Management Framework underscores that "not all AI risks are the same," advocating for a deliberate and evidence-based allocation of resources guided by systematic risk assessments (Zendehdel Nobari & Zendehdel Nobari, 2025). However, due to the limited resources that organizations can allocate to risk management, prioritizing these risks is essential.

Table 1. The AI risks classification

Category	Challenge/Risk	AI Risk
Ethical & Social	Bias and discrimination: AI systems can perpetuate and amplify existing societal biases, leading to unfair or discriminatory outcomes.	R1
	Lack of transparency and explainability: The "black box" nature of some AI systems makes it difficult to understand how decisions are made, hindering accountability and trust.	R2
	Misinformation and disinformation: AI can be used to generate and spread false information, eroding trust and potentially causing harm.	R3
	Erosion of privacy: AI systems often rely on large amounts of data, raising concerns about data privacy and security.	R4
	Job displacement: Automation and AI may lead to job losses and the need for workforce reskilling.	R5
	Loss of human control & autonomy: Over-reliance on AI may reduce human autonomy and agency.	R6
	Dehumanization: The use of AI, especially in areas that require human interaction, may lead to dehumanization.	R7
	Identity Loss/Erosion of Creativity: Over-reliance on AI may lead to a loss of human identity or erosion of human creativity.	R8
	Increased Inequality: AI may exacerbate existing global inequalities and create new divides between data-rich and data-poor areas.	R9
	Implementation challenges: Integrating AI into existing systems can be complex and costly.	R10

Organizational	Lack of AI literacy: A lack of understanding of AI among employees can hinder adoption and create resistance.	R11
	Inadvertent Data Exposure During AI Optimization: Employees may unintentionally compromise organizational data security while attempting to over-optimize AI models, creating unauthorized data access points or exposing sensitive information.	R12
	Difficulty in assigning accountability: Determining who is responsible for the actions of AI systems can be challenging.	R13
	Balancing competing priorities: Organizations may struggle to balance responsible AI practices with other business goals.	R14
	Over-reliance on AI: Over-reliance on AI systems may lead to a decline in human skills or decision-making abilities.	R15
Technical	Data quality issues: AI models are only as good as the data they are trained on, and poor-quality or biased data can lead to inaccurate or unfair results.	R16
	Security vulnerabilities: AI systems can be vulnerable to adversarial attacks and other security breaches.	R17
	Unforeseen consequences: AI systems may perform actions that are unforeseeable to their designers and operators.	R18
Legal	Lack of clear regulations: The absence of comprehensive AI-specific regulations creates uncertainty and potential for misuse.	R19
	Liability issues: It is not always clear who is liable for harm caused by AI systems.	R20
Societal	Erosion of trust: Lack of transparency, bias, and misuse of AI can lead to a decline in public trust.	R21
	Misuse of AI: AI can be used for malicious purposes, such as surveillance, manipulation, and attacks.	R22
	Unequal access to benefits: The benefits of AI may not be equally distributed, further exacerbating existing inequalities.	R23

## Methodology

The primary objective of this study is to select an appropriate method for prioritizing the identified risks. To achieve this, we employed the Importance-Performance Analysis (IPA) method. In this approach, stakeholders—previously identified using the CATWOE framework (Customers, Actors, Transformation process, Worldview, Owners, and Environmental constraints)(Checkland, 1989)—were asked to rate both the importance and the current level of

performance related to each risk using a 5-point Likert scale. The results were then aggregated into a final IPA matrix using the geometric mean (Figure 1).



Figure 1. The research methodology roadmap and tools

### CATWOE framework

The CATWOE framework originates from Checkland's Soft Systems Methodology (SSM) as a problem-analysis tool. At the National Library and Archives of Iran (NLAI), we adapted this method specifically for stakeholder identification. By analyzing Customers, Actors, Owners, and other CATWOE elements, we systematically mapped key stakeholders affected by our organizational transformations where the different CATWOE elements and their definitions are detailed in the table 2.

Table 2. CATWOE elements mapped into NLAI

Customers	Which people are affected by the system? (Profit or Loss)	References librarians Cataloging Librarians End users NLAI Employees Digital resources department staff
Actors	Which individuals or groups are involved in system activities?	IT department staff
Transformation	From this specific view, what is really transformed from input to output?	"The conversion of undetected hidden AI risks in the NLAI's workplace (INPUT) → into proactively managed and mitigated AI

		risks (OUTPUT), such that: End-users experience secure, personalized, and bias-free digital interactions, Staff operate in an environment safeguarded from invisible technological threats, NLAI data assets maintain integrity and protection against algorithmic exploitation."
Worldview	A vision or approach that develops a root definition. So, it can be the big picture of the expected change	"Hidden AI risks in national libraries are existential threats to democratic knowledge access, cultural heritage, and human dignity demanding preemptive guardianship as an ethical imperative."
Owners	Which people or groups own the system and can change or even stop it?	Top management Board of trustees and government
Environment	What are the environmental constraints (such as legal, physical, ethical, etc.) that should be considered in this system?	Lack of AI technical expertise in libraries vs. tech-focused organizations Misalignment between legacy NLAI's ERP and generative AI capabilities Low prompt-engineering skills among librarians

### Individual IPA method

The Importance-Performance Analysis (IPA) method prioritizes actions by evaluating two dimensions: importance and performance. In our AI risk management application at the NLAI, stakeholders first assessed the perceived importance of each AI workforce-related risk across classified domains. They then rated NLAI's current risk management performance for each risk using a five-point Likert scale. This dual assessment transforms IPA into a risk prioritization tool, mapping risks into improvement quadrants based on stakeholder evaluations.

Concentrate Here (High Importance/Low Performance): Urgent intervention needed

Keep Up the Good Work (High/High): Sustain current practices

Low Priority (Low/Low): Consider resource reallocation  
 Possible Overkill (Low/High): Potential over-investment  
 This matrix visually prioritizes risks, enabling targeted resource allocation aligned with stakeholder perspectives.

Table 3. Number and types of participants in IPA

	Stakeholders in NLAI	Number of participants in IPA
1	References librarians	2 (S1 , S2)
2	Cataloging Librarians	2 (S3, S4)
3	End users	3 (S5, S6, S7)
4	NLAI Employees	2 (S8, S9)
5	Digital resources department staff	2 (S10, S11)
6	IT department staff	2 (S12, S13)
7	Top management	2 (S14, S15)
8	Board of trustees and government	2 (S16, S17)
Total participants in IPA		17

### Group IPA

Individual IPA matrices were completed separately by all identified stakeholders (who previously identified by CATWOE framework- Table 3). Seventeen stakeholder assessments were aggregated into a unified group IPA matrix (Table 4, Figure 2) using the weighted geometric mean method. This approach – mathematically preserving unanimity and homogeneity (Saaty, 2008) – consolidated individual ratings into final importance/performance scores. The aggregated matrix revealed consensus priorities in AI risks in NLAI.

Table 4. Final group IPA Table

AI Risk	Importance of AI risk	Performance of NLAI about AI risk
R1	2.68	1.33
R2	2.39	1.49
R3	2.19	2.15
R4	3.11	1.86
R5	1.36	2.61
R6	2.34	2.44
R7	1.64	2.22
R8	2.34	1.96
R9	2.44	1.86
R10	2.42	1.61
R11	2.41	1.45
R12	4.24	1.45
R13	2.02	1.88
R14	1.58	2.10

<b>R15</b>	1.96	2.22
<b>R16</b>	2.26	2.16
<b>R17</b>	2.60	1.74
<b>R18</b>	2.27	1.29
<b>R19</b>	2.64	1.74
<b>R20</b>	2.68	2.11
<b>R21</b>	2.89	2.09
<b>R22</b>	3.70	2.47
<b>R23</b>	2.44	2.46
<b>Average</b>	2.46	1.94

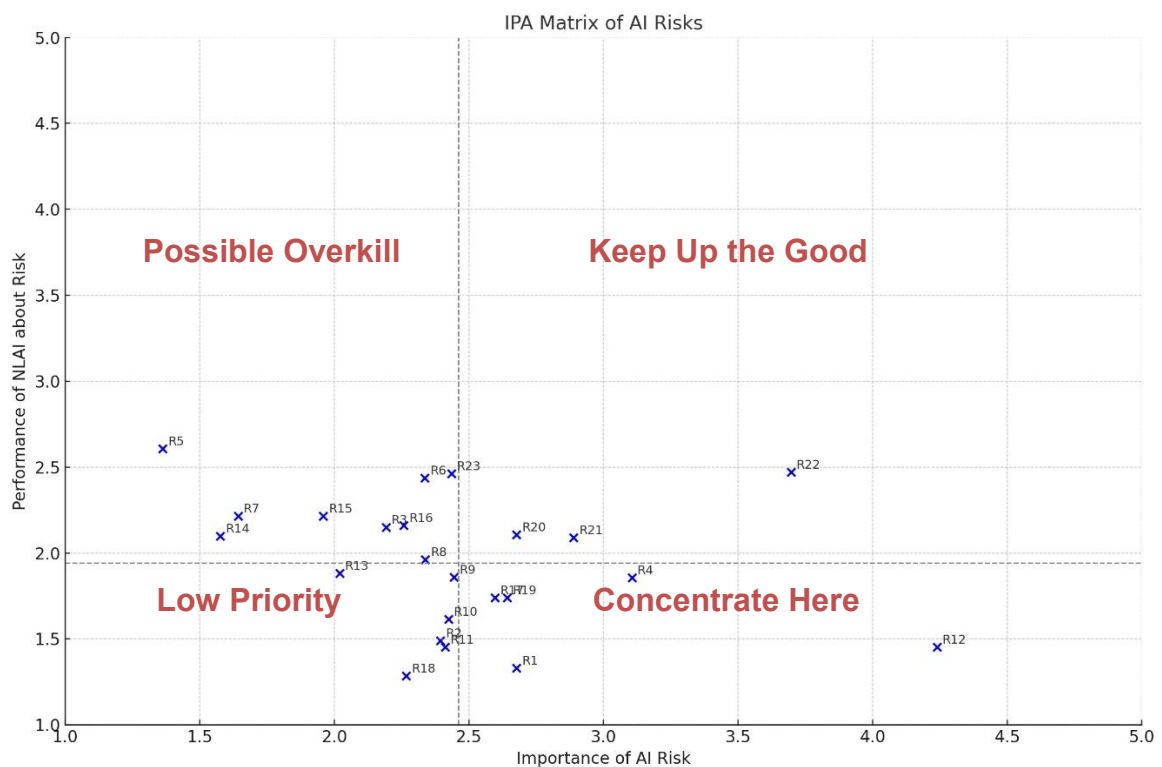


Figure 2. Final group IPA matrix

## Discussion

As illustrated in the IPA matrix, the risks located in the bottom-right quadrant represent those with high importance but low perceived performance, indicating areas that require immediate risk management attention. Among these, R12 – “Inadvertent Data Exposure During AI Optimization” is the most critical, combining the highest importance with the lowest level of perceived action. This suggests that the National Library and Archives of Iran (NLAI) should prioritize this issue urgently.

Following R12, risks R4 – “Erosion of privacy” and R1 – “Bias and discrimination” also fall into this quadrant and demand accelerated efforts to mitigate their potential impact.

In contrast, R22 – “Misuse of AI” lies in the top-right quadrant, which indicates that although it is highly important, stakeholders believe the organization has done a relatively good job managing it. Therefore, it is essential to maintain current performance levels in this area and continue monitoring it closely.

Interestingly, R5 – “Job displacement” is located in the top-left quadrant, which signifies high performance in an area of comparatively low importance. This may suggest an over-allocation of resources to this risk, and the organization could consider redirecting efforts toward higher-priority AI risks for better resource efficiency and impact.

## **Conclusion**

In another study conducted at the NLAI in 2021 on the performance management system, the effectiveness of soft approaches was well proven in problem structuring and solving complex management issues, and for this reason, a combination of soft methods was used in the present study to identify and rate the risks of artificial intelligence in the NLAI. (Zendehdel Nobari et al., 2021).

Given the resource limitations in libraries and archives—which typically rely on government funding—it is crucial to utilize available resources in the most efficient way. At the same time, the rapid and exponential growth of technologies like generative artificial intelligence requires libraries and archives to shift from a passive stance to a proactive and forward-looking approach toward these disruptive technologies. By properly ranking AI-related risks, they can adopt suitable strategies for identifying, assessing, and managing each category of risk. Such approaches, which involve the active participation of key stakeholders, can ultimately lead to improved user experiences in libraries and archives. Ultimately, they can assume a proactive leadership role in guiding their institutions through disruptive AI-driven transformations.

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## Biographical Information:

**Babak Zendehdel Nobari** holds a PhD in Management (Operations Research) from the University of Tehran, with a dissertation on ERP risk assessment methodology. He began his research in 2010, publishing several decision-making papers. From 2018 to 2022, he served as Director General of Planning and Development at the National Library and Archives of Iran (NLAI), leading key projects such as the performance management system and the LibTech open innovation platform. In 2021, he presented LibTech at IFLA and the ICA. He is currently Director of Planning at the NLAI and a university lecturer in management.

**Behnam Zendehdel Nobari** is a PhD candidate in Management and a recipient of the 2024–2025 Development of Pedagogical and Scientific Skills Grant at Iscte Business School in Lisbon, Portugal. He has professional experience across various industries in the Middle East and Europe. His current research focuses on the relationship between AI and humans in business relationship contexts. His PhD project explores how relationship dynamics can improve human-chatbot interactions. He is particularly interested in the application of AI

in business, especially the interplay between humans and AI chatbots from a marketing perspective.

**Reza Shahrabi** holds a PhD in Information Science and has over 20 years of professional experience at the National Library and Archives of Iran (NLAI), where he currently serves as Library Deputy. His scholarly work has been recognized internationally, with papers accepted at IFLA conferences in 2017, 2018, and 2019.