



Abstract

Increased reliance on Artificial Intelligence (AI) has intensified patterns of sectoral dependency in the global economy. While the adoption of AI in the secondary and tertiary sectors has greatly expanded, its integration remains uneven for the primary sector.

This study assesses the advantages and disadvantages of AI in the agriculture, fishing and forestry industries. It highlights that smaller firms face particularly significant barriers, ethical and regulatory concerns surrounding inequality and job displacement, among other barriers. Overall, this study suggests the need for stricter regulations, and tailored planning for each industry, through government initiatives that integrate Environmental Non-Governmental Organizations (NGOs) and AI developers. Moreover, it implies that technological progress promotes efficiency, equity, and sustainability.

Methods

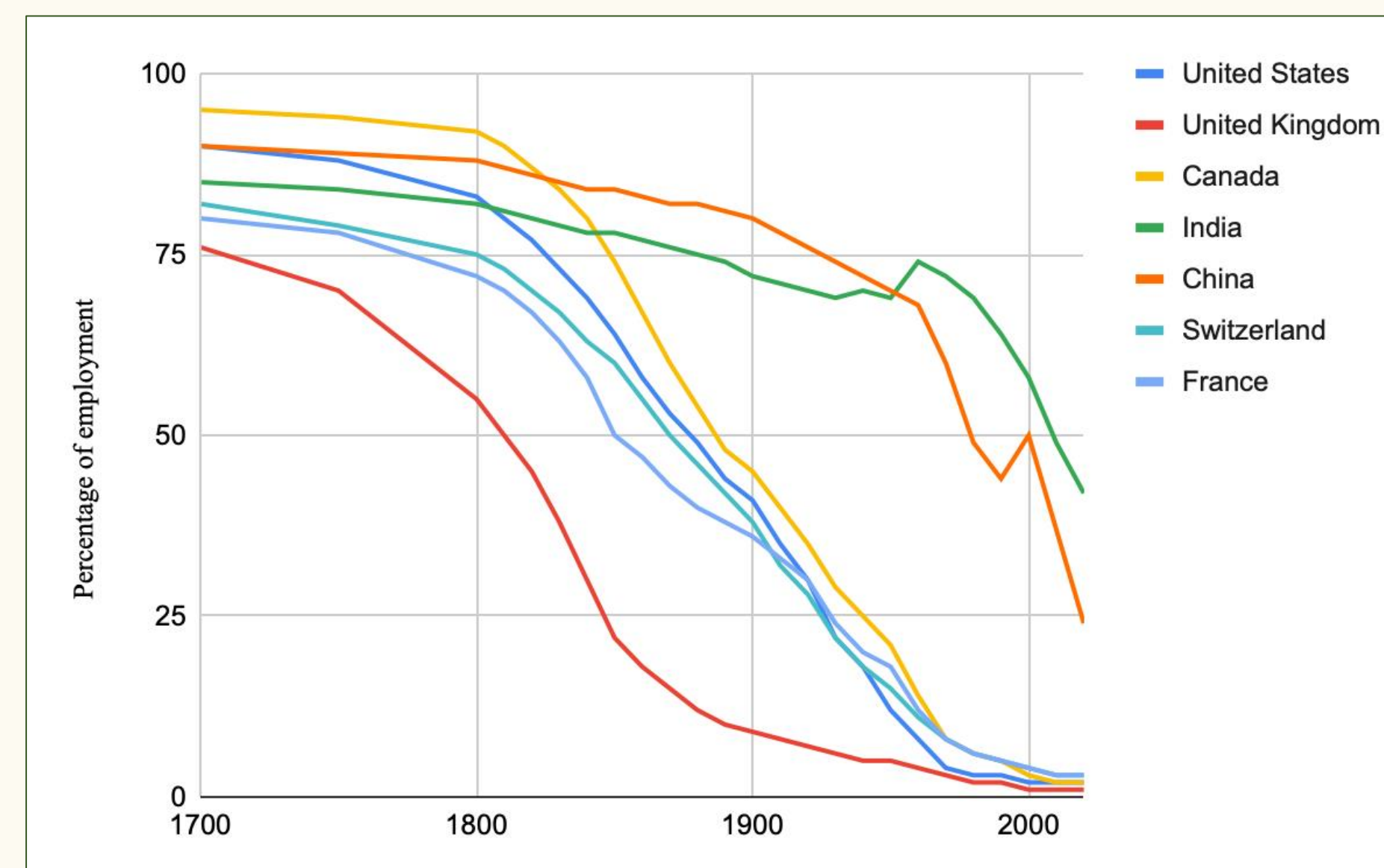
A literature-based comparative review was conducted using peer-reviewed sources published between 2014 and 2026.

The selection of sources was determined according to three dimensions:

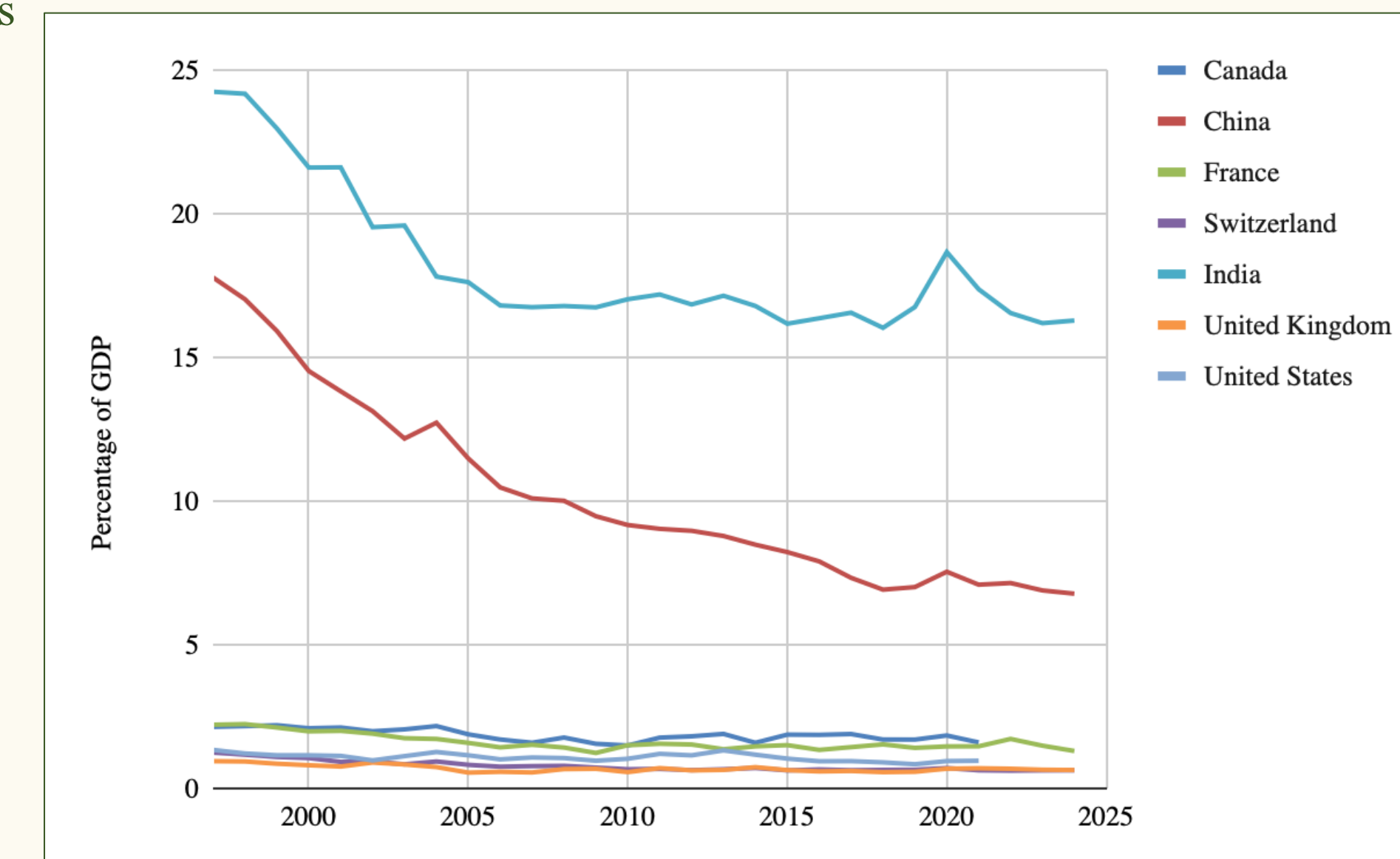
- Initial screening for relation to the two main topics (AI and the primary sector);
- In-depth review and analyse of each article;
- Selection of the most complete and relevant, as well as those which explored different sectorial and industrial perspectives.

Ultimately, this paper focuses on the agriculture, fishing, and forestry industries. These industries were selected because they allow for the examination of the impacts of AI on industries often overshadowed. Thus, highlighting the issues faced by these more obscured industries, while still leaving room for agriculture, the most prominent industry in its sector.

Graph 1: Employment in Agriculture Pre- and Post-Industrial Revolution (18th and 19th century)



Graph 4: % of GDP in the agriculture, forestry and fishing industries, in major countries



Results

In agriculture, AI may increase yields by up to 25% and reduce waste by 40–60%, but its implementation costs can reach USD 200,000–500,000 over five years.

In fisheries, however, AI safety systems have been linked to a 50% reduction in fatalities and a 17.41% reduction in maritime accidents.

In forestry, AI wildfire systems achieved 35.2% higher detection accuracy and may reduce wildfires by up to 76%.

Overall, fisheries offer the most immediate adoption pathway, forestry follows, and agriculture has the greatest long-term food-security potential but faces the highest financial and inequality barriers.

Discussion

Many studies explore the impact of AI on our modern society, this study agrees with the following: Although AI has great potential to raise production yields, reduce waste/maximize use of resources and provide better work environments, it comes at cost. A cost that will only be fully paid off when governments, AI developers and SMEs are able to ensure sector-specific regulations, affordable access to infrastructure and worker's reskilling; thereby avoiding pooling of resources/gains in larger firms.

Conclusion

Answer: AI can make the primary sector more productive, safer and more sustainable, but its benefits will not automatically be shared.

Findings & Recommendation: While agriculture has greater long-term potential, but higher accessibility risks, fisheries and forestry offer more immediate opportunities for adoption. A successful adoption of AI will require investments, affordable technologies, reskilling and regulation. All which could be more easily achieved through cross-organizational collaboration.

Study



This QR code will lead you to the study in question.