Sectoral Impacts of AI on Employment in India's Service Economy

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ARTICLE DETAILS	ABSTRACT
	This research examines the impact of artificial intelligence on India's labour market, challenging conventional assumptions about widespread technological unemployment through a demand elasticity framework. Using secondary data from the Reserve Bank of India's KLEMS database spanning 1994-2023 and applying Bessen's theoretical model, the study analyzes how AI-driven productivity improvements affect employment across India's service sectors. The findings reveal significant sectoral variations in demand elasticity, with financial services (1.86), health and social work (1.3), retail and wholesale trade (1.2), and business services (1.08) exhibiting high elasticity, suggesting these sectors are likely to experience employment growth rather than displacement from AI adoption. Conversely, sectors with lower elasticity—education (0.77) and post and telecommunications (0.32)—face greater risks of job displacement due to market saturation. The research emphasizes that India's relatively slower AI adoption provides a crucial window of opportunity to build robust institutional infrastructure comprising enabling, insuring, and stewarding institutions. The study concludes that AI's employment impact will be determined by sector-specific demand dynamics rather than uniform displacement, requiring differentiated policy approaches to harness AI's potential for inclusive economic growth while mitigating risks for vulnerable workers.

1.   Introduction

The rapid advancement of artificial intelligence (AI) in recent years has sparked an unprecedented technological revolution that is fundamentally reshaping discussions about the future of work and employment. Large Language Models now demonstrate remarkable proficiency in knowledge-based tasks, and forecasts suggest AI workers could function in office environments by the end of 2025. This has heightened global concerns about job displacement, with international organizations such as the IMF and ILO warning of automation risks to millions of jobs, while industry reports from Goldman Sachs and McKinsey predict that a significant share of work hours may be automated within this decade. These developments have reignited debates reminiscent of past industrial revolutions about whether automation ultimately eliminates or transforms employment opportunities.

India, as a services-led economy, is particularly vulnerable to these shifts. A large portion of its workforce is concentrated in knowledge-intensive sectors like IT, banking, and business process outsourcing, which face substantial risks of AI-driven disruption. Surveys indicate that many Indian white-collar workers expect partial or full automation of their jobs within the next five years, fueling fears of skill redundancy at a time when the country must generate millions of non-farm jobs annually to sustain growth. Workforce displacement not only threatens individual livelihoods but also risks undermining domestic consumption and weakening India's overall economic trajectory.

Yet, the prevailing narrative of uniform technological unemployment oversimplifies the situation. Historical evidence demonstrates that automation often reshapes rather than eliminates jobs. For example, despite the introduction of ATMs, the banking sector continued to expand its workforce as roles evolved from clerical functions to relationship management, sales, and financial counseling. The employment impact of technological change depends heavily on sector-specific demand characteristics, suggesting that a one-size-fits-all approach to analyzing AI's impact is inadequate.

This study addresses this complexity by applying a demand elasticity framework to assess AI's differential effects across India's service sectors. Drawing on Bessen's theoretical model and leveraging RBI's KLEMS database (1994–2023), it analyzes how productivity improvements interact with consumer demand. The hypothesis is that sectors with high demand elasticity will convert productivity gains into job growth, while low-elasticity sectors are more prone to displacement. Beyond academic insights, this analysis has pressing policy relevance: India's relatively slower AI adoption provides a critical window to prepare through reskilling programs, targeted sectoral policies, and institutional reforms. By offering a nuanced understanding of sector-specific employment trajectories, the research

contributes to framing India's AI transition as an opportunity for inclusive economic growth rather than a threat of widespread technological unemployment.

2.   Review of Literature

The literature on artificial intelligence and employment presents divergent perspectives on automation's labor market impacts. International organizations warn of widespread displacement, with the **IMF** (**Cazzaniga et al., 2024**) and **ILO (Berg, 2024)** estimating millions of jobs at risk globally. **McKinsey Global Institute (2024)** and Goldman Sachs project significant work hours could be automated by 2030, particularly affecting knowledge-intensive roles. However, this displacement narrative is challenged by historical evidence and theoretical frameworks that suggest more nuanced outcomes.

Bessen (2018) provides crucial historical perspective, examining US industries since the 1930s and demonstrating that automation results in large-scale unemployment only when sector demand becomes saturated. His analysis of banking reveals how despite ATM introduction, teller employment grew as roles evolved from clerical to sales functions. This transformation illustrates that employment outcomes depend on sectoral demand characteristics and the ability to reorganize tasks rather than simple technological substitution.

The theoretical foundation for understanding these dynamics comes from **Acemoglu and Autor (2011)** and **Acemoglu and Restrepo (2019)**, who develop task-based models showing how automation's employment effects depend on complementarity between human skills and technology. Their concept of the *"reinstatement effect"* demonstrates how new auxiliary tasks emerge alongside automation, potentially expanding labor's role by changing production composition in labor's favor.

Bessen (2019) advances this understanding by linking demand elasticity to employment outcomes, showing that sectors with high elasticity—where productivity gains translate into lower prices and expanded consumer demand—are more likely to experience job creation rather than displacement. This framework suggests that automation's net employment effect depends on whether increased efficiency generates sufficient demand expansion to offset direct displacement effects.

The institutional response literature emphasizes the critical role of social infrastructure in managing technological transitions. **Acemoglu and Robinson (2012)** demonstrate how inclusive institutions enable broad participation in innovation benefits, while **Haldane (2018)** provides a practical framework

distinguishing enabling institutions (workforce development) from insuring institutions (social safety nets). Recent work recognizes the need for stewarding institutions that oversee ethical AI integration.

Despite this rich theoretical foundation, significant gaps exist in understanding AI's impact on developing economies, particularly India. **Goel et al. (2024)** examine AI adoption in Indian banking but provide limited employment analysis. **Korinek and Stiglitz (2021)** offer theoretical insights into AI and development strategies but lack empirical examination of sector-specific dynamics. **Daco (2024)** analyzes generative AI's labor impacts but focuses primarily on developed economies.

The literature reveals a critical need for empirical analysis applying demand elasticity frameworks to India's service sectors. While theoretical models suggest differential impacts across sectors based on demand characteristics, no comprehensive study examines how these patterns manifest in India's services-dominated economy. This research gap is particularly significant given India's unique position as a services-led developing economy facing the challenge of generating millions of jobs annually while managing AI-induced disruptions. The current study addresses this gap by providing the first systematic analysis of demand elasticities across India's major service sectors and their implications for AI-driven employment outcomes.

3. Objective of the Study

The objective of this study is to examine how artificial intelligence–driven productivity improvements affect employment across India's major service sectors by applying a demand elasticity framework to secondary data from the Reserve Bank of India's KLEMS database (1994–2023) and Bessen's theoretical model, thereby identifying which sectors are likely to experience net job creation versus displacement and informing targeted institutional and policy responses to manage AI-induced labor market transitions.

4. Research Methodology

The research employs a quantitative secondary-data methodology, drawing on the Reserve Bank of India's KLEMS database (1994–2023) to measure sectoral output, labour productivity, wage, and price series for six major service industries. We apply Bessen's (2019) demand elasticity framework by estimating log-linear demand functions of the form $\ln D\left(\frac{p}{\omega}, \omega\right) = \alpha + \beta_1 \ln\left(\frac{\omega}{p}\right) + \beta_2\left[\ln\left(\frac{\omega}{p}\right)\right]^2 + \gamma_1 \ln\omega + \gamma_2(\ln\omega)^2 + \epsilon$ where D is real demand per person, ω is the real wage, and p is the sectoral price level. Elasticities with respect to wages and productivity are derived from the estimated coefficients. We then classify sectors by elasticity thresholds (≥1.0 vs. <1.0) to identify those likely to experience net

employment growth versus displacement under AI-driven productivity improvements. Robustness checks include alternative functional forms and sub-period analyses, while methodological limitations are addressed through sensitivity testing and discussion of potential measurement errors.

5.   Impact of Artificial Intelligence on Labour Markets

Rising Concerns about AI and Labour Market Disruption : Concerns about Artificial Intelligence (AI) disrupting labour markets have intensified due to rapid advancements in AI technology over the last four years. The development of increasingly complex AI models signals a paradigm shift, with intelligent machines expected to perform tasks currently done by humans. Industry leaders, such as the founder of OpenAI, foresee AI workers ready to operate in office settings as early as the end of 2025. This anticipation raises fears about job displacement, especially in entry-level positions, sparking debates on how AI might exacerbate social and economic inequalities.

Challenges of AI Adoption and Economic Inequality : AI research and development are dominated by a few large corporations with vast resources, creating high entry barriers and risks of concentrated benefits from automation. The *'winner-takes-all'* effect could disproportionately harm developing countries, rich in labor but resource-constrained. As automation threatens to increase inequality, the public sector faces the challenge of managing the transition costs. The need for responsible AI adoption practices is critical, particularly in countries like India, where employment levels amplify the potential impact of AI on the workforce.

From Invisible AI Features to Frontline AI Tools : Previously, AI and machine learning (ML) were integrated subtly into everyday technologies—such as predictive text, virtual assistants, and recommendation systems—mostly unnoticed by users. However, recent breakthroughs have drastically shifted perceptions of AI, highlighting the urgency to align AI developments with societal goals. The rise of AI initiatives by tech giants has triggered a competitive 'arms race' in AI technologies, evidenced by soaring patents and investments, signaling the gaining momentum toward widespread AI deployment in business practices.

Understanding the Broader Implications of AI : The accelerated growth and investment in AI paint a picture of an imminent 'AI revolution,' fueling concerns about the future of human labor and broader societal impacts. These anxieties necessitate a nuanced examination of both short- and long-term effects of AI on employment and social structures. Drawing lessons from prior technological revolutions may

help frame this understanding, guiding policymakers and researchers as they navigate this transformative period.

Institutional Responses and India's Unique Position : Addressing AI-related labor disruptions requires building robust social infrastructure—institutions capable of supporting a smooth transition amidst inevitable technological upheaval. Though this process is time-intensive and demands collaboration across the public sector, private companies, and academia, India currently benefits from a window of opportunity. The relatively slower scale-up of AI adoption in India allows time to strengthen regulatory frameworks and address deployment challenges. The future trajectory of AI's impact on the Indian labor market hinges critically on the robustness of these institutional responses.

6.   Revolutions and Ripples: Labor Market Disruptions from AI and Institutional Responses

AI's Potential for Large-Scale Labour Market Displacement : International organizations and researchers highlight the imminent risk of widespread job displacement due to AI, with developing economies particularly vulnerable. The IMF and ILO estimate millions of jobs globally face automation risks, while studies show substantial exposure to AI across various income groups and occupations in advanced economies like the UK and the US. Private sector reports, such as those from Goldman Sachs and McKinsey, predict significant portions of work hours could be automated by generative AI by 2030, underscoring the urgent need for skill upgrades in social, emotional, and creative domains.

AI Impacts and Anxieties in India : In India, a services-led economy, concerns about AI's impact on employment are pronounced, especially among white-collar workers. Surveys reveal that a majority expect partial or full automation of their jobs within five years, with many fearing skill redundancy. The banking sector and private industries are accelerating AI adoption, supported by projections of rapid AI market growth. This situation reflects broader global trends where AI adoption reshapes job demands and highlights the urgency for reskilling and adaptation in the Indian labor force.

Lessons from Past Technological Revolution : Historical technological revolutions reveal long-lasting and painful labour market disruptions, marked by job loss, rising income inequality, and slow transitions to new employment. Productivity gains often did not immediately translate into wage growth for displaced workers, leading to protracted economic hardship and social fragmentation. Examples such as the energy transition-induced coal mining job losses in the US illustrate labour markets' vulnerability to shocks, emphasizing the critical need for managed transitions.

The Urgency of Addressing India's Labour Market Challenges : India faces a unique challenge of scale, needing to generate millions of non-farm jobs annually by 2030 to meet workforce growth. The country's large presence in low value-added service jobs, highly susceptible to automation, poses significant risks. Workforce displacement threatens consumption and could derail economic growth. Given these stakes, policymakers must prioritize managing uncertainties related to AI's labour market effects, recognizing that under-preparedness could have severe, long-lasting consequences.

Institutional Foundations for Inclusive Growth : The complexity and uncertainty surrounding AI-induced disruptions call for coordinated policy responses focused on strengthening social infrastructure. Building and upgrading institutions will be pivotal to mitigating risks and translating technological gains into inclusive economic growth. By addressing structural issues and preparing the labour market for AI integration, India can better navigate the transition and cushion vulnerable workers from adverse impacts.
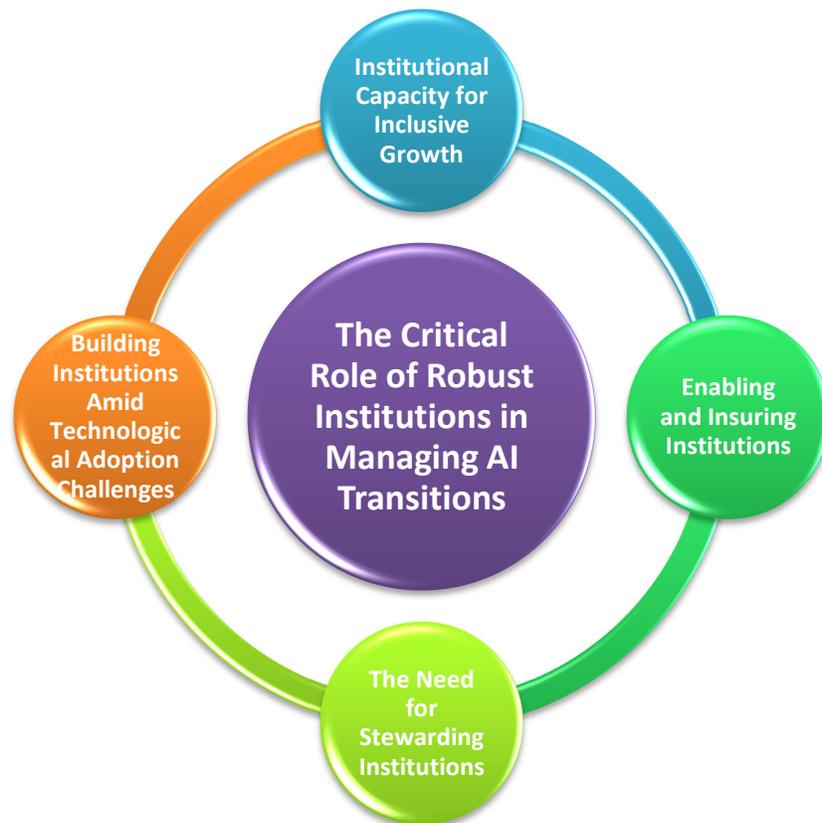
Institutional Capacity for Inclusive Growth : Minimizing the negative impacts of technological disruptions such as AI requires a strong societal response through the development of robust social infrastructure. As Acemoglu and Robinson (2012) emphasize, inclusive institutions are fundamental to ensuring broad participation in the benefits of innovation while fostering sustained economic growth.

These institutions shape a country's economic trajectory and provide the framework necessary to manage creative destruction, enabling societies to achieve inclusive prosperity.

Enabling and Insuring Institutions : Andrew Haldane categorizes institutional needs into two main types: enabling and insuring institutions. Enabling institutions are tasked with equipping the workforce with the skills needed to adapt and thrive amid evolving job demands, facilitating seamless transitions to new roles created by technological progress. This function is particularly crucial for India, given the large workforce employed in low-skill service sectors vulnerable to automation. Insuring institutions offer social safety nets and support mechanisms during these transitions, safeguarding workers' living standards, reducing inequality, and preserving social cohesion while mitigating recession risks.

The Need for Stewarding Institutions : In addition to enabling and insuring institutions, there is a growing recognition of the need for stewarding institutions, which oversee the ethical and societal integration of AI technologies. These institutions ensure that emerging technologies are applied responsibly, balancing the drive for innovation with public welfare without stifling progress. Stewarding institutions promote transparency and accountability, particularly in sensitive domains such as healthcare and education, thereby preventing adverse consequences and fostering public trust in AI applications.

Building Institutions Amid Technological Adoption Challenges : Establishing these institutions is a complex and resource-intensive endeavor that requires sustained commitment and collaboration across sectors. Unlike earlier technological revolutions, AI's current global infancy provides all nations, including India, with a unique opportunity to proactively build the necessary frameworks. The gradual scaling of AI adoption, akin to previous general-purpose technologies, allows time for refining supportive systems to ensure AI contributes to inclusive growth rather than exacerbates disruption.

7.   Vision to Viability: AI's Real World Challenges

AI currently represents a major technological breakthrough, with Large Language Models demonstrating impressive capabilities in exams, problem-solving, and knowledge-intensive tasks. However, they still fall short of producing original, publishable research, highlighting the gap between breakthrough potential and practical, widespread utility. While AI shows the promise of significant productivity gains, its high costs, experimental nature, and social acceptability challenges limit immediate adoption. Human oversight remains essential, especially as generative AI models are prone to hallucinations and unreliable outputs. Thus, while AI stands at the frontier of innovation, it is still in the experimental stage of finding scalable, practical applications.

Reliability

Reliability is central to AI's real-world deployment. In consumer-facing uses, small errors can be tolerated, but in business and safety-critical scenarios, mistakes can be disastrous. For instance, a navigation error in autonomous vehicles can cause fatalities, whereas errors from chatbots are recoverable. Issues of biased recruitment systems or flawed decision-making only amplify these risks. Traditional liability frameworks struggle with AI accountability, raising ethical concerns as machines replace human judgment. Current Large Language Models, according to experts, are not yet reliable enough for mass adoption, underscoring the need for rigorous testing and robust development standards before large-scale use.

The Infrastructure Challenge

Like past technological revolutions that relied on canals, roads, telecommunication, and electricity grids, AI adoption also hinges on building a strong infrastructure ecosystem. This extends beyond physical assets to include data frameworks, chip supply chains, large-scale data centers, and human expertise. The challenge is intensified by the need for high-quality, unbiased datasets that require costly curation and processing. Infrastructure expansion is resource-intensive and time-consuming, meaning AI's full benefits will depend heavily on how quickly these elements—technological, human, and organizational—can align to support scalable, reliable adoption of AI across industries.

The Resource Challenge

One of the most pressing hurdles is resource efficiency. Developing and deploying AI demands vast financial and material resources, with training costs for advanced models like GPT-4 or Gemini Ultra reaching into hundreds of millions of dollars. Beyond finances, AI's energy and water consumption by massive data centers raises environmental concerns, while its reliance on rare earth minerals strains global supply chains. This scale of consumption risks conflicting with global priorities such as energy security and environmental sustainability. Without breakthroughs in efficiency and sustainable practices, AI adoption may remain limited to a few advanced economies rather than becoming truly global and inclusive.

AI stands at the crossroads between breakthrough capability and practical reality. Its transformative potential is undeniable, but challenges of reliability, infrastructure, and resource efficiency continue to slow its scaled deployment. Overcoming these barriers will require not just technological advances but systemic improvements in accountability frameworks, sustainability practices, and organizational

readiness. If resolved strategically, these challenges could allow AI to transition from an experimental breakthrough into a dependable and democratized technology with widespread societal benefits.

8.   Employment Dynamics in the Age of Automation: Lessons from History

Automation frequently transforms jobs rather than eliminates them by automating specific sub-tasks, which reshapes job profiles instead of causing outright displacement. The banking sector demonstrates this process clearly: despite the adoption of labor-saving innovations like ATMs, teller employment actually rose as roles shifted from clerical activities toward customer-oriented functions such as sales and financial counseling (ILO, 2019; Bessen, 2015). Whether a sector experiences job creation or contraction depends on how profitably sub-tasks can be reorganized into new roles, itself determined by service demand and the availability of skilled workers (Acemoglu & Autor, 2011; Bessen, 2018). Understanding these dynamics is therefore central to predicting labor market outcomes under technological change.

Historical evidence from the industrial revolution reinforces this perspective, showing that automation only causes sustained unemployment when product demand is saturated. Bessen (2018) found that in industries like cotton, steel, and textiles, productivity gains drove employment growth when consumer demand remained untapped, as machines complemented labor. This highlights the importance of demand elasticity: sectors with high elasticity are more likely to experience the "reinstatement effect," where new tasks emerge alongside automation, enhancing labor's role. As Acemoglu and Restrepo (2019) argue, this constant reconfiguration of task composition enables productivity gains to coexist with employment growth, helping to offset displacement effects in dynamic industries.

9.   Elasticity in India's Service Sectors

Elasticity equations help measure how much the demand for services changes when prices, wages, or productivity change. In India's service sectors, understanding this relationship helps explain how automation and other productivity improvements might create or reduce jobs.

$$\ln D\left(\frac{p}{\omega}, \omega\right) = \alpha + \beta_1 ln\left(\frac{\omega}{p}\right) + \beta_2 \left[ln\left(\frac{\omega}{p}\right)\right]^2 + \gamma_1 ln\omega + \gamma_2 (ln\omega)^2 + \epsilon$$

D   :   Real demand per person for a sector

ω :   Real wage

p :   Real price

| ϵ | : | Error term |

| $\alpha, \beta_1, \beta_2, \gamma_1, \gamma_2$ | : | Equation parameters |

This formula shows how the demand depends on the ratio of wages to prices, and also on wages themselves.

$$ln\, D(A \cdot s, \omega) = \alpha + \beta_1 ln(A \cdot s) + \beta_2 [ln(A \cdot s)]^2 + \gamma_1 ln\omega + \gamma_2 (ln\omega)^2 + \epsilon$$

A: Labour productivity (how much each worker produces)

s: Labour's share of income

This expresses demand in terms of productivity and the share of income going to workers.

Elasticity of Demand : $\epsilon_D = \dfrac{\partial\, lnD}{\partial\, ln(\frac{\omega}{p})}$

This tells us how sensitive demand is when the ratio of wage to price changes. A higher value means small changes in wages or prices lead to big changes in demand.

Elasticity with Respect to Productivity : $\dfrac{\partial\, lnD}{\partial\, lnA} = \epsilon_D \left(1 + \dfrac{\partial\, lns}{\partial\, lnA}\right)$

The elasticity with respect to productivity depends on the price elasticity of demand and on how the labour share changes with productivity. If productivity goes up and workers get a bigger share of income, demand can increase even more.

In practice: If sector productivity and wages rise, demand often grows—especially where people need more of the service (high demand elasticity).

For jobs: If demand goes up after automation, extra jobs may be created. If demand is "saturated" (everyone who wants the service already gets it), automation may reduce jobs.

Key takeaway: High demand elasticity means productivity improvements are likely to create more jobs, not fewer. This is because demand increases enough to offset the job losses from automation.

If a service (like banking or healthcare) becomes more efficient and cheaper, and people really want more of it, automation won't reduce jobs—it might actually create new ones.

These math formulas help policymakers and economists predict whether improving productivity will help job creation or lead to people losing jobs, so they can make better decisions for India's workforce.

The equation shows that on the right-hand side, ϵ_D represents the price elasticity of demand, which measures how sensitive the demand for a good or service is to changes in its price. The partial derivative term captures the influence of productivity on labour's share of output, reflecting how improvements in productivity can affect the distribution of income between labour and capital. Together, the equation indicates that the price elasticity of demand and the productivity elasticity of demand are positively correlated, meaning that as price sensitivity increases, the responsiveness of demand to productivity changes also tends to rise. This relationship is important because it helps explain how productivity gains can lead to increased demand—and potentially more employment—when the market is responsive to such changes.

10.   Employment Potential in India's Services Sector

Analysis of demand elasticity using RBI's KLEMS data and Bessen's (2019) model shows that sectors like financial services (1.86), health and social work (1.3), retail and wholesale trade (1.2), and business services (1.08) have high elasticity. This indicates potential for productivity-driven job growth, as automation and AI can enhance efficiency while expanding demand. For instance, finance's unsaturated demand means automation can boost productivity without reducing jobs, while health and social work benefit from AI support that complements rather than replaces frontline workers.

By contrast, sectors such as education (0.77) and post and telecom (0.32) show lower elasticity, limiting employment gains from automation. In education, AI-enabled tools may reduce some tasks but regulation can moderate displacement, while telecom's saturated market and oligopolistic structures suggest automation mainly raises profits rather than jobs. These differences highlight the need for sector-specific policies to manage AI's employment impact in India's service economy.

Demand Elasticities across services sectors for India
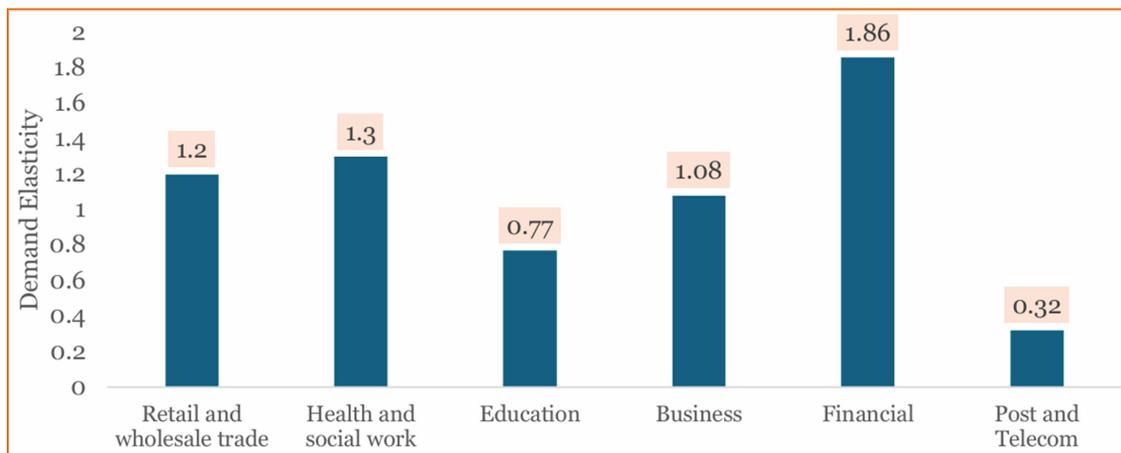
Source: Author's estimates

This chart illustrates the demand elasticities across major services sectors in India, showing how responsive each sector's demand is to changes in price or productivity. The bars represent elasticity estimates: financial services exhibit the highest elasticity at 1.86, followed by health and social work (1.3), retail and wholesale trade (1.2), business services (1.08), with lower values for education (0.77) and post and telecom (0.32).

The meaning of these figures is that sectors with higher demand elasticity—such as finance, health, retail, and business—are more likely to see employment growth when productivity improves, since rising efficiency and automation can stimulate greater demand rather than simply displacing jobs. In contrast, sectors like education and post & telecom, with low elasticity, are less responsive to such improvements; productivity gains there may not translate into higher employment and could even risk job losses if demand is already saturated. This underscores that the impact of automation and AI on jobs will vary significantly across different service sectors in India, depending on how elastic their demand is.

India's services sector is a key engine of economic growth and employment, exhibiting diverse demand elasticities across its sub-sectors. High demand elasticities in financial services, health and social work, retail and wholesale trade, and business services indicate these sectors have room for further expansion and job creation driven by productivity enhancements and automation. For example, the financial sector's high elasticity suggests it is not saturated, so efficiency gains may generate employment opportunities. Health and social work stand to benefit from AI applications in diagnostics and frontline support, while retail and wholesale trade can capitalize on productivity improvements in inventory and customer management. In the business sector, elastic demand reflects opportunities for employment growth with AI adoption, though sub-sector differences mean lower value-added segments like BPOs could face job losses, unlike higher value-added units.

In contrast, sectors such as education and post and telecom display lower demand elasticity. Education's relative inelasticity may imply that AI-driven productivity gains might reduce the need for teaching personnel, but the sector's essential and regulated nature may limit negative employment impacts. Telecom, marked by market saturation and oligopolistic structures, is less likely to translate productivity gains into increased employment, potentially leading to labour displacement as productivity improvements mostly increase profit margins instead of lowering prices. These variations highlight how automation's impact on employment in India's services will depend critically on sector-specific demand

dynamics and regulatory frameworks, demanding tailored policy approaches to maximize inclusive growth.

11.   Conclusion

This study reveals that the impact of artificial intelligence on India's labour market will be fundamentally shaped by sector-specific demand elasticities rather than following a uniform pattern of displacement. The empirical analysis of India's services sectors demonstrates that high-elasticity sectors—including financial services (1.86), health and social work (1.3), retail and wholesale trade (1.2), and business services (1.08)—are positioned to experience employment growth through AI-driven productivity improvements. These findings challenge the prevailing narrative of widespread technological unemployment, suggesting that automation can serve as a catalyst for job creation in sectors where demand remains unsaturated. Conversely, sectors with lower demand elasticity, particularly education (0.77) and telecommunications (0.32), face greater risks of labour displacement as productivity gains may not translate into expanded employment opportunities.

The research underscores that India's current window of opportunity—characterized by relatively slower AI adoption compared to developed economies—provides crucial time to build the institutional infrastructure necessary for managing this technological transition. The framework of enabling, insuring, and stewarding institutions offers a comprehensive approach to harnessing AI's benefits while mitigating its disruptive effects. Historical evidence from previous technological revolutions reinforces the critical importance of proactive institutional responses, as unmanaged transitions have consistently resulted in prolonged economic hardship and social fragmentation. For India, with its imperative to generate millions of non-farm jobs annually by 2030, the stakes of getting this transition right are particularly high.

The study's findings have profound implications for policymakers, emphasizing the need for differentiated approaches across sectors rather than blanket policies. While high-elasticity sectors should be supported through infrastructure development and skill enhancement programs to maximize their employment potential, low-elasticity sectors require more targeted interventions to prevent displacement and facilitate workforce transitions. The research also highlights significant challenges in AI's real-world implementation, including reliability concerns, infrastructure requirements, and resource constraints, which may naturally moderate the pace of adoption and provide additional time for institutional preparation. Ultimately, India's ability to transform AI from a source of disruption into a driver of inclusive growth will depend on the robustness of its institutional responses and the effectiveness of

sector-specific policy interventions designed to leverage the varying demand elasticities across its services economy.

REFERENCE

1. Acemoglu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employment and earnings. In O. Ashenfelter & D. Card (Eds.), Handbook of labor economics (Vol. 4B, pp. 1043–1171). Elsevier.

2. Acemoglu, D., & Restrepo, P. (2019). Automation and new tasks: How technology displaces and reinstates labor. Journal of Economic Perspectives, 33(2), 3–30. https://doi.org/10.1257/jep.33.2.3

3. Acemoglu, D., & Robinson, J. A. (2012). Why nations fail: The origins of power, prosperity, and poverty. Crown Business.

4. Berg, J. (2024, October 9). Minimizing the negative effects of AI-induced technological unemployment. International Labour Organization. https://tinyurl.com/4f7thztd

5. Bessen, J. E. (2015). Learning by doing: The real connection between innovation, wages, and wealth. Yale University Press.

6. Bessen, J. E. (2018). Automation and jobs: When technology boosts employment. Economic Policy Institute.

7. Bessen, J. E. (2019). Automation and the future of work. Yale University Press.

8. Cazzaniga, M., Jaumotte, M. F., Li, L., Melina, M. G., Panton, A. J., Pizzinelli, C., et al. (2024). Gen AI: Artificial intelligence and the future of work. International Monetary Fund. https://tinyurl.com/33hjum83

9. Daco, G. (2024, February 14). The impact of GenAI on the labor market. EY-Parthenon. https://tinyurl.com/m9vs3c4a

10. Goel, S., Raut, D. K., Kumar, M., & Sharma, M. (2024). How Indian banks are adopting artificial intelligence? RBI Bulletin, October 2024. https://tinyurl.com/4jznsbsc

11. Goldman Sachs. (2023). The potentially large effects of artificial intelligence on economic growth. Goldman Sachs Economics Research.

12. Haldane, A. G. (2018, May 23). Ideas and institutions – A growth story [Speech]. https://tinyurl.com/246jvy5p

13. International Labour Organization. (2019). Work for a brighter future – Global Commission on the Future of Work. ILO Publications.

14. International Monetary Fund. (2024). World Economic Outlook: Navigating a narrow path toward sustainability. https://tinyurl.com/33hjum83

15. Kalyani, A., Ozkan, S., Bass, M., & Dueholm, M. (2024, September 30). AI optimism and uncertainty: What can earnings calls tell us post-ChatGPT? St. Louis Fed On the Economy. https://tinyurl.com/bdhnyyu7

16. Korinek, A., & Stiglitz, J. E. (2021). Artificial intelligence, globalization, and strategies for economic development (NBER Working Paper No. 28453). National Bureau of Economic Research. https://tinyurl.com/2vvxkwdx

17. McKinsey Global Institute. (2024, May 21). A new future of work: The race to deploy AI and raise skills in Europe and beyond. https://tinyurl.com/48tnydzu

18. Powell, A., Brione, P., Francis-Devine, B., Rough, E., Codd, F., & Buchanan, I. (2023). Potential impact of artificial intelligence on the labour market. House of Commons Library. https://tinyurl.com/jjj68k86