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The Fifth Wave of Automation- A Critical Review of Infrastructure-Driven Business Models and the Future of Employment

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Abstract – This paper analyses the structural change of the corporation organization using five gradual stages of automation and infrastructural evolution. The present wave of industrial revolutions simultaneously crowds out not only the physical work, but also the cognitive work, coordination mechanisms, and hierarchies themselves as opposed to the earlier revolutions that mostly automated the former. The analysis follows this development of cloud computing which has broken down physical infrastructure needs by dissolving physical labor needs with AI agents, physical labor needs with robotics, management need with systems and finally, the world infrastructure allowing assembly-based company operations, which do not have traditional employment structures. Using examples of recent cases such as the billion-dollar valuation of the 13-employee Instagram and the new type of business based on AI-agents, the work states that the employee-employer relationship is not just evolving but structurally becoming obsolete. It has implications that go further than labor markets into the issue of resource allocation, social structure, and value generation in the post-employment economies. This shift requires the strategic repositioning of founders, workers and policymakers as firms move forward to creating organizations and instead assemble infrastructure assemblages.

Keywords: automation waves, AI infrastructure, future of work, zero-employee business, workforce automation, post-employment economy, infrastructure leverage, algorithmic workforce.

1. INTRODUCTION

Imagine the following A founder sitting in a cafe in Bali on a laptop and running a company with an annual revenue of 10 million dollars. No employees. No office. No organizational chart. The whole process is operated by coordinated infrastructure, artificial intelligence agents to deal with customer support, and automated solutions that deal with logistics and cloud platforms to deal with transactions. This same amount of revenue would have demanded 50 employees, physical office space, server rooms, and management hierarchy 30 years ago. The founder would have been spending majority of his time coordinating people but not configuring systems.

This isn't hypothetical. It is currently occurring in thousands of businesses without much noise. But the vast majority are preoccupied with the wrong question. They are too preoccupied with the question of which AI tool to choose what software one should study, how to automate single processes. These are concerns at the tool level. They fail to see the actual reorganization that occurs behind the scenes. It is not really about tools that change anything. It's about infrastructure. What we are seeing is the erosion of employee-company model that has characterized commercial activity in a century long history. It is not what is known as job displacement. It is the irrelevance of employment as a principle of organization.

The whole world speaks about how AI takes away jobs. That is easy thinking since it fits into patterns

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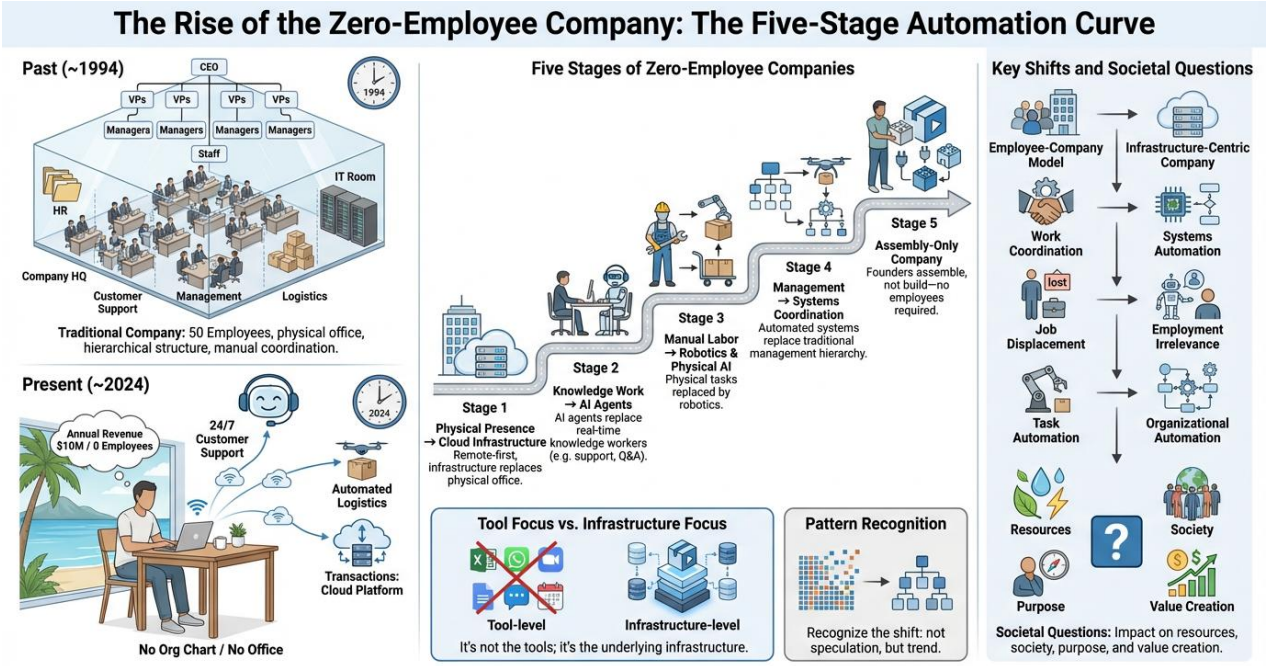
known. Earlier automation cycles substituted the physical capacity of human beings with machines. We understand that story. The workers in the factories were turned into machine operators. Typists were converted into computer users. It was only the individual work that was altered.



The **Five-Stage Shift to Zero-Employee Companies**: Automation is Changing the Organizational DNA, Not Just the Tools.

Fig -1: The Rise of the Zero-Employee Company

This time is different. The new wave does not simply take over the tasks. It substitutes the coordination mechanisms that placed companies into existence in the first place. When robots do physical work, AI agents do every piece of knowledge work, and everything is automated, what is the point of employees? More essentially, how can we imagine a company without people. This paper outlines the five stages that are delivering the notion of zero-employee companies to be not only possible but also inevitable. Physical presence was substituted with cloud infrastructure. Knowledge workers are being replaced by AI agents in real time. Manual labor will be substituted with physical AI and robotics. Management will be substituted with systems. And last, the world will have a pure assembly based company, meaning founders assemble and do not build.

Each stage builds up on the other stage. At every stage, a barrier of human labor that required human concentration is removed. The combination of them is a full change in structure. It is important since we are during it. Phase one is complete. Phase two is already underway. Phase three begins. This pattern cannot be observed by most people as they are looking at separate technologies rather than infrastructural change. They are discussing whether ChatGPT will be used to displace copywriters when the actual issue is whether a company is going to have the need of an internal staff all. The implication extends way beyond business strategy. They embrace some of the most fundamental questions to the way society is structured, how individuals gain access to resources, how we allocate the surplus that will be produced by these systems, and what gives meaning in the absence of work that has been traditionally done.

This is not the issue of whether this transformation is going to happen. The trend is evident and gaining momentum. The issue is in the place where we put ourselves. What is the new way founders are built in

this new paradigm. What happens to workers in post-employment creation value. What does society do when the social contract based on employment falls apart. What is that that comes next is not speculation. It's pattern recognition. The mosaics have been laid down. The infrastructure is already in construction progress. What we are talking of is the speed at which the assembly occurs, and who knows soon enough to take advantage of it.

2. OBJECTIVES

This analysis aims to achieve three things. First, to chart the five-stage movement where automation and infrastructure are systemically eliminating the traditional relationship between employees and employers. It is through this mapping that one gets a perspective of not only individual technological changes but the structural change that they all form.

Second, to explain the reasons why this transformation can be considered a fundamental shift but not an incremental automation. The past industrial revolutions mechanized physical operations without making much change to organizational structure. The latest wave automates both mental and manual work as well as the coordination processes that were the reason behind the hierarchy in organizations in the first place. This concurrent ness is the key to strategic positioning.

Third, to offer applicable models to founders, workers, and investors who will undergo this transition. Use of theory bears little fruit. This work determines certain strategic repositioning needed by each stakeholder group, including infrastructure-first company building up to the post-employment value creating models.

These goals have a bigger role: they help the reader to look beyond the tool-level thinking to the patterns of infrastructures reshaping commerce. Most of the discussion is about the possibility of AI replacing certain forms of jobs. This does not go to the more fundamental question, When infrastructure substitutes the necessity of human concentrated effort, what happens to the company form itself.

3. UNDERSTANDING THE PATTERN

3.1 Why Companies Needed Employees in the First Place

To know the direction, we are heading we must find out where we have been. The businesses were not established because somebody believed that the hierarchical structure was good in nature. They are the solutions to definite coordination issues that people could not resolve individually. Through the physical capital which required hundreds of thousands or millions of dollars, in 1950 you had to manufacture as zero output, widgets. Machinery, factories, raw materials. No one could afford this. Capital was monopolized, immobile and costly. You required investors and that would require you to have a corporate structure. You had to hire workers since you had to have numerous hands to run all that machinery.

Capital concentration was not all. There was limited knowledge that was difficult to transfer. If you knew how to weld, you had that in your hands and eyes and had grown up years. You couldn't easily share it. Firms came up as repositories of knowledge. Months or years of training were put in the apprentice by the experienced welder. The information that the company had been capturing and storing was specialized knowledge that could not be easily duplicated by individuals. The third obstacle was the coordination itself. Complex operations involved human judgment to handle them. There was a need to prioritize the orders and manage delays by the suppliers, manage what to do in the event of a machine failure. All these decisions were not automated, and each case was unique and needed contextual appreciation.

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You require managers to coordinate the workers, senior managers to coordinate the managers, and executives to coordinate the entire system.

Visit a manufacturing enterprise of the 1950s and you would realize that there are humans everywhere since they are working on all three issues at the same time. Employees offer physical work which machines cannot perform now. Knowledge possessed by engineers and professional craftsmen is not easily codifiable. All these moving parts have an interdependency that is coordinated by managers. Scarcity resources were coordination through companies. There was a shortage of capital, knowledge, and coordination capacity. These few resources were effectively focused on the corporate structure.

3.2 Then things started changing Slowly at first, then accelerating

Internet minimizes the costs of coordination. You could now communicate instantly with suppliers, customers and partners in any part of the globe. Previously, the need to have physical meetings or phone tagging was eliminated as information became accessible at the touch of a button. Costs of transaction were reduced. The advantage of coordination of the fact everybody was under one building was diminished.

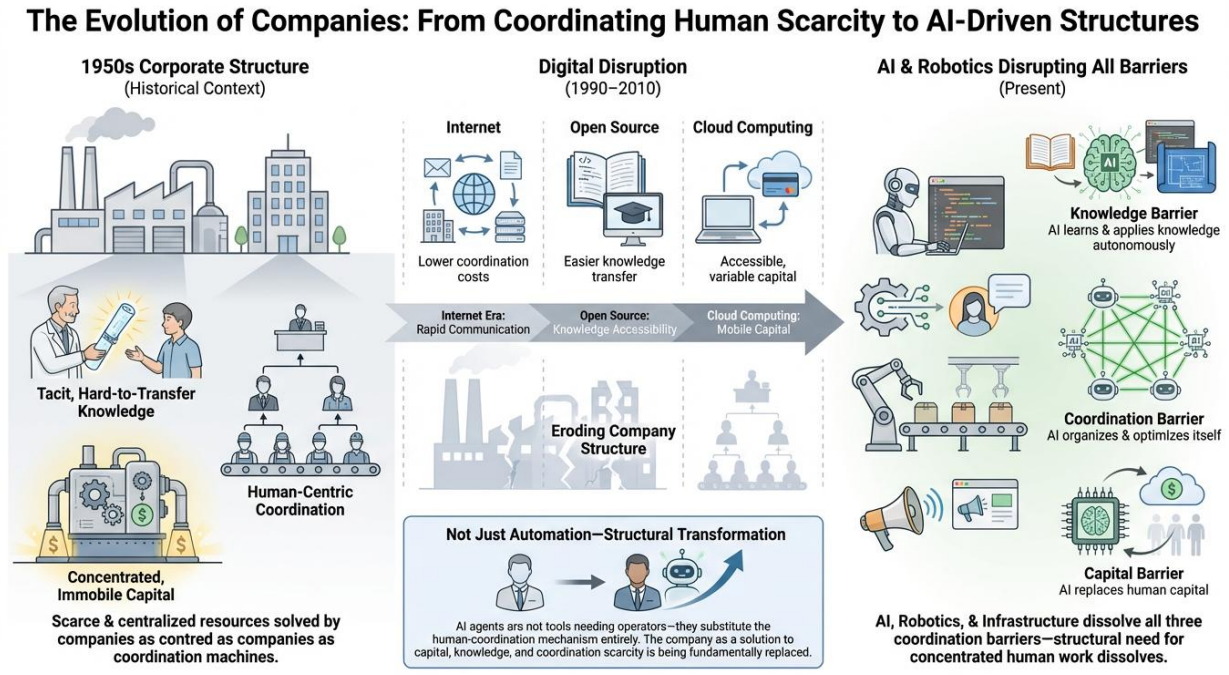

Fig -2: The Evolution of Companies

The knowledge barriers were lowered by open source. Specialist knowledge was no longer an arcane held in the heads of individuals or the company strong rooms. I want to learn Python. There are thousands of free tutorials. I must learn complicated engineering. Online, academic papers and technical documentation are freely available. The lack of knowledge reduced exponentially. Capital requirements were dissolved through cloud computing. In 1990 to start a company, it would be necessary to invest heavily in servers, networking equipment, office space, and physical infrastructure. In 2010, it took a laptop and a credit card to start the same company on cloud services. Capital became mobile between concentrated and indivisible to accessible and variable cost.

The traditional corporate structure was being eroded with each shift, on a different basis. However, none of them is the single catalyst that brought about the change that we have today. The internet did not cost

fewer coordinating people but did not remove the necessity of people to perform the actual work. The open source helped to make knowledge more available but did not get rid of the necessity of skilled practitioners. Cloud increased access to capital but did not remove the role of human factor in decision making and performing. The only thing different this time is that AI, robotics, and infrastructure are jointly assaulting all the three barriers. AI agents do not simply increase the availability of knowledge. They learn and put the knowledge into practice. They do not simply make coordination less expensive. They organize themselves independently. They do not simply increase the availability of capital. They substitute human capital in most areas completely.

The past automation waves replaced physical capacity of man. The human muscle was substituted by machines. The machines, however, required human operators to make decisions, operate the machines, deal with exceptions, and coordinate the whole system. The company hierarchy did not change significantly. The present wave replaces the human cognitive capacity and coordination capacity simultaneously. AI agents write programs, create products, interact with clients, and streamline promotional efforts. And they are not devices that can enhance human capacity. They are independent operators of entire processes. And unlike employees of humans, they distribute learning through all instances at once, get better over time, and grow exponentially.

That is why the statement that AI is simply a tool lacks the point. Tools require operators. What we are creating are not tools but substitutes of the whole human-coordination mechanism that explained the structure of the employee-company. This is essentially different because of the compounding effect on all the three barriers. It is not a question of people losing their jobs. It is of the structural need of concentrated human work dissolving completely.

4. PHASE 1: CLOUD INFRASTRUCTURE REPLACED PHYSICAL PRESENCE

Online bookstore, here was what you required in 1998, physical servers, thousands of dollars of equipment, an IT department to take care of all this, office space to store all this, back-up system, network infrastructure, security system, and huge start-up capital before you could sell a single book. This infrastructure took years and hundreds of millions of dollars to develop by Amazon. As of 2018, you required a laptop and an AWS account. You would be able to spin up servers on demand and only pay what you used. No upfront capital. No IT staff. No physical infrastructure. It might take months of preparation to make a team of engineers launch something that one individual could launch in the afternoon.

This change appears to be a given, and its structural consequences remain underestimated. Cloud did not only make it cheaper. It changed the rich and poor of the economics of company creation by turning the fixed costs into the variable costs and computing power could be immediately accessible to anyone with credit card. Infrastructure in the past was very massive and created barriers to entry. To begin a technology firm, one needed either a large venture capital or sluggish bootstrapping over years as one built the physical infrastructure required to function. This of course gave an advantage to bigger established companies with capital. It is the one that stuck the employee model in place since you had to have a team to construct the infrastructure yourself before you could begin to construct your product.

AWS launched in 2006. In half a decade, things had changed entirely in the startup world. Small groups and individuals could now use the computing system that had been used by the fortune 500 firms. The infrastructure barrier broke down. The initial indications were manifested in good time but were brushed off as anomalies. In 2012, Instagram was sold off to Facebook at the price of 1 billion with only 13

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employees. Observers in the industry referred to it as an outlier, a special case that Facebook had made possible by its existing infrastructure. They missed the pattern.

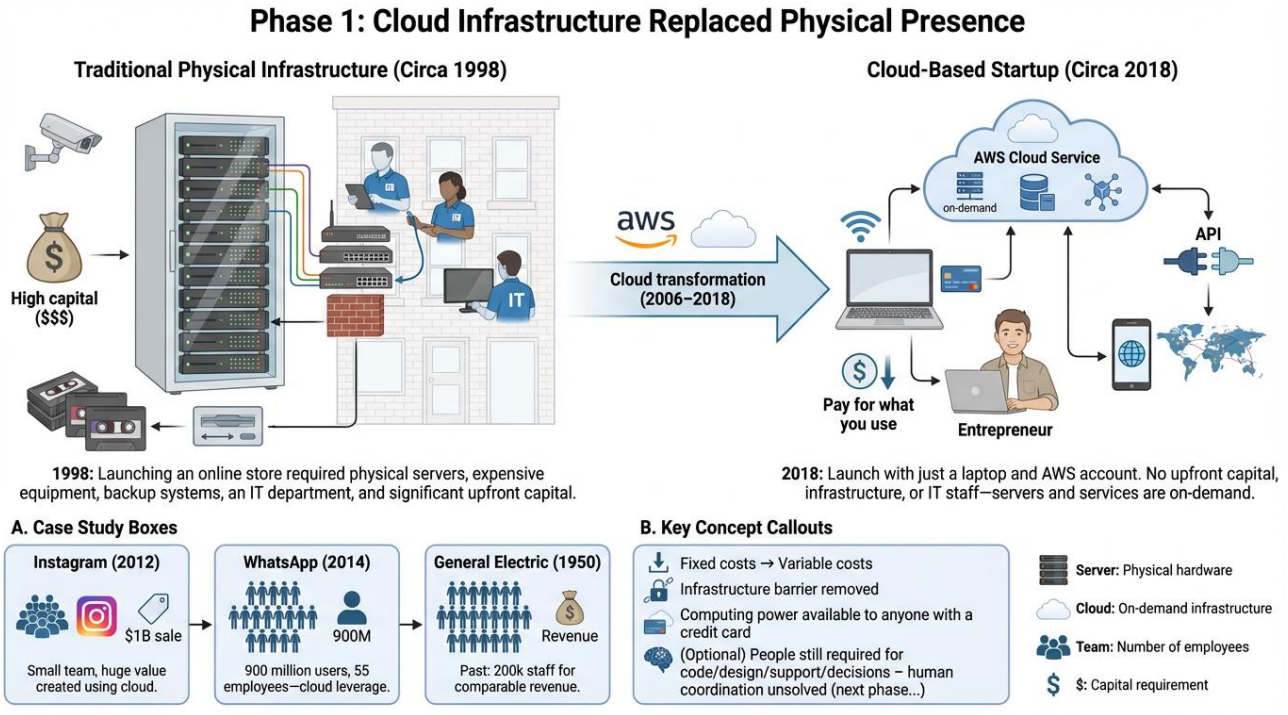

Fig -3: Cloud Infrastructure Replace Physical Presence

At the time of acquisition by Facebook in 2014, WhatsApp was serving 900 million users with 55 employees. Once again, rejected as a genius. But these weren't exceptions. They were previews of that which infrastructure leverage facilitates. Consider this in relation to similar companies of the past. In 1950, General Electric had more than 200,000 workers to make approximately the same income by inflation-adjusted revenue what WhatsApp made with 55. The distinction was not that WhatsApp was more hard or intelligent. The distinction was infrastructure. They were constructed on cloud platforms, mobile operating systems infrastructure, and internet connectivity that featured 99 percent of what used to demand the employees.

The initial total stage of transition was cloud. The physical company was transformed into a digital company. The office became optional. Servers became services. IT departments had turned into API calls. Capital requirements were reduced to millions of thousands. But this stage was needed yet not enough. The infrastructure problem was solved by cloud. It did not resolve the human coordination issue. People were still required by the companies to write the code, design its products, serve customers, resolve exceptions, and make strategic decisions. Cloud enabled small teams to operate in areas where huge teams are needed. It had not yet enabled people to accomplish what teams were needed to achieve.

5. PHASE 2: AI AGENTS ARE REPLACING KNOWLEDGE WORK

Enter most tech firms these days and you are in a weird kind of hybrid situation. AI agents do half the customer service tickets, half humans do. Artificial intelligence coding assistants are code generators that help developers to produce 30-40 percent of code. The applications of AI consist of optimizing ads and creating content, but the human marketers manage it all. Finance departments automate

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bookkeeping but retain accountants to check and make complicated decisions.

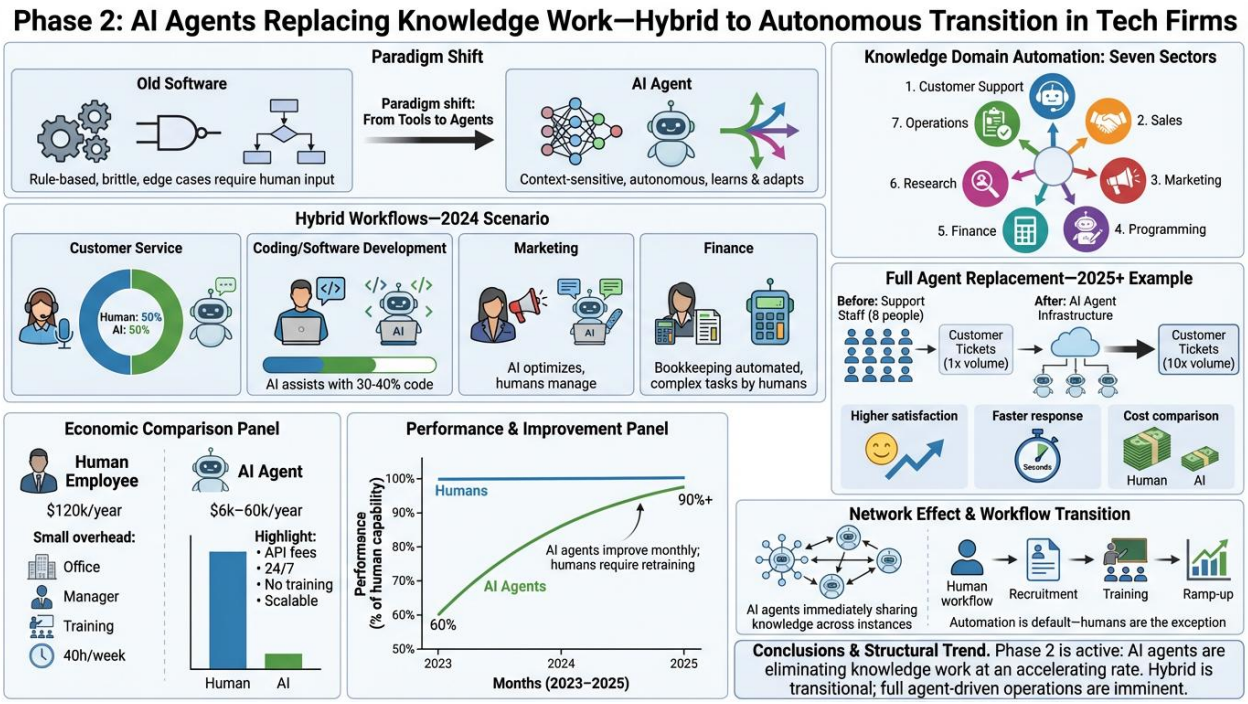

Fig -4: AI Agents Replacing Knowledge Work

This intermediate stage is short lived. We are witnessing a paradigm change between AI-as-tool and AI-as-agent, and most people have not understood what it entails on the structural level. Old software was brittle and rule based. You wrote a certain logic: in case of a request by a customer regarding a price, display a pricing page. When query is not in known patterns, pass to human. All edge cases were to be coded. This is the reason why repetitive tasks could be automated with the use of software but not human judgment.

Artificial intelligence agents are quite different. They are context sensitive, dynamic and do not require explicit programming to deal with new situations. They do not simply follow set rules. They know purpose and use some form of reasoning and are always getting better because of practice. It is the transition of the tools that help the autonomous agents that perform entire workflows. Consider customer support. The conventional chatbots could process perhaps 20% of the queries matching keywords to predetermined responses. The current AI agents can solve 70-80% of the tickets in end-to-end, even in troubleshooting, managing the accounts, and even the most subtle emotional labor, such as sympathizing with angry customers. They do not simply respond to questions. They solve problems.

One of the SaaS companies that I know of has swapped their full support staff of eight people with AI agent infrastructure in the early part of 2025. There were better customer satisfaction scores. The time of response was reduced to seconds. The company can transact 10 times the number of tickets that it bought before at no extra cost. The founder is not rejoicing over lower number of headcount. He understands that he would not hire the support team in the first place in case he began today. There are seven knowledge areas that are actively automating at present. On-site customer support via solutions such as Zendesk and Intercom currently provide AI agents to support L1 and L2 customer support without human intervention. Sales agents qualify leads, arrange meetings, have initial conversations and simply forward human closers to the final negotiation. Marketing agents develop campaigns, spend money on

ads in the most efficient way, create content, and segment audiences independently.

Fastest has been changed through coding. Programmers working with AI assistants claim that now they write 50-70% of the code with the help of AI. They create specifications, the AI creates implementation, they scrutinize and refine. One of the development shops that I have become familiar with has three senior engineers working on the workload that would have needed 12 full-time developers. Human beings are interested in architecture and complicated edge cases. The AI is used to perform routine implementation. The finance agents automate bookkeeping, invoice processing, and financial reporting. Agents in the research will carry out market analysis, competitive intelligence, and trend identification. The operations agents streamline operations, handle vendor relations, and logistics.

The economics is unbelievable. The employee has 80k salary, 20k benefits, has to be housed in an office, has management overhead, needs a period of training, and can work 40 hours per week only. Total annual cost: $120k minimum. An AI agent will run on API fees and compute of $500-5000/month, 24/7, does not require training, and is infinitely scalable. Annual expense: $6,000-60,000 and would be perfectly scaled. Agents are 60-70 percent of human capability, at which point the economic case becomes overwhelming. You are paying 5-20x more slightly higher performance. And the difference is shrinking each month.

That is why the acceleration curve is extremely steep. The AI agents improve measurably every month. Humans don't. The agents exchange their learning in all the instances immediately. Human beings need personal training. There is no friction in hiring agents. Humans need to be recruited, interviewed, onboarded, and ramped. Network effects make agents better as they are used. The more useful the agents are, the more they are used, and the more they are used, the better the training data will be, and the better the training data will enhance the agents. Most of the companies are currently in hybrid mode. The trend is not new, the agent should be hired in the first place, human only when an agent fails to cope with it. This contrasts with the classical approach where human beings were default and automation was an exception. Automation is the new standard. Man is turning out to be the exception. This is important since Phase Two is not speculative. It's actively happening. It is not whether the AI agents will eliminate knowledge workers. They already are. The question is at what rate and to what extent.

6. PHASE 3: PHYSICAL AI AND ROBOTICS REPLACE MANUAL LABOR

Phase Two happens on screens. Phase Three occurs in warehouses, factories and streets. It is the Phase Two that is being slowed down by about five years due to the hardness of atoms as compared to bits, but the line is the same. Today, Amazon has more than 750,000 robots that work at their fulfillment centers. These are not just any conveyor systems. They are self-directed mobile robots that are used to move around warehouses, locate objects, select orders, and communicate with each other to coordinate activities to maximize throughput. The proportions have changed as human workers still do some tasks although the ratio has changed. Ten years ago, one robot was serving five human beings. In the current situation, twenty robots are managed by one human being. Tesla factories are progressing in the proportion of automation per quarter. Not because they are anti-worker but because robots have become economical in more work. Robots will not call when they feel unwell, they will not require benefits, they will work 24/7, and their prices will drop every year as human labor will be rising or not, same.

Self-checkout systems had a temperate growth in retail not necessarily with the intention of enhancing customer experience but rather lowering labor expenses. Each self-checkout station removes between two and three cashier jobs. Retail chains are strategically downsizing the number of people by

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automation, which is already cost-effective. The technology stack which allows physical automation is going online in four areas at the same time. Computer vision also enables machines to perceive and analyze physical surroundings with confidence. Making things, learning spatial relations, defect detection and maneuvering in complex environments are all tasks nowadays that can be performed by a robot as well as humans who are in tight spaces.

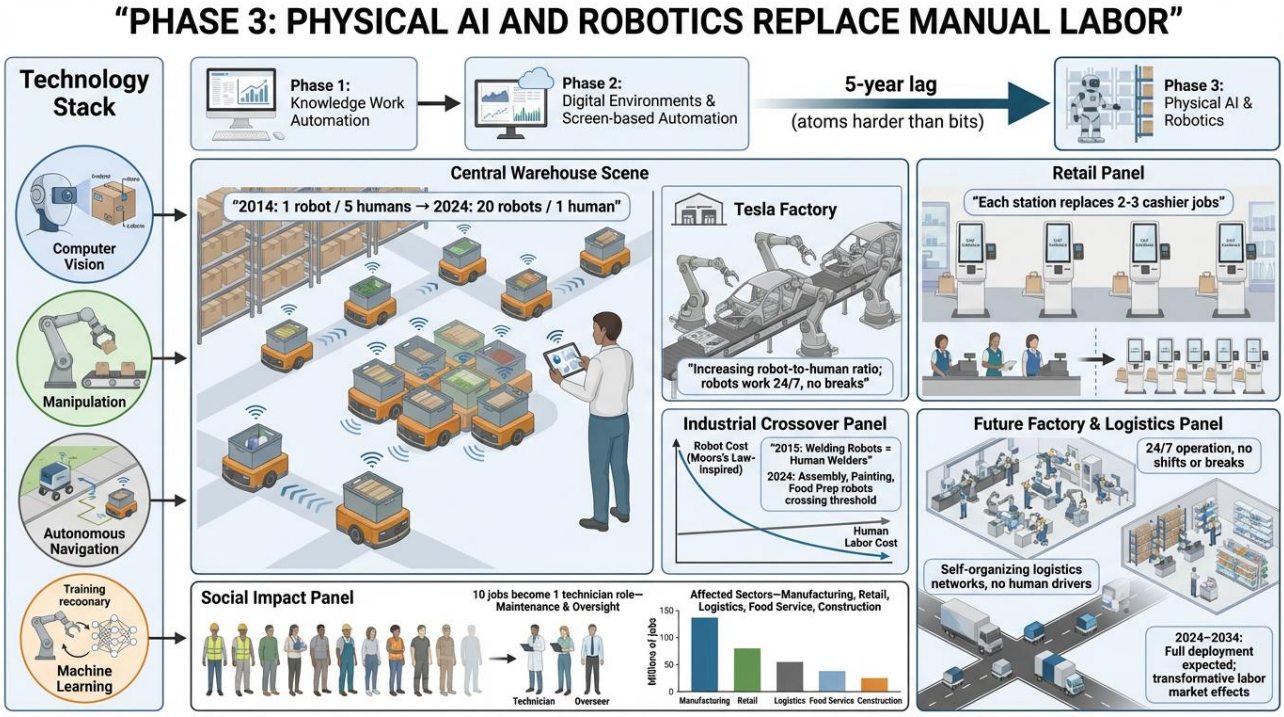

Fig -5: Physical AI And Robotics Replace Manual Labor

There is a huge improvement in the technology of manipulation. Specific tasks now have human-like level of dexterity using robot hands and arms. They are not as general as they should be, but they do not have to be. They simply must deal with the movements needed to be made in welding, assembly, picking, packing, or preparing food. It is enough to substitute most of the manpower. Self-driving cars have their navigation technology being transferred to warehouses, delivery robots, and service robots. Autonomous vehicles have the same sensor fusion, path planning and obstacle avoidance that make cars autonomous, also make everything else autonomous. Already, delivery robots work on sidewalks in several cities. The robots of warehouses are autonomous and move in complicated conditions.

Machine learning enables robots to train in the process of simulating and by exposure. They do not need to be explicitly programmed on each movement. They are taught how to do things by practicing and receiving feedback like human beings. This drastically increases the scope of activities of robots at a low cost. The economic breaking point does not occur simultaneously. In 2015, Welding robots were cost-equal to human welders. They are now in control of welding manufacturing. It was soon followed by the painting of robots. Many products are going across the threshold now by assembly robots. Robots in food preparation are developing but fast. Status quo Robots are still too costly to perform most tasks and it is cheaper to employ human beings in most settings. But direction is more important than condition. The prices of robots declined exponentially based on altered experiments of Moore Law. Costs of human labor remain unchanged or rise because of inflation and pressures of living wage. Any job that does not mandate general intelligence or fine motor skills in unstructured situations is bound to experience the

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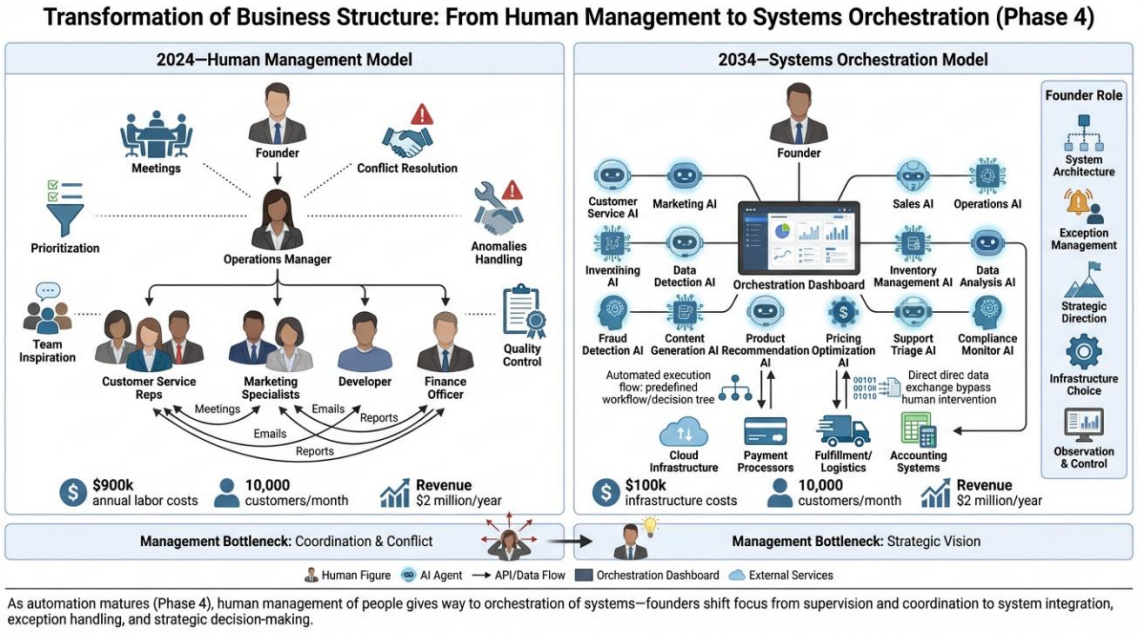
crossover. What this implies in structure Factories are 24/7, no shifts, no breaks, no turnover. Logistics networks are self-organizing systems that are not made up of human drivers. Stores are automated warehouses with little human resource. The company is no longer a hiring agent of the physical labor force but a planner of physical infrastructure. The remaining aspect of human element involves maintenance, except for handling, design and oversight. The ratio, however, is very different. It has one technician who manages 50 robots rather than 10 employees. Jobs are not eliminated totally. They become infrastructure management functions. But 10 jobs are made one and that one needs different skills.

The social impact of this phase will be the most extensive since it influences the greatest categories of employment. Manufacturing, retail, logistics, food service, and construction alone are used by hundreds of millions of people worldwide. By the time physical AI is deployed comprehensively, the consequences of automation in the labor market will be enormous compared to those of the automation of knowledge work. But the timeline is clear. Phase Three is underway and will increase in the coming 5-10 years as the technology stack has matured and the economics becomes overwhelming in more work.

7. PHASE 4: SYSTEMS REPLACE MANAGEMENT

This is the thing most people fail to understand about management, it is there to organize humans. You take out the human factor in the equation, and you do not need the management anymore. You require orchestration systems. Consider the real activities of managers. They collect information of various sources in making decisions. They also spend resources in a prioritized manner. They are solutions to conflicting needs. They inspire and pick teams in the same direction. They deal with anomalies that are not associated with normal practice. They offer control measures about quality and uniformity.



As automation matures (Phase 4), human management of people gives way to orchestration of systems—founders shift focus from supervision and coordination to system integration, exception handling, and strategic decision-making.

Fig -6: Transformation of Business Structure

All these functions are present in an employee-based company since human beings need coordination. Man requires contextualized and simplified information. There are conflicts that humans go through which need the help of a mediator. Motivation and culture are what humans must have to perform.

Human beings deal with work of fluctuating quality, and this needs supervision. Software does not require all this. There is no conflict between AI agents. Robots don't need motivation. Computerized systems offer flawless uniformity. The data is transferred via APIs in real-time and it is not subject to human interpretation. The allocation of resources is done via algorithms that optimize in real-time in accordance with the prevailing conditions.

New management level is entirely different. Meetings are eliminated by dashboards. Founders look at real-time metrics of what is happening in all systems, as opposed to weekly reporting on their status. APIs replace email chains. Systems exchange information directly with one another by means of structured data exchanges in place of human coordinators relaying information between departments. Task delegation is substituted by triggers and workflows. Systems do not require employees to be assigned any work by managers, but when conditions are satisfied, they automatically execute a predefined workflow. Weekly reports are substituted with real-time data. Rather than human beings assembling data to be reviewed, dashboards show the existing position in real-time. Routine decisions are subject to automated decision trees instead of being made by managers.

Imagine an e-commerce firm of 2024 compared to 2034. The 2024 version has a founder, an operations manager, three customer service reps, two marketing specialists, one developer, and one individual doing finance. It has a total of 9 people who serve 10,000 customers every month and has a revenue of 2 million dollars every year. The 2034 model has an orchestration dashboard and a founder. Customer service, marketing, sales and operations are done by twelve AI agents. The API integrations have links with cloud infrastructure to provide hosting services, payment processors to facilitate transactions, fulfillment networks to provide logistics services, and accounting systems to provide financial services. Independent employee with 10,000 customers monthly with a revenue of 2 million a year.

Same customers. Same revenue. Radically different structure. The 2024 version will be $900k of annual labor. The infrastructure costs of 2034 are 100k. The 2024 model needs management supervision at all time to ensure that people are on track. The 2034 version needs an architectural choice and exception handling. The question of span of control becomes insignificant. According to traditional management wisdom, a single manager can successfully supervise seven or ten direct reports. More than that, there is too much coordination overhead. Infrastructure management has different scales. There is no emotional labor, contextual communication, and conflict resolution needed in systems, which means one founder can manage dozens of integrated systems.

The bottleneck is changed to strategic vision. When it is automated in execution, the limited resource is knowing what to execute. Founders do not need to spend much time on how work occurs since they can make decisions on the work to be done. Strategy is then the added value. What the founders literally do in this model: System architecture, the design of the connection and interaction of various pieces of infrastructure. Exception management, handling of edge cases that cannot be solved by automated systems. Strategic direction, what products to create, what markets to penetrate, what problems to fix. Infrastructure choice, decisions on what platforms and services to include are based on capabilities and economics. Observation and control, looking at dashboards and adjusting the parameters to enhance performance.

The skills needed in these activities are not the same as conventional management. Weak people, strong systems thinking. Not so much emotion, more architecture. Not so much about inspiration and culture, but integration and coordination. Phase Four is the one that is still in the process of appearing but will be gaining speed as Phase Two and Three will have a full-fledged maturity. With AI agents and robots as

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workforce, the management as we know it is not there anymore. You're not managing people. You are dealing with infrastructure.

8. PHASE 5: GLOBAL INFRASTRUCTURE CREATES ASSEMBLY-BASED COMPANIES

This last stage is the entire changeover. Companies do not build up but begin to compile out of the global infrastructure. The historical analogy is educative Once the electrical grids were covered on a universal radius, factories ceased to produce their own electricity. They plugged into the grid. That change was the radical transformation of the way a factory worked. We are soon to come to a similar point with whole companies. The infrastructure elements are also becoming mature. AWS, GCP and Azure provide unlimited on-demand computing on their compute infrastructure. The OpenAI, Anthropic, and open model AI infrastructure are cognitive capacity services. Financial rails for payment infrastructure via Stripe, PayPal, and crypto networks are a pluggable infrastructure that anyone can connect to.

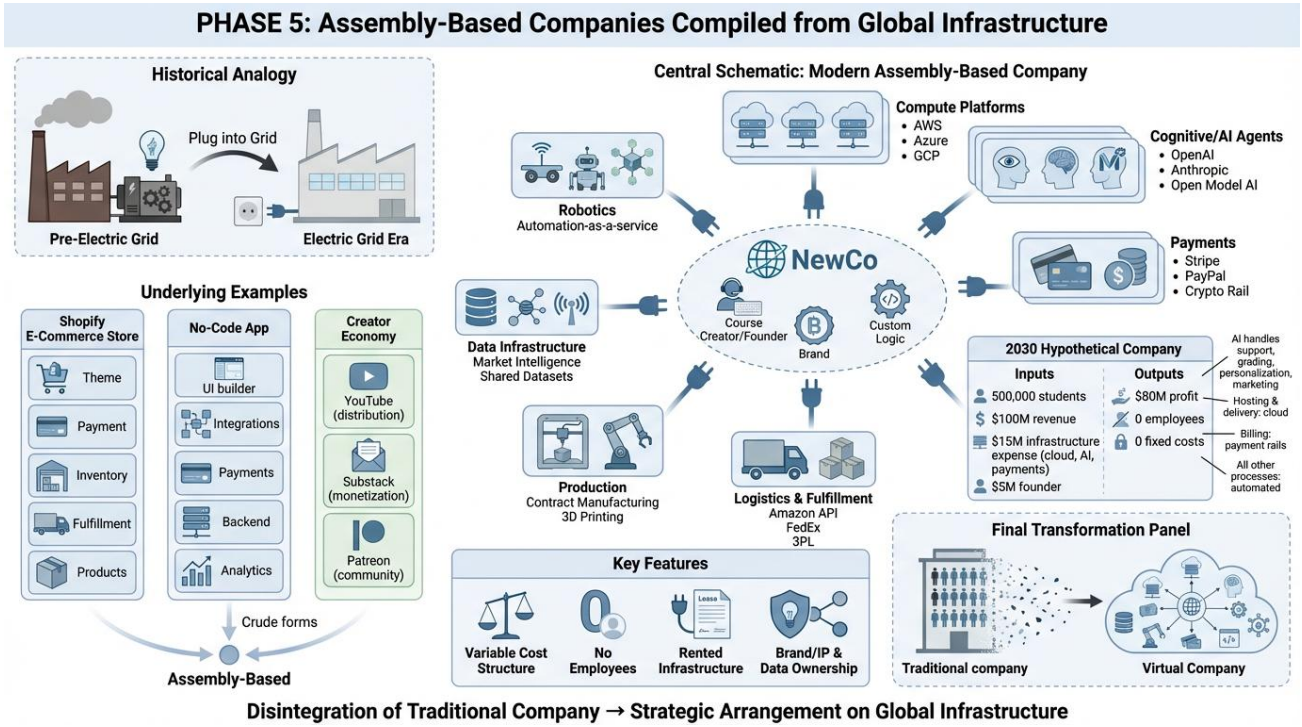

Fig -7: Assembly-Based Companies Compiled from Global Infrastructure

The infrastructure of logistics is becoming pluggable networks. End-to-end delivery is provided as an API call by Amazon, FedEx, and dedicated fulfillment services. Creating infrastructure by using contract manufacturers, 3D printing networks and on-demand production allows you to create products without having factories. As subscriptions, data infrastructure offers market intelligence, real-time information feeds, and shared datasets. Robotics platforms are coming up which provide leased robot fleets and automation- as a service.

The way assembly-based companies work is as follows: Take a business model and target market. Link to compute infrastructure in the form of hosting and processing. Insert AI agents in operations, customer service, marketing and sales. Add payment rails to transactions. Connect to physical fulfillment networks in case required. Use production infrastructure to make products. Attach branding, unique value proposition and custom logic. It is not a start-up company you are putting together. You are putting

together one made of standardized parts.

Such a model is in existence in its initial form. Shopify stores are e-commerce firms which are an assembly-based one. The founders select a theme, add payment processing, inventory management, fulfillment networks, and add their products. They are not constructing e-commerce infrastructures. They're configuring it. No-code platforms enable non-technical founders to build complex applications by bonding pre-heated components. The creator economy demonstrates the actions of an individual creator as a one-person media company distributing through YouTube, monetizing through Substack, and coordinating community through Patreon. They are not creating platforms. They are capitalizing on existing infrastructures.

These are crude forms of the entire assembly model. The second evolution is further integration of all business functions at the same time. Suppose that in 2030 there is a hypothetical online education company. Revenue: 500,000 students that generated annual revenue of $100 million. Infrastructure expenses: 15 million USD that encompasses cloud hosting, AI agent APIs, and payment processing, as well as content delivery. Foundation: $5 million. Profit: $80 million. Employees: Zero.

This isn't fantasy. All the elements are present nowadays. The founder develops course material and strategy. AI agents deal with student support, grading, personalization, and marketing. Hosting and delivery is dealt with on cloud platforms. Subscriptions and billing are done by payment processors. All the other processes are self-driven. Making the billion-dollar solo founder work out is due to zero fixed costs and perfectly scaled variable costs. Growth in infrastructure occurs automatically as there is no need to recruit when you grow. The relationship is variable cost, but there is more payment as more is used. It does not have any overhead within the organization as there is no organization in its real sense.

This model is stronger with time due to the network effects. Shared infrastructure gets better with aggregate use. The training data by all users of a single underlying model is beneficial to your AI agents. Logistics networks are streamlined on a global scale rather than on a company-by-company basis. The cost of payment infrastructure is reduced by scale. Efficiency in manufacturing is improved with collective demand. In this model, what you really possess takes interest. Infrastructure is not owned, it is rented. You do not have employees, you do not own them. They still have: Your brand, customer relationships, unique structure of infrastructure elements, strategic information on your market, and your own data.

Businesses transform into intellectual property and assembling directives. It is in the knowledge of which pieces to put together and how to arrange them to suit certain markets. This implementation occurs in the form of infrastructure. This is the ultimate disintegration of the traditional company form. Physically, there is no physical presence, no workers, no structure of management, no in-house business. Just strategic arrangement on global infrastructure.

9. CURRENT TRENDS

The five stages do not represent a progression of events that will happen. They are overlapping waves of various degrees of maturity, and they are gaining momentum at the same time.

Cloud infrastructure (Phase One) attained almost universal adoption. Gartner predicted that by 2024 the global end-user spending on public cloud services was going to be over 600 billion, compared to virtually none in 2005. This phase is complete. All new companies are constructed on cloud default.

The use of AI agents (Phase Two) is blowing up. The GPT-4 API of OpenAI grew the yearly adoption by developers 300 per cent. Firms such as Sierra established by the Salesforce co-CEO Bret Taylor raised $110

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million with a clear purpose of developing AI agents that can substitute customer service departments. This is no longer experimental. It is its mainstream business policy. According to a study by McKinsey, generative AI has the potential to automate 60-70 percent of existing workflows, and knowledge work will be affected the most in the nearest future.

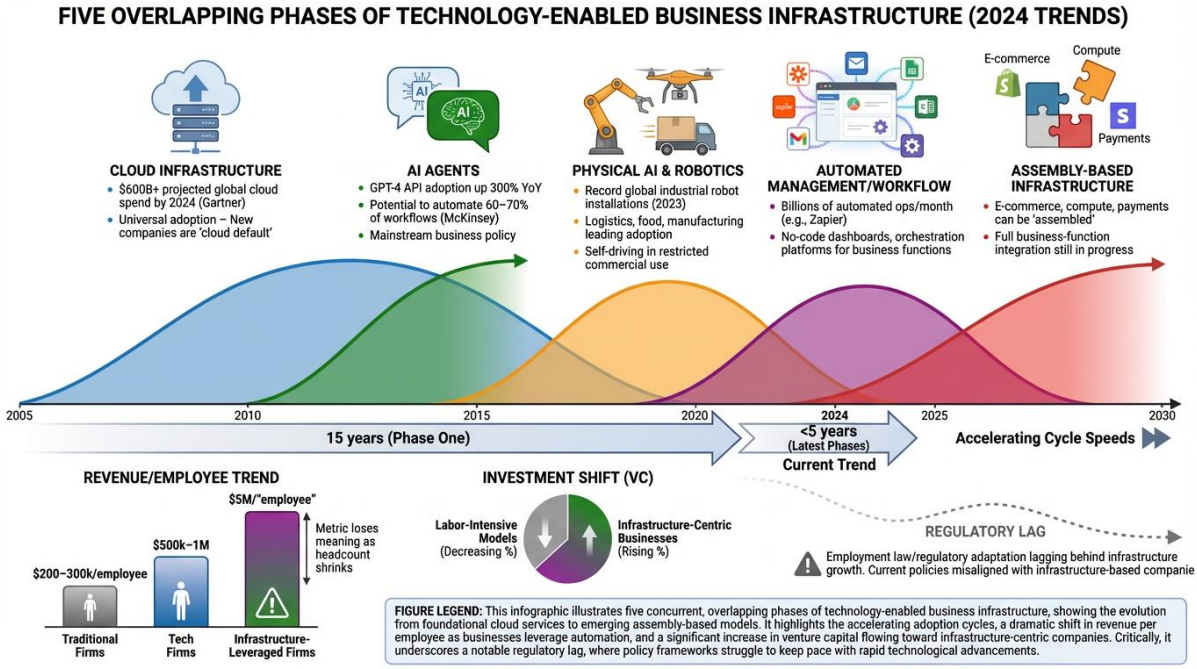

Fig -8: Five Overlapping Phases of Technology-Enabled Business Infrastructure (2024 Trends)

The early deployment phase was reached with physical AI and robotics (Phase Three). According to the International Federation of Robotics, world industrial robot installations are at record levels in 2023, and especially in the areas of logistics, food production, and Manufacturing. Boston Dynamics and the likes shifted toward commercial applications of research demonstrations. Self-driving technology is still unrefined but commercially applied in restricted situations through businesses such as Waymo and Cruise.

Automated management (Phase four) is developing on the platform of integrated workflow. There were companies such as Zapier that links various software applications together via automated processes that were reported to process billions of automated operations every month. The shift towards no-code operations and built-in dashboards is the initial stage of Phase Four development. The orchestration platforms allow founders to control whole business functions instead of people.

Phase Five, infrastructure based on assembly, is fragmented. Shopify made e-commerce assembly based. Stripe allowed payments to be assembled. AWS made computing based on assembly. However, complete integration of all business functions is not there. The compositions are there; the smooth system of assembly is yet to develop. The chronology narrows down and down. Phase One was during which it took about 15 years after the launch of AWS to universal adoption. Phase Two is accelerating much quicker as AI agent deployment will have critical mass in 3-4 years. Phase Three should move faster as the cost will decrease and the capabilities will be enhanced. Phase Four and Five will build upon what the previous phases have done, and they may grow to maturity within the next 5-10 years.

This trend is confirmed by revenue-per-employee measure. Conventionally, firms have revenues of

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200,000-300,000 per employee on average. Technology firms go even greater, at a range of $500,000-1,000,000. However, the companies that leverage infrastructures are shattering such standards. A business that has two founders and zero employees with the production of $10 million demonstrates the figure of five million dollars per capita. When the denominator tends towards the value of zero, the metric becomes meaningless. The capital flowing through the investment sector is more and more concentrated in infrastructure-enabling firms as opposed to labour intensive models. Venture capitalists are categorical to support those companies having low staff counts to their revenue potential. The unit economics of the leverage of infrastructure generate better returns than the human dependent models. There is a long way behind in terms of regulatory environments. Traditional employment relationships are assumed in labor law, employment regulation, tax policy, and social safety nets. These systems were not made to accommodate infrastructure based companies with and without employees. The mismatch poses certain opportunities and risks, which are not subject to much policy intervention.

10. IMPLICATIONS AND CHALLENGES

The change generates three types of deep-rooted problems, namely economic, social, and structural. They all need essentially different thought than incremental automation developed.

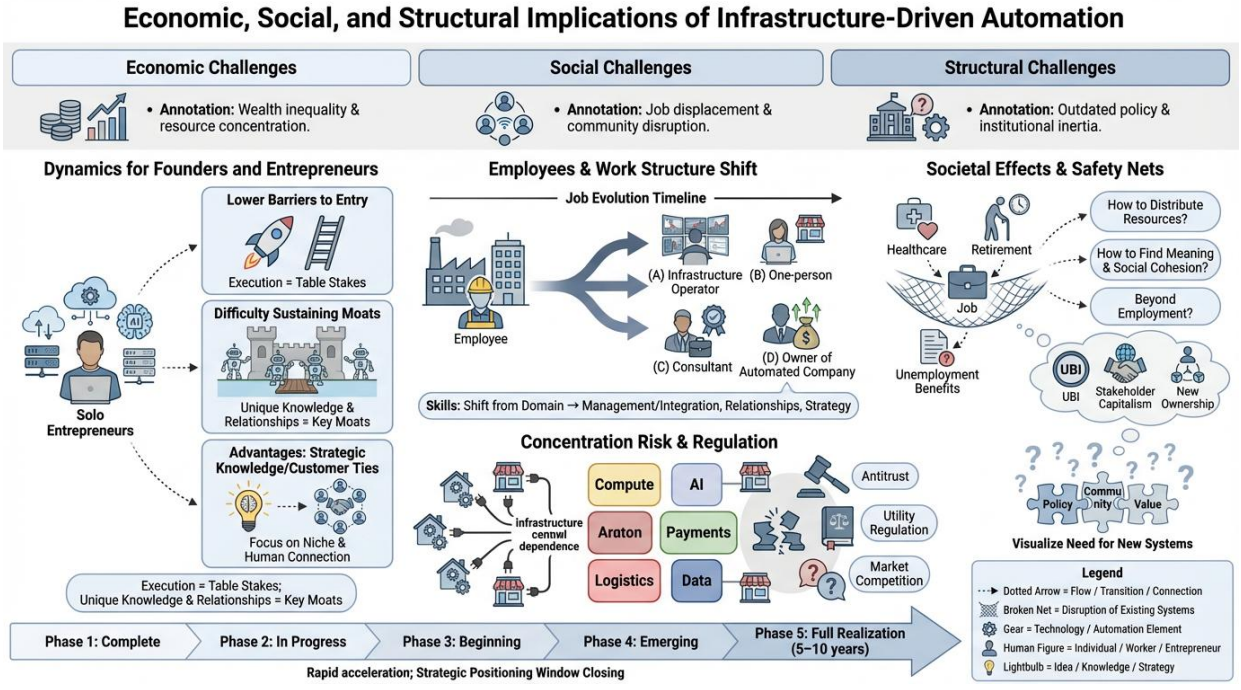

Fig -9: Economic, Social and Structural Implications of Infrastructure-Driven Automation

It is an opportunity of a lifetime for the founders and entrepreneurs. Easy access barriers have never been low. The infrastructure literacy of a solo founder provides them with the ability to start businesses that would have been previously, only possible with venture capital and large teams. However, competitive moats are more difficult to sustain. The execution advantage is reduced when all people can utilize the same infrastructure. What brings about sustainable differentiation in the case of commoditized infrastructure. The solution seems to be special knowledge and customer relations. Primary moats are strategic knowledge of underserved markets, proprietary data to enhance your infrastructure set-up, and strong customer relationships that generate switching costs. Execution capacity was formerly a

significant strength, now a table stake.

Practical consequences to founders Bias towards thinking infrastructure-first. Prior to the hiring of your first worker, make inquiries about whether an AI agent can manage the role. Establish design companies that work independently. Become familiar with the infrastructure environment, what each platform can or cannot do. Establish communal links with infrastructure providers quickly. Integration and orchestration must be part of the core competencies, and not the technical details that are outsourced. In the case of existing employees, the structural change is unpleasant. The diminishing of employee-employer relationship implies that the traditional job security is being diminished. Nevertheless, this does not always imply poverty or unemployment. It implies alternative work structures as well as alternative value capture systems.

The change seems to be that of employee to some alternative models. Infrastructure experts that operate automated systems instead of doing them. One-person infrastructure-based businesses that are in competition with the traditional ones. Project consultants that offer expertise in a specific area on demand. Automated companies that have their owners enjoy returns without them having to work. The marketable skills change altogether. Management and coordination of infrastructure become more precious than domain knowledge. Mental ability to think and be creative with strategies is more important than the ability to execute. Network effects and relationship building are particularly important in a scenario where work is also automated. Then the challenge comes to create value that is not easily commodifiable or automatable.

Practical implications for the employees: Accelerate the rapidity of developing financial autonomy since the transition phases are unsteady. Building infrastructure literacy, which is the ability to use platforms but not to rival them. Infrastructure leverage. Consider initiating side projects. Change attitude of job security into value creation where traditional jobs might not be very stable in the long run. To society, the issues are not restricted to personal adjustment to the transformation of the system. The conventional social safety nets are employment-based. Healthcare is tied to jobs. Employer based retirement savings. Unemployment insurance does not presuppose any structural employment obsolescence, but temporary unemployment. In absence of employees, what is the way of people accessing such resources?

The questions are political and philosophical and not economic in nature. What does society do with resources in a society where employment ceases to be the major mechanism of distributing resources? What brings meaning, form, and sociality to the environment where traditional work is lost. What does it mean to make people valuable by having their labor to communities to which it is optional. These cannot be answered by market mechanisms only. They need to make decisions together regarding resource distribution, social organization, and value other than economic productivity. Numerous ideas are available, ranging between universal basic income, stakeholder capitalism, and radically different ownership models. None of them have come to an agreement, and the transformation is happening at a faster pace compared to policy development.

Specific attention should be paid to the concentration risk. Infrastructure is very costly to construct but inexpensive to utilize. It brings out tendencies of natural monopoly. It is possible that in 80 percent of global business infrastructure, 5 companies will own commodities of computing, AI, payment, logistics, and data. The relationship between companies and employees as sources of power is changed with the sources of power being the infrastructure and providers. When a founder is going to build an assembly-based company, he or she will become reliant on infrastructure providers in similar ways to how employees become reliant on employers. If AWS opts to increase prices by 40 percent, there is not much

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you can do. Should OpenAI become restrictive on the API it closes your business. The centralization of infrastructure control establishes new patterns of vulnerability.

Regulatory questions gain criticality. Are the infrastructure providers to be utility-like. Are antitrust regulatory systems that were developed to deal with industrial-era monopolies pertinent to infrastructure platforms. What do we do to make sure we have competitive infrastructure markets. Network effects tend to concentrate power, how do we secure this? These are the questions that are not answered much. The timeline is important since it will show the available time to carry out the preparation. Phase One is complete. Phase Two is currently in progress. Phase Three begins. Phase Four is emerging. Phase five can be seen 5-10 years earlier in full realization. Nevertheless, the trend is obvious and is gaining speed. The strategic positioning window is open, but it is fast closing down.

11. HOW TO POSITION YOURSELF

The various stakeholders should be approached differently where strategic positioning is concerned but one thing cuts across the board Infrastructure literacy becomes the core competency.

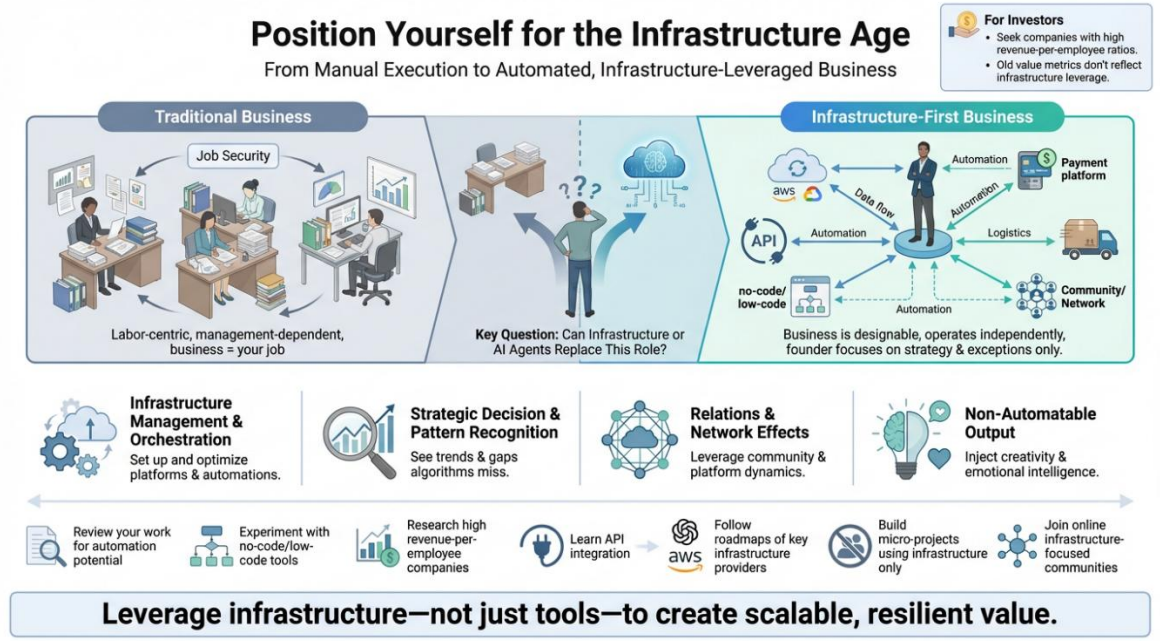

Fig -10: Position Yourself for the Infrastructure Age

Assuming that you are creating a company, infrastructure-first thinking should be the default mode of thinking. Inquire specifically before any hiring decision is made as to whether an AI agent, an automated system or external platform can perform the function. The infrastructure must be the default, and the employees must have made an exception under certain justification. Make business designable in your absence. This is what seems contradictory, yet it is necessary. When your business can't operate without your fulltime attention, then you have created a job, but not a business. The businesses that take advantage of infrastructures are independent of management, with the founders focusing on strategy and exceptions and not operations.

Get to know the infrastructure environment. What capabilities are available on which cloud platforms? What can present AI agents depend on? What are the best payment processors to combine with what platforms? Which markets are covered by what logistics networks? The knowledge is made as innate as

knowing your customer or market. Establish communal links with infrastructure providers quickly. With these platforms becoming important to the operation of business, the direct relationship with teams gives advantages. First movers tend to have superior support, shape the product, and have access to new capabilities prior to being made publicly available.

Make integration and orchestration key competencies. The possibility to integrate the various elements of infrastructure in a smooth manner and make them work to your best advantage according to your application needs, emerges as a core competitive edge. This demands technical knowledge and strategic outlook of how the pieces fall in place. In the case of being an employee now, transition requires active re-positioning. Being reactive means waiting until disruption comes. Strategic positioning implies that we need to acquire skills that are infrastructure-relevant today when traditional employment remains stable.

Change job security to value creation. The concept of job security is structurally losing its meaning. However, the skill to generate value continues. The question arises What value can you generate that you will not compete with but utilize infrastructure. Gain competencies of four types. Infrastructure management and orchestration: The process of learning how to set up and optimize automated systems. Making strategic decisions and identifying patterns and opportunities unnoticed by algorithms: Identifying trends and possibilities. Relations building and network effects: Building value in networks and communities. Producing output that is not readily automatable This work involves real creativity and emotional intelligence or original problem solving.

You should also consider doing side projects using infrastructure leverage when you are still working. These dynamics can only be well explained in direct experience. Create a small structure with no employment, only infrastructure. This gives real insight into opportunities as well as constraints. Achieve financial freedom sooner. This is an unstable period of transition. A living expense of 12-24 months will leave it to experiment, learn, and reposition without desperation to make decisions.

The trends have definite strategic directions if you are an investor. Search companies have extreme revenue per employee ratios. Conventional measures disintegrate, whereas revenue efficiency signifies leverage in infrastructure. Infrastructure becomes very useful. The companies facilitating the assembly model assume value, everybody building on their sites. The picks and shovels of the infrastructure age fetch better profits from most companies that employ such tools. Seek businesses that allow leveraging of the infrastructure as opposed to competing with execution. A platform to assist founders in coordinating AI agents is a value-capturing move compared to having agents in separate businesses. Primary moats are network effects and data benefits.

Conventional value measurement tools must be changed. The infrastructure-leveraged economics is not reflected in price-to-earnings ratios that are made to suit labor-intensive businesses. A business whose revenue is 50 million and whose infrastructure costs 10 million and the business has no staff will depict 80 percent profit margins. This could not be done in old fashioned business models. The culture change that is needed is applicable in any position. Since the creation of organizations to the construction of systems. Managing people to coordinate infrastructure. Since recruiting based on skills to setting up based on capabilities. Since the increased number of heads to the broadening of the infrastructure assimilation.

Anyone may begin with Review the existing work and see what could be performed by AI agents nowadays. This gives real insight into automation path. Most individuals do not possess the number of tests to assess the existing AI possibilities, as they do not have much knowledge of their capabilities. Test no-code and low-code systems. These give easy points of leverage on infrastructure without having to

dig deep into the technical aspects of the infrastructure. Construct something that is easy to comprehend the model. Research firms that have high revenue-per-employee ratios. Instagram, WhatsApp, etc are not exceptions. They're templates. Applying the knowledge of how they managed to work with maximum efficiency, there are patterns which can be applied. Study API integration and workflow automation. Simple knowledge of the manner through which the various systems are interconnected is strategic advantage itself. This does not need one to become a developer but rather get out of pure business or operation thinking. Go through infrastructure providers and learn their road maps. American AI OpenAI, Anthropic, AWS and Stripe and others release updates on capabilities periodically. Being in advance allows one to position oneself before the general realization.

Construct something tiny by means of infrastructure only. No employees, no hires, not a single employee, platforms only. This offers practical learning that cannot be acquired in theory. Become part of networks that have businesses based on infrastructure. Online communities of founders creating this way, forums, and Discord servers share learning and network effects. The chance is there now to those who see the trend. Majority of the people are stuck in the tool-level thinking. They argue that ChatGPT will cut the job of copywriters when the actual issue is that businesses will not necessarily have staff of their own. People who mentally make the leap to infrastructure benefit 5-10 years as long as this has not become obvious to the mainstream thought process.

12. THE COUNTERVAILING FORCES

12. 1 Why Employment May Persist Longer Than Predicted

Although the five steps model outlines real technological ability, various forces can decelerate, misdirect or completely change this movement. The knowledge of these countervailing forces creates the requisite balance to infrastructure-determinist accounts.

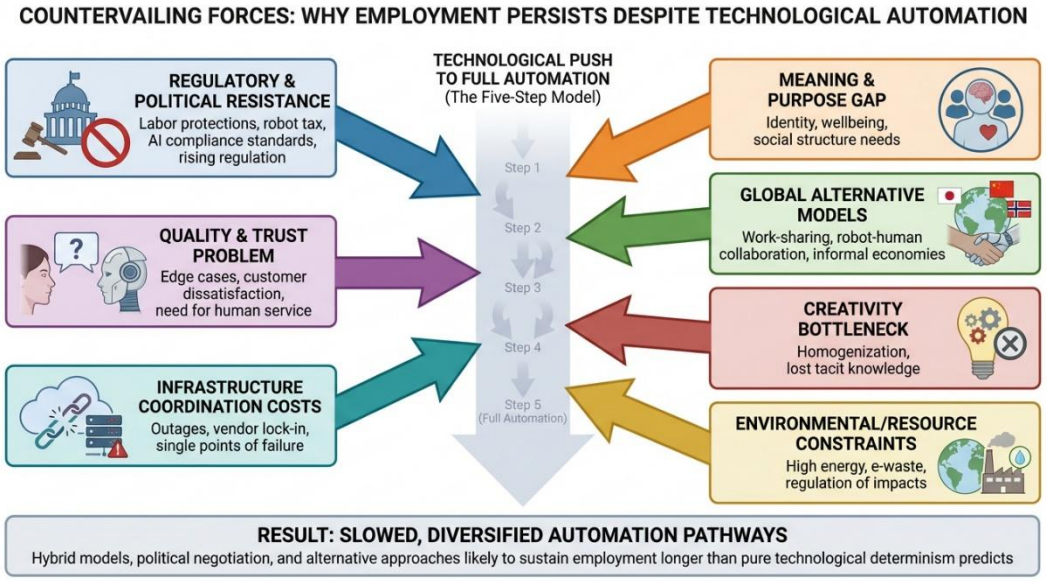

Fig -11: Countervailing Forces

12.2 Regulatory and Political Resistance

Protections on labor did not just come out of the blue. They are the political concessions between the capital, the labor and the government that are hard-earned. The political economy is not factored in the

assumption that these just fade away with the advancement of technology. France already outlaws some types of automation via its labor law. South Korea taxes robots. The AI Act of the EU sets high compliance standards on automated systems. Political pressure to intervene is increased as the impact of automation as a source of unemployment becomes apparent. The possibilities of universal basic income, robot taxes, and mandatory employment quotas, the right to human service law, etc. are all viable regulatory solutions. Its article assumes frictionless technological adoption, yet political friction is high and increasing.

12.3 The Quality and Trust Problem

Routine tasks are easy to automate but edge cases, subtleties, and situations where real understanding is needed are hard to automate. An AI-store selling 80% of the tickets is impressive until you consider the fact that 20 percent of them can be your most valuable or the most dissatisfied customers. Those companies automating these interactions run a risk of destroying important relationships. Several papers indicate that customers like human contacts to complex or emotional problems. Over-automated hospitals recorded a decline in patient satisfaction. Banks that stopped having human tellers found out there is an issue of retaining customers. The very premise that good enough automation can meet all requirements overlooks the huge quality gaps that can become hard or even impossible to bridge.

12.4 The Coordination Costs of Infrastructure Dependence

The article glorifies companies that are assembly-based, and they are not properly responding to emerging vulnerabilities. In the case of AWS that had a significant outage in 2022, thousands of businesses completely halted. In the event of instability in OpenAI in 2024, firms that relied on their APIs were instantly hit by operational crisis. Dependence on infrastructure is facilitating single point of failure which the employment-based models averted due to the redundancy. In addition, infrastructure providers are granted monumental power over the dependent businesses. Increase in prices, service terms or capability prohibition can annihilate companies within a span of a night. The perceived effectiveness of infrastructure leverage can be weak in comparison to ownership-based models.

12.5 The Meaning and Purpose Gap

Man is not engaged in work just to earn money. Work gives a sense of identity, social bonding, structure, purpose and meaning. It is always demonstrated in psychological studies that meaningful work is a vital factor in wellbeing and life satisfaction. The premise that individuals would easily switch to post-work lives disregards the strong human desire to give back as well as be recognized. The societies, which tried to achieve de-employment very quickly by distributing the resources (different nations with many resources), tended to have social dysfunction, depression, and lack of meaning. The issue of infrastructure-based unemployment can initiate problems on an unprecedented scale. These psychological and social needs will remain unmet, and without effective handling of these needs, anti-automation resistance can be even stronger than economic efficiency will indicate.

12.6 Alternative Models Emerging Globally

The Western-centric focus of the article lacks work and various ways of approaching automation. Japan does not emphasize the replacement of coffee but tries to make people work together with robots without opposition, but to support them. In Nordic countries, there are experimental works made with shorter work weeks and work-sharing. Not all Asian countries are led by the idea of pure efficiency. The common prosperity program in China expressly limits some types of automation of labor. The informal economy in India runs on a completely different logic in comparison to Silicon Valley startups. Such alternative models could be more sustainable or socially acceptable compared to zero-employee companies.

12.7 The Innovation and Creativity Bottleneck

Infrastructure leverage is the best way to optimize execution but is a limitation to innovation. When all the people use the same infrastructure, it is more difficult to differentiate. The article does recognize that this has a role, but it underestimates its importance. Intuitive creativity may demand profound understanding of the domain, tacit knowledge, and creative insights that infrastructure-based models might not be able to produce. Firms that are constructed based on assembly only run a risk of becoming the same commodity producers that compete on price. The strategic acumen and distinct structure that the article describes as sustainable moats could not be enough to last in the competitive advantage.

12.8 Environmental and Resource Constraints

The environmental cost of business models that are dependent on infrastructure has not been touched in the article. The implementation and training of AI costs enormous amounts of energy. Already, the global data centers are already using high percentages of electricity production. Expansion to accommodate millions of infrastructure-intensive businesses can reach environmental limits in advance of the economic ones. Data center cooling that could consume a lot of water, the rare earth minerals used in computing hardware, and electronic waste attributed to the rapid turnover of hardware are all forms of environmental costs not reflected in infrastructure prices. The politics of regulation in the vicinity of the environmental impact may greatly change the economics as demonstrated in this article.

These forces of opposition do not disqualify the five-phase model but indicate that the process of transformation will be more gradual, messy, and challenged than technological capability itself would imply. Employment might make changes instead of vanishing. Human and automated work Hybrid models can be more resilient as opposed to pure automation. Political accommodations can maintain jobs on social and not economic grounds. The social, political, and practical forces that oppose technological push in the direction of infrastructure leverage, together with a more comprehensive analysis, are more understandable than either one on its own. There is a likelihood of negotiation between these forces and not just a technological determinism in the future.

13. CONCLUSION

Incremental improvement is not happening. We are experiencing structural change. These five stages are not independent trends but cumulative forces which when combined, break down the traditional company form. Physical barriers were removed using cloud infrastructure. Cognitive work is being removed by AI agents. Physical labor will be automated through robots. Management will be replaced with systems. Pure assembly based companies will be made possible by global infrastructure. Every stage is a serious change. They make history together, both, the obsolescence of employment as such, as an organizing principle, something historically unprecedented. Companies became the means of coordinating the scarce resources. The coordination mechanism is fundamentally altered when capital, knowledge and capacity to coordinate becomes plentiful due to infrastructure.

The point was never to get employed. It was a means to an end. The end was the organization of specialized capabilities such as generating value that could not be created individually. It is developing new ways of coordinating specialized capacities in infrastructure instead of employment relations. The role remains whereas the framework is entirely changed. This is important as those who win will be the ones who will realize infrastructure leverage before it dawns. The movement towards assembling as opposed to building is deep though not well understood. More traditional benefits such as access to capital and potential to get talented teams are no longer as important. The new benefits regarding

strategic intelligence, orchestration of infrastructure, and unique data become prevalent. It is currently constructing its infrastructure. AWS, open AI, Stripe, Shopify, and hundreds of other systems are developing building blocks that can be assembled to make up companies. The ability to coordinate these elements is the proficiency that is required. Most people are still reasoning in terms of tools. They observe individual technologies and argue about certain uses. They lack the infrastructural pattern that is transforming the nature of commerce.

This is not the issue of technology overtaking human beings. It involves infrastructures taking over organizational structures. Humans remain essential. The difference is what alters, which is the way we arrange to generate value. The employment relationship had some functions that were applied in circumstances. Those contexts are shifting. New forms of organization are formed that are applicable in new situations. It is not whether this transformation will be taking place. The trend is evident and rising at a faster pace. Cloud adoption is complete. AI agents are being widely deployed. Physical automation is coming into existence. There is the emergence of management automation. An entire infrastructure is probably only ten years away, but the trend is clear.

The question is what your contribution to the construction of this future is. Are you aware of the trend in time to place strategically. Do you become literate infrastructure when it is uncommon. Do you develop assembly principles at inception, or do you struggle to defend organizational models which are aimed at other constraints. Research structure intimately. Test assembly based construction. Join other people who are venturing into this frontier. The company that is coming is not even like the current company. It is currently being constructed by founders that look beyond tool-level thinking to infrastructural change. The chance is there for those who are willing to see and do it. The age of infrastructure has come. Everything depends on how you are involved.

REFERENCES

[1] ASGHARI ESTIAR, F., MOHAMMADZADEH, A., & Abbasi, I. (2023). Valuation of digital services in iran: Empirical proof for google and instagram. Journal of Information and Communication Technology, 15(57), 14-25. https://doi.org/10.61186/jict.43901.15.55.14

[2] Choudhary, V. (2023). Impact of RPA and AI automation on IT business. https://doi.org/10.31274/cc-20240624-870

[3] Estlund, C. (2021). Forecasting the impact of automation on jobs. Automation Anxiety. https://doi.org/10.1093/oso/9780197566107.003.0002

[4] Harris, L. T. (2017). Further societal implications. Invisible Mind. https://doi.org/10.7551/mitpress/9780262035965.003.0010

[5] Hörger, C., & Ward, P. (2023). Coordination mechanisms and the role of taskscape in value co-creation: The british 'milkman'. Journal of Business Research, 162, 113849. https://doi.org/10.1016/j.jbusres.2023.113849

[6] Patmore, G. (2018). Employment relations and history. The Routledge Companion to Employment Relations. https://doi.org/10.4324/9781315692968-5

[7] Shafahi, A., & Haghani, A. (2018). Project selection and scheduling for phase-able projects with interdependencies among phases. Automation in Construction, 93, 47-62. https://doi.org/10.1016/j.autcon.2018.05.008

[8] Westover, J. H. (2025). The dawn of useful AI agents: Implications for knowledge work and organizations. Human Capital Leadership Review, 26(1). https://doi.org/10.70175/hclreview.2020.26.1.7

[9] Yakushko, K. H. (2019). Preparatory stages of terminological work observing automation concepts. Mìžnarodnij fìlologìčnij časopis, 1(10), 127-133. https://doi.org/10.31548/philolog2019.01.127

[10] (1942). Medicine 100 years ago. BMJ, 2(4252), 30-30. https://doi.org/10.1136/bmj.2.4252.30-c

[11] (2024). Proactive customer support: Re-architecting a customer support/relationship management software system leveraging predictive analysis/ai and machine learning. Engineering: Open Access,

2(1), 39-50. https://doi.org/10.33140/eoa.02.01.04
[12] Banerjee, R. (2011). Welder training and certification - role of IIW india. Indian Welding Journal, 44(3), 92. https://doi.org/10.22486/iwj.v44i3.177956
[13] Bidgoli, H. (2002). Infrastructure for electronic commerce. Electronic Commerce. https://doi.org/10.1016/b978-012095977-8.50011-2
[14] Diebold, J. (1959). Automation: It's impact on business and labor. PsycEXTRA Dataset. https://doi.org/10.1037/e511472009-001
[15] Holcombe, R. G. (2013). Firms as knowledge repositories. The Review of Austrian Economics, 26(3), 259-275. https://doi.org/10.1007/s11138-011-0165-1
[16] Lammenett, E. (2021). Facebook und instagram. Praxiswissen Online-Marketing. https://doi.org/10.1007/978-3-658-32340-0_14
[17] Lerner, J., & Tirole, J. (2006). The economics of technology sharing: Open source and beyond. Advancing Knowledge and The Knowledge Economy. https://doi.org/10.7551/mitpress/1132.003.0028
[18] Luo, H. (2025). Does smart city construction exacerbate capital misallocation? spatial spillovers, digital transformation, and robotics application. Structural Change and Economic Dynamics, 73, 328-344. https://doi.org/10.1016/j.strueco.2025.01.008
[19] M, M. K., & A R, A. P. S. (2024). A study on user satisfaction towards whatsapp. International Journal of Research Publication and Reviews, 5(10), 3381-3386. https://doi.org/10.55248/gengpi.5.1024.2914
[20] Rana, O. (2014). The costs of cloud migration. IEEE Cloud Computing, 1(1), 62-65. https://doi.org/10.1109/mcc.2014.24
[21] Stroud, D. (1998). The impact of the internet on business processes. Internet Strategies. https://doi.org/10.1057/9780333981474_4
[22] (1950). Planning and production costs in great britain. Nature, 166(4214), 216-216. https://doi.org/10.1038/166216a0
[23] (1950). GENERAL ELECTRIC. Analytical Chemistry, 22(4), 13A-13A. https://doi.org/10.1021/ac60040a712
[24] (2012). Estimating the cost of equity capital and the overall cost of capital. Cost of Capital in Litigation, 25-53. https://doi.org/10.1002/9781119200680.ch2
[25] (2024). Deciphering deception - the impact of AI deepfakes on human cognition and emotion. Journal of Advances in Artificial Intelligence, 2(1). https://doi.org/10.18178/jaai.2024.2.1.101-107
[26] Bagga, J. (2023). SAP API management. Introduction to Integration Suite Capabilities. https://doi.org/10.1007/978-1-4842-9630-1_4
[27] Bentley, T. J. (1978). Added value. Making Cost Control Work. https://doi.org/10.1007/978-1-349-03191-7_2
[28] Bihlmaier, A. (2016). Learning of surgical know-how by models of spatial relations. Learning Dynamic Spatial Relations. https://doi.org/10.1007/978-3-658-14914-7_5
[29] Boyland, J., Farnum, C., & Graham, S. L. (1992). Attributed transformational code generation for dynamic compilers. Workshops in Computing. https://doi.org/10.1007/978-1-4471-3501-2_13
[30] Brauer, D. A. (2020). Do rising labor costs trigger higher inflation?. Handbook of Monetary Policy. https://doi.org/10.4324/9780429270949-55
[31] Chachar, S. (2025). Secure AI adoption framework for a multi-tenant saas product companies. Journal of Advanced Research in Electronics Engineering and Technology, 12(1&2), 195-203. https://doi.org/10.24321/2456.1428.202506
[32] Code, R. (2026). Exactly.ai promo code: "AVA" get 15% off on all AI art generation plans. https://doi.org/10.55277/researchhub.hzff6t24
[33] Dubey, A. D. (2025). AI adoption across industries. AI for Product Development. https://doi.org/10.1201/9781003536901-15
[34] Ferreira, B., & Reis, J. (2023). A systematic literature review on the application of automation in logistics. Logistics, 7(4), 80. https://doi.org/10.3390/logistics7040080
[35] Hedberg, L. M., & Luchak, A. A. (2018). Founder attachment style and its effects on socioemotional wealth objectives and HR system design. Human Resource Management Review, 28(1), 33-45. https://doi.org/10.1016/j.hrmr.2017.05.004
[36] Kadalagere Sampath, S., Wang, N., Wu, H., & Yang, C. (2023). Review on human-like robot manipulation using dexterous hands. Cognitive Computation and Systems, 5(1), 14-29. https://doi.org/10.1049/ccs2.12073
[37] Kochkina, N., Andriushchenko, I., & Gatto, G. (2024). Strategic AI adoption: Economic impact, case studies from handy.ai, and industry readiness. 2024 IEEE International Conference on Artificial Intelligence & Green Energy (ICAIGE). https://doi.org/10.1109/icaige62696.2024.10776631

[38] Leloudas, P. (2023). Test execution. Introduction to Software Testing. https://doi.org/10.1007/978-1-4842-9514-4_6
[39] Les, Z., & Les, M. (2020). Machine perception—machine perception MU. Studies in Computational Intelligence. https://doi.org/10.1007/978-3-030-24070-7_2
[40] Liu, Y., & Zhang, Y. (2015). Welder rating system based learning of human welder intelligence in GTAW. 2015 IEEE International Conference on Advanced Intelligent Mechatronics (AIM). https://doi.org/10.1109/aim.2015.7222556
[41] Mesfin, S. (2025). Practices and challenges of school based supervision. Current Trends in Business Management, 3(1), 01-06. https://doi.org/10.33140/ctbm.03.01.04
[42] Ott, A. (2004). Comparable cost calculation for road and rail infrastructure. Trends in Infrastructure Regulation and Financing. https://doi.org/10.4337/9781035363346.00018
[43] O'Sullivan, T. (2011). Decision making and decision outcomes. Decision making in social work. https://doi.org/10.1007/978-1-137-28540-9_9
[44] Ryabicheva, O., & Bahtiozina, R. (2019). Company pricing strategy: Concept, content, structure. SCIENTIFIC DEVELOPMENT TRENDS AND EDUCATION. https://doi.org/10.18411/lj-12-2019-114
[45] S. Md. Shakir Ali (2024). Adoption of self-checkout systems in retail and their impact on customer experience. Journal of Informatics Education and Research, 4(3). https://doi.org/10.52783/jier.v4i3.1970
[46] Sciarelli, F., & Rinaldi, A. (2017). Traditional structure of development programme. Development Management of Transforming Economies. https://doi.org/10.1057/978-1-137-59911-7_10
[47] Seto, T., & Sekimoto, Y. (2019). Trends in citizen-generated and collaborative urban infrastructure feedback data: Toward citizen-oriented infrastructure management in japan. ISPRS Int. J. Geo Inf., 8, 115. https://doi.org/10.3390/ijgi8030115
[48] Shankar Koppula, R. (2020). ETL automation and orchestration with apache airflow. International Journal of Science and Research (IJSR), 9(10), 1809-1814. https://doi.org/10.21275/sr24801073723
[49] Sharma, R. C., & Sharma, S. (2024). Administering and controlling salary costs and salary review. Compensation and Reward Management. https://doi.org/10.4324/9781032626123-6
[50] Shvets, P. A., & Babych, R. B. (2019). COST OF LABOR IN THE LABOR MARKET OF UKRAINE: FACTORS AND TRENDS OF FORMATION. Efektyvna ekonomika. https://doi.org/10.32702/2307-2105-2019.5.53
[51] Sonkiya, P. (2024). Optimising warehouse navigation: A novel two-dimensional grid model for robot path planning in warehouse logistics. Scholars Journal of Engineering and Technology, 12(10), 314-323. https://doi.org/10.36347/sjet.2024.v12i10.003
[52] Stamatis, D. H. (2025). Statistics relating customer service and satisfaction. The Forgotten Leg of Quality. https://doi.org/10.1201/9781003650614-3
[53] Stephens, M. (2004). Job loss expectations, realizations, and household consumption behavior. Review of Economics and Statistics, 86(1), 253-269. https://doi.org/10.1162/003465304323023796
[54] Subaveerapandiyan, A., & Shimray, S. (2024). The evolution of job displacement in the age of AI and automation: A bibliometric review (1984–2024). Open Information Science, 8. https://doi.org/10.1515/opis-2024-0010
[55] Travadi, M. (2025). Ai-powered customer support automation: Transforming ticket creation and management.. INTERANTIONAL JOURNAL OF SCIENTIFIC RESEARCH IN ENGINEERING AND MANAGEMENT, 09(01), 1-9. https://doi.org/10.55041/ijsrem40922
[56] Varadarajan, M. N., Rajkumar, N., Viji, C., & A, M. (2024). AI-POWERED FINANCIAL OPERATION STRATEGY FOR CLOUD COMPUTING COST OPTIMIZATION FOR FUTURE. Salud, Ciencia y Tecnología - Serie de Conferencias. https://doi.org/10.56294/sctconf2024694
[57] Wienholt, N. (2025). Using an AI coding agent. GitHub Copilot and AI Coding Tools in Practice. https://doi.org/10.1007/979-8-8688-1784-7_2
[58] Yudiansyah, A., DwiAyu, S., Keke, Y., & Veronica, V. (2020). CAN THE MOBILE ROBOT BE a FUTURE ORDER-PICKING SOLUTION?: A CASE STUDY AT AMAZON FULFILLMENT CENTER. https://doi.org/10.25292/ATLR.V3I0.339
[59] (1988). Architectural acoustics. Choice Reviews Online, 26(02), 26-0939-26-0939. https://doi.org/10.5860/choice.26-0939
[60] (2013). Keyboard interfaces: E bottleneck constricting communication and performance. The Design of Future Educational Interfaces. https://doi.org/10.4324/9780203366202-11
[61] (2022). A comparative study of machine learning techniques for robotics control. Korea Journal on Machine Learning and Applications in Robotics. https://doi.org/10.59121/kjmlar2209330001
[62] (2023). Moore's law, n.. Oxford English Dictionary. https://doi.org/10.1093/oed/6338591394
[63] (2024). Disruptive trends in automation technology. MDPI. https://doi.org/10.3390/books978-3-7258-

1212-7
[64] Birhanu, D., Krishnanand, L., & Rao, A. (2017). Comparison of select financial parameters of ethiopian consumer goods supply chains. Benchmarking: An International Journal, 24, 102-117. https://doi.org/10.1108/BIJ-04-2015-0032
[65] Bogue, R. (2011). Spanish company develops unique cmos-compatible MEMS fabrication process. Assembly Automation, 31(3). https://doi.org/10.1108/aa.2011.03331caa.002
[66] Bryksin, M., Vysotsky, N., & Guseynov, P. (2023). Industrial HMI design principles for highly automated manufacturing processes. Human Interaction & Emerging Technologies (IHIET 2023): Artificial Intelligence & Future Applications. https://doi.org/10.54941/ahfe1004043
[67] Clerice, T. (2025). Peer review report for: The artificial intelligence cooperative: READ-COOP, transkribus, and the benefits of shared community infrastructure for automated text recognition [version 2; peer review: 2 approved]. https://doi.org/10.21956/openreseurope.22874.r61769
[68] Columbres, M. R. C., & Victoriano, J. M. (2024). Cloud sustainability: An analysis and assessment of the plateau prediction of 2023 gartner hype cycle for emerging technologies. International Journal of Sustainable Development and Planning, 19(8), 2881-2892. https://doi.org/10.18280/ijsdp.190807
[69] Cui, L., & Wei, Q. (2025). Investigation and research on the current status of logistics service quality at fedex corporation. Journal of Agricultural Science and Supply Chain Management, 1(1), 46-68. https://doi.org/10.71204/mb5mh268
[70] Dahm, M. H., & Heydenreich, J. (2024). Creator economy. essentials. https://doi.org/10.1007/978-3-658-44657-4_2
[71] Geurts, R., & Potocek, P. (2025). Enhancing automation and accessibility in electron microscopy through generative AI. Enhancing Automation and Accessibility in Electron Microscopy through Generative AI. https://doi.org/10.14293/apmc13-2025-0306
[72] Gruber, J. (2023). Askgpt: Asking GPT about r stuff. CRAN: Contributed Packages. https://doi.org/10.32614/cran.package.askgpt
[73] Hanson, D., & Von Rabenau, B. (1976). Economic growth in a mixed urban economy: Infrastructure investment and labor migration. IEEE Transactions on Automatic Control, 21(2), 221-224. https://doi.org/10.1109/tac.1976.1101200
[74] Ifrah, S. (2024). Introduction to azure AI and openai. Getting Started with Azure OpenAI. https://doi.org/10.1007/979-8-8688-0599-8_1
[75] Ingham, J. N. (2000). Merrick, john (1859-1919), insurance company founder and entrepreneur. American National Biography Online. https://doi.org/10.1093/anb/9780198606697.article.1001141
[76] Ismail, H., Hasbi, I., Nugraha, D. W., Nugraha, N., Marbun, T., & Kastanya, G. (2024). Innovative educational strategies to increase online company revenue. The International Journal of Business Review (The Jobs Review). https://doi.org/10.17509/tjr.v7i1.73705
[77] Ji Eun, Jeong, & 반영환 (2014). A study on analytical comparison between payment processes by different mobile payment types - focus on types of mobile payment schemes used in korea -. Journal of Digital Design, 14(2), 641-650. https://doi.org/10.17280/jdd.2014.14.2.060
[78] Jimmy, C., & Falianty, T. A. (2021). Managing leverage of infrastructure projects: Aggregate and sectoral risk effect. Journal of Asian Economics, 73, 101284. https://doi.org/10.1016/j.asieco.2021.101284
[79] Khmelevskiy, 0. (2019). INTERNATIONAL LOGISTICS IN KEY TRENDS IN ITS DEVELOPMENT. Market Infrastructure. https://doi.org/10.32843/infrastruct38-10
[80] Korobeinikova, T., Luzhetska, N., & Kishchak, M. (2023). REQUIREMENTS FOR SECURING COMPANY NETWORK INFRASTRUCTURE. Sworld-Us Conference proceedings, 23-28. https://doi.org/10.30888/2709-2267.2024-24-00-009
[81] Li, T., & Li, R. (2023). When partial differential equations and neural networks meet 3D printing: A case study of 3D printing of PINN solutions. 2023 China Automation Congress (CAC). https://doi.org/10.1109/cac59555.2023.10451028
[82] Manavgat, G., Demirci, A., Korkmaz, O., & Koluman, A. (2023). Global scale integrated logistics performance analysis and its spillover effect. Logforum, 19(2), 245-262. https://doi.org/10.17270/j.log.2023.826
[83] Marson, J., & Ferris, K. (2018). 24. intellectual property. Business Law. https://doi.org/10.1093/he/9780198766285.003.0024
[84] Mishra, P. (2023). AWS billing and pricing. Cloud Computing with AWS. https://doi.org/10.1007/978-1-4842-9172-6_11
[85] Pias, C. (2019). Overhead projector as a mediating technology of organization. The Oxford Handbook of Media, Technology, and Organization Studies, 285-300. https://doi.org/10.1093/oxfordhb/9780198809913.013.28

[86]Ramachandran, S. (2023). Unravelling aid funding: Linking funding allocation patterns and localization in sierra leone. WIDER Working Paper. https://doi.org/10.35188/unu-wider/2023/413-7
[87]Schlapbach, K. (2018). (perceived) authenticity and the physical presence of the performer. Oxford University Press. https://doi.org/10.1093/oso/9780198807728.003.0005
[88]Dr.A.Shaji George. (2025). Mega-Mergers and Human Dynamics: A Review of Integration Failures and Success Factors. Partners Universal International Innovation Journal (PUIIJ), 03(06), 1–27. https://doi.org/10.5281/zenodo.18195213
[89]Shirokova, R. V., & Knatko, D. (2008). FOUNDER INFLUENCES ON THE DEVELOPMENT OF ORGANIZATIONS: A COMPARISON BETWEEN FOUNDER AND NON-FOUNDER MANAGED RUSSIAN FIRMS. Journal of Business Economics and Management, 9(2), 91-95. https://doi.org/10.3846/1611-1699.2008.9.91-95
[90]George, Dr. A. Shaji. (2025). Dynamic Product Placement and AI: How Virtual Advertising is Transforming Brand Engagement in Streaming Media. Zenodo, 03(06). https://doi.org/10.5281/zenodo.18221112
[91]Sriratana, L. (2018). Efficiency improvement of door frame manufacturing process in wood product manufacturing industry. 2018 5th International Conference on Industrial Engineering and Applications (ICIEA). https://doi.org/10.1109/iea.2018.8387094
[92]Tesoriere, A. (2017). Stackelberg equilibrium with many leaders and followers. the case of zero fixed costs. Research in Economics, 71(1), 102-117. https://doi.org/10.1016/j.rie.2016.11.004
[93]Turner, A., Weber, J., & DeAngelis, M. (1981). A geographic market suitability analysis for low- and intermediate-temperature solar IPH systems, volume i. https://doi.org/10.2172/5352268
[94]George, Dr. A. Shaji., Dr.T.Baskar, & Dr.Nataliia Siranchuk. (2026). The Gig Career Revolution: How Platform Work Is Transforming Global Employment, Economics, and Human Wellbeing. Zenodo, 3(1). https://doi.org/10.5281/zenodo.18401066
[95]Xiong, Y. (2009). An incentive model of governance of IT firm. 2009 International Conference on Management of e-Commerce and e-Government. https://doi.org/10.1109/icmecg.2009.125
[96](2000). Function, specialisation and integration. Trade and Traders in Mid-Victorian Liverpool. https://doi.org/10.5949/liverpool/9780853236061.003.0005
[97](2006). Strategic considerations for infrastructure development. Infrastructure for the Built Environment: Global Procurement Strategies. https://doi.org/10.4324/9780080461656-12
[98](2009). E-BUSINESS IMPLEMENTATION TEMPLATES. Dynamic E-Business Implementation Management. https://doi.org/10.4324/9780080504810-25
[99]George, A. S. (2026). Career Minimalism How Gen Z Is Redefining Work-Life Balance and Professional Success. ResearchGate, 03(01), 69–98. https://doi.org/10.5281/zenodo.18413424
[100](2019). Lloydspharmacy parent company says funding cuts and low prescriptions hit profits. Pharmaceutical Journal. https://doi.org/10.1211/pj.2019.20206915
[101](2025). Box 3. financial infrastructure and payment instruments report 2024. Financial Infrastructure and Payment Instruments Report 2024, 1-5. https://doi.org/10.32468/rept-infr-finan.box3.2024
[102](2025). The traditional jazz dance company, 1969–74. Mura Dehn, 157-170. https://doi.org/10.5040/9781350428065.0013
[103]Agranat, R., & Gal, M. (2025). Fueling concentration: Network effects and AI agents. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.5250253
[104]Bell, S. (2017). Constructing infrastructure. Urban Water Sustainability. https://doi.org/10.4324/9781315680811-3
[105]Dr.A.Shaji George, & A.S.Hovan George. (2025). The AI Job Revolution - How Emerging Roles Are Reshaping the Future of Work and Creating New Career Pathways. Partners Universal Innovative Research Publication (PUIRP), 03(04), 58–70. https://doi.org/10.5281/zenodo.17009242
[106]Fischmann, G., Corbeanu, A., Spinu, R., Sulea, C., & Iliescu, D. (2023). Job insecurity, job security, job future ambiguity? oh my… a new step towards conceptual clarity. Job Insecurity, Precarious Employment and Burnout. https://doi.org/10.4337/9781035315888.00009
[107]Gupta, A., & Mishra, J. (2025). A study on the perception and effectiveness of digital marketing platforms adopted by women entrepreneurs in jhansi city with a focus on the bakery business. (study the use of instagram, whatsapp, whatsapp business, facebook and e-commerce).. Advanced International Journal for Research, 6(4). https://doi.org/10.63363/aijfr.2025.v06i04.1210
[108]Levinthal, D. A., & Wu, B. (2010). Opportunity costs and non-scale free capabilities: Profit maximization, corporate scope, and profit margins. Strategic Management Journal, 31(7), 780-801. https://doi.org/10.1002/smj.845
[109]Tamzini, K. (2015). Strategic tacit knowledge-based competitiveness. Advances in Business Strategy and Competitive Advantage. https://doi.org/10.4018/978-1-4666-6457-9.ch009

[110]Dr.A.Shaji George. (2025). How AI Agents Are Reshaping the Internet from Human-Centered to Machine-Mediated Commerce. Partners Universal International Innovation Journal (PUIIJ), 03(04), 52–65. https://doi.org/10.5281/zenodo.17064240

[111]Velmurugan, R., Jothi, K., Sudarvel, J., & Senthilkumar, S. (2025). The role of infrastructure in developing and sustaining competitive advantage. National Competitive Advantage Amid Rapid Global Transformation. https://doi.org/10.4018/979-8-3373-2247-6.ch007

[112](2004). HP infrastructure operations. RAPID Value Management for the Business Cost of Ownership. https://doi.org/10.1016/b978-155558289-0/50016-1

[113](2007). NETWORKS AND VALUE CREATION. Net Work. https://doi.org/10.4324/9780080479637-11

[114]Driguez, L. (2022). Labour law and competition law under french regulation. The Cambridge Handbook of Labor in Competition Law. https://doi.org/10.1017/9781108909570.018

[115]George, Dr. A. Shaji., & Dr.T.Baskar. (2025). AI Agents Are Reshaping the Internet from Human-Centered to Machine-Mediated Commerce. Zenodo, 2(5). https://doi.org/10.5281/zenodo.17212468

[116]Hayat, K., & Daim Harahap, R. (2024). Evaluation of teller services to customers and analysing customer satisfaction with teller services at BSI KCP lauser. Muhasabatuna : Jurnal Akuntansi Syariah, 6(2), 219-228. https://doi.org/10.54471/muhasabatuna.v6i2.2958

[117]Huang, Q., & Deng, Q. (2023). People-centered common prosperity. China Insights. https://doi.org/10.1007/978-981-19-9665-8_4

[118]Ifrah, S. (2024). Introduction to azure AI and openai. Getting Started with Azure OpenAI. https://doi.org/10.1007/979-8-8688-0599-8_1

[119]George. (2024). Workforce Impacts By 2030: Job Losses and Opportunities in an Era of Automation and AI. Partners Universal International Research Journal, 3(4), 41–47. https://doi.org/10.5281/zenodo.14677191

[120]Kaitosalmi, J., & Ratia, M. (2024). Evaluating healthcare automation: A multi-case study on the utilization of automation initiatives in healthcare operations. Proceedings of the 16th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management. https://doi.org/10.5220/0012947100003838

[121]Koot, M., & Wijnhoven, F. (2021). Usage impact on data center electricity needs: A system dynamic forecasting model. Applied Energy, 291, 116798. https://doi.org/10.1016/j.apenergy.2021.116798

[122]Puja Gholap (2025). Comparative analysis on developed optimization techniques for reducing energy consumption in AI training and inference. Journal of Information Systems Engineering and Management, 10(14s), 111-116. https://doi.org/10.52783/jisem.v10i14s.2166

[123]George, Dr. A. Shaji., & Dr.T.Baskar. (2025). The Rise of Intelligent Automation: How Advances in Robotics and AI Are Reshaping Industries. Zenodo, 3(1). https://doi.org/10.5281/zenodo.14904775

[124]Siegel, A., & Seedhouse, P. (2024). Seeing human spoken interaction as a complex adaptive system. Human Spoken Interaction as a Complex Adaptive System. https://doi.org/10.3366/edinburgh/9781399522687.003.0006

[125]Trovato, G., Ricotti, L., Laschi, C., Zecca, M., Cosentino, S., Bartolomeo, L., Hashimoto, S., Takanishi, A., & Dario, P. (2021). The italy–japan workshop: A history of bilateral cooperation, pushing the boundaries of robotics. IEEE Robotics & Automation Magazine, 28, 150-162. https://doi.org/10.1109/MRA.2021.3068559

[126]Wagner, R. (2025). EU AI act (2024/1689) and EU MDR (2017/745): Breaking the expensive myth: Why ai-powered medical devices under EU MDR don't need EU AI act certification – a detailed analysis of regulatory requirements and compliance. https://doi.org/10.70317/2025.02rw02

[127]Yazar, Y. (2024). ERRATUM TO: Exploring the association between calling and work engagement: The mediating role of psychological needs satisfaction and perception of meaningful work. Psikoloji Çalışmaları / Studies in Psychology. https://doi.org/10.26650/sp2024-01e

[128](2007). South korea. Tax Systems and Tax Reforms in South and East Asia. https://doi.org/10.4324/9780203088241-21

[129](2019). Resource distribution and social reciprocities. Bwiti. https://doi.org/10.2307/j.ctvbcd20q.12

[130](2021). AWS outage will spotlight cloud resilience issues. Emerald Expert Briefings. https://doi.org/10.1108/oxan-es266013