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# The Economics of Data: Treating Information as a New Factor of Production

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## Abstract

For businesses, information has emerged as a major economic resource and has revolutionised the way value is created, resources are managed and competition is determined in more and more digitalised markets. Land, labour, capital and entrepreneurship are the traditional key factors that explain economic production, but the size, speed and importance of data in the strategic planning of economic production require a rethinking of this framework. In this paper, the economics of data is discussed, as information is being reconsidered as a new, and increasing, factor of production. It includes a discussion of the role of data in enhancing productivity, innovation, decision making, market efficiency and developing data-driven business models. Data is not like the traditional productive resources, being copyable, shareable, combinable and reusable with low marginal costs, and can be of increasing value when combined with powerful analytical tools, Artificial Intelligence, digital infrastructures and expertise. The paper also looks at the economic risks of data ownership, privacy, asymmetries of information, unequal access, data monopolization, cyber security and digital market power. Special emphasis is placed on how organizations convert raw data into economically value information, and actionable intelligence. The study represents a broader picture of the current digital economy and new areas of competitiveness for these economies by recognizing data as a valuable economic product. It concludes that data governance, responsible data-sharing agreements, investments in data digitalization and access to information for all are vital to unlocking the economic value of data and to sustainable and inclusive growth.

**Keywords**: Data Economics; Data as a Factor of Production; Digital Economy; Information Economy; Data-Driven Innovation; Artificial Intelligence; Big Data; Digital Transformation; Productivity; Data Governance; Data Ownership; Competitive Advantage; Digital Markets; Economic Value of Data; Knowledge Economy.

## Introduction

Digital technologies have revolutionised the way economic activities are organised, how production is made and how value is created. The core of this shift is data, which from being a side product of business activities is now a strategic economic asset. All digital transactions, interactions, financial transactions, searches, social interactions and connected devices create data that can be captured, processed, analysed and monetised. Conventional notions of factors of production – land, labour, capital, entrepreneur – are being challenged as organisations increasingly rely on data for making decisions. The information and data is becoming one of the resources which has an impact on productivity, innovation, competitiveness and economic growth.

Data is unique and cannot be substituted for other economic inputs. Data is more malleable than physical capital and may be reproduced and reused for a relatively small additional cost. It can be used for marketing decision making, product development, risk assessment, optimisation of supply chain, customer relationship management, public policy, etc. all at the same time. Further, the economic value of data can be enhanced by integrating it with other data and/or when such data is used with fast-developing technologies like artificial intelligence, machine

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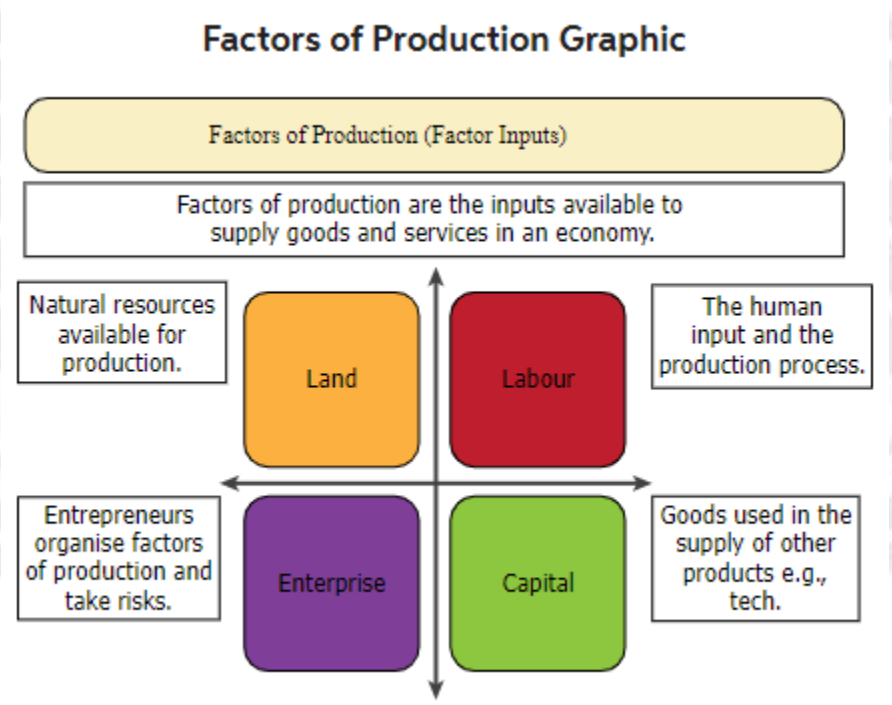
learning, cloud computing, and big data analytics. Thus, the value of data is not just in the data itself, but in the capabilities that can be harnessed for the collection, control, analysis, interpretation, and effective application of data.

Data-driven business models have also modified the competition landscape of today's markets. The amount of data collected by user will be used by digital platforms to customize services to the individual, to predict user needs, to improve algorithms, and to develop new products. This opens the door to network and information advantages that could be available to the firm with the largest and best data. Meanwhile, disparate access to data and analytical tools can present big challenges for large technology-driven companies versus smaller ones. Concentration, entrepreneurship, employment, productivity and distribution of economic opportunities are thus important aspects of data's consequences for firm performance.

Data as an economic resource brings up several key questions about data ownership, access, privacy, security, data value and data governance and regulation. Data can connect to people, organizations, community, and public institutions at the same time and can be described as multi-dimensional. Data can be multi-dimensional—they can be related to people, organizations, community, and public institutions at the same time. Issues of who should own data, who should be able to profit from it and who should be protected by the right to it have thus become an important part of economic policy today. The growing adoption of artificial intelligence compounds these worries as large amounts of data are needed to train, predict and make decisions with algorithmic systems.




***Source:*** ***https://www.insightsonindia.com/indian-economy-3/introduction-to-economics/factors-of-production/***

From a macro perspective, information can improve productivity and innovation through better resource allocation, reducing information asymmetries, and informing decisions based on data, as well as new product and service development. At the organisational level, data can be used to drive operational efficiency, better forecasting, customer knowledge and strategy. Access to relevant data can also be advantageous for entrepreneurs since it can help reduce uncertainty and the process of identifying opportunities can be streamlined. The benefits of data, however, don't happen by themselves. Their reliance is on data quality, technological infrastructure, human competencies, institutional frameworks, and responsible governance.

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In this context, the present research looks at the economics of data and the emergence of data as a new factor of production. The study aims to discuss the role of data in value creation, productivity and innovation, and how it can be used to make a business competitive, and to define the economic issues of data ownership, valuation, access, privacy, and governance. The study can be considered as part of production economics, thereby explaining the role of data in the transformation of modern economic systems and why data is now becoming a growing factor of sustainable economic and organizational performance.

**Background of the study**

The digital economy has transformed the creation, exchange and measurement of economic value. The traditional explanation of economic production is in terms of factors like land, labour, capital and entrepreneurship. But with the advent of the digital technologies, cloud computing, artificial intelligence, big data analytics, Internet of Things (IoT) systems, and digital platforms, the economy has entered a new paradigm where data and information has become a key production factor and a key decision-making tool. The gathering, processing, analysis and utilization of information has become a vital business necessity to better understand markets, create new products, optimize operations, manage risk and gain a competitive edge. So data has become more than just a side product of administration; it is now considered a strategic economic resource.

Data is a unique asset in its own right and is a key asset that sets it apart from the traditional factors of production. Typically, physical capital degrades as it is used, while data may be used repeatedly without degradation. Marketing, product, financial, customer service and strategic planning all use the same data set. Data can also be more valuable when joined with other data sets, or when analyzed using sophisticated analytical tools. This brings about considerable economies of scale and scope and enables organizations to create new values out of information that is perhaps irrelevant at first glance. The economic value of data is, however, not only related to a large number of data but also to their quality, availability, timely nature, relevance, ownership and analytical usability.

This change has been helped by the digital transformation. A lot of information is being created and consumed by organizations in a massive way as a result of online transactions, mobile applications, social media engagements, digital payments, connected devices, enterprise systems, and customer relationship platforms. These information flows enable companies to see how consumers act and what the market conditions are like, in a way that has never been possible before. AI and machine learning can also leverage data to make predictions, recommendations, classes and automated decisions from large, complex datasets, boosting the productivity of data. Therefore, more and more the economic value of information is emerging from the interaction of the data, technological infrastructure, expertise of humans and analytical power.

With the increasing importance of data, new business models and forms of competition have emerged too. Data-driven activities are crucial for digital platform companies, financial technology organizations, e-commerce companies, online advertising networks and technology-enabled service providers. Data can be used for customization, prediction, optimizing the supply chain, fraud identification, pricing and customer relationship. At the same time, companies with superior data assets or more knowledge about how to use data to make decisions might get a leg up on competition. An important economic question is whether the data is a new factor of production along with the traditional ones of economic resources, or whether it is a form of capital or an intermediate good?

This is a key question, since the classical indicators of the economy are not necessarily appropriate to measure the productivity and value creation impact of data. Some investments might appear to be more long-term, such as investments in database, data infrastructure and analytical systems, data governance and digital skills, and do not necessarily make it into

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traditional definitions of productive capital. Likewise, many digital services offer a zero-cost to consumers, and the use of the service relies on capturing and then using the user information for economic value. This complicates the measurement of the overall contribution of data to national income, product, businesses performance and consumer welfare.

Another dimension that is important is that of data ownership and property rights. Information has a lower marginal cost of copying, transferring, combining and reusing than physical assets. It can become complex to identify who should own and be the beneficiary of data. Businesses can gather data created by consumer activity, and consumers may be unaware of what happens to their data after it has been created and may not realize it is being monetized. Data protection, privacy, cyber security, competition and responsible data governance are also becoming key concerns for governments. The economic value of data is inextricably linked with the institutional and regulatory context in which data is created and shared, as illustrated in these issues.

Data-driven production also will have implications for labour and entrepreneurship. Skilled staff members are in high demand who are able to leverage data, analyze information, have digital skills and collaborate with smart systems. Meanwhile, business owners can benefit from data to discover new market opportunities, gain insight into consumer requirements, minimize uncertainty and create innovative products and services. Publicly available or platform-generated or commercially obtained data can be leveraged by small businesses and start-ups to potentially outcompete larger firms in markets traditionally dominated by them. But there is the potential for new forms of economic inequality between organizations, industries and regions based on differential access to high-quality data and advanced analytical infrastructure, too.

The growing significance of information from a macro-economic point of view poses questions concerning productivity, economic growth, market concentration and development. Countries and organizations that have a robust digital infrastructure, a workforce with highly educated personnel, and research capacities, and a good system of data governance can gain more economic value from information. On the other hand, poor digital skills, weak institutions, limited connectivity and access to technology can hinder some businesses and communities from fully engaging in the data-driven economy. Therefore, the economics of data extends beyond the impact of individual companies to an economy's competitiveness, inclusive growth, innovation and sustainable economic development.

In this context, the present study titled “The Economics of Data: Treating Information as a New Factor of Production” tries to analyse the evolution of the economic role of information in the present production systems. It is the use of data to create economic value, the way organisations become productive with data as resource and the differences between data and traditional factors of production that are explored in the study. It also addresses data ownership, data privacy, data governance, technological capability, productivity, innovation and inequitable access to information resources. The study hopes to shed light on the issue of whether data is a separate factor of production, and the extent to which it is becoming an increasingly important factor of economic and business life.

**Justification**

Data has been impacted by the fast-paced digital economy and has become a valuable economic asset for strategic purposes. The massive amounts of data that businesses, governments, and digital platforms create and use online, via social media, mobile apps, connected devices, and artificial intelligence systems are an ever-expanding reality. The increasing reliance on data has called into question some of the fundamental economic notions of production and questioned whether or not information can be viewed as a separate factor of production and a factor that is becoming more critical.

In the traditional economic theory, economic production is explained in terms of land, labour, capital and enterprise. Information, however, has some attributes that make it unique as a factor

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of production. It can be easily replicated and replicated, be updated constantly, can be merged with other data sets, can be converted into economic value using analytics, algorithms and technological infrastructure. High productivity, innovative ideas, market insights, customer personalization, and decision-making are all benefits that can be gained by organizations that possess high quality and strategically relevant data.

The study is justified because data-driven business models play an important role in today's markets. Digital platforms and businesses based on digital technologies are more and more generating value out of the collection, processing, analysis and monetisation of information, in addition to human sources and physical property. The use of artificial intelligence and machine learning also reinforces this trend, as it helps organizations to transform big data and complex information into forecasts, recommendations, automated decision-making and new products and services. Knowing the economics of data is thus an important tool in understanding the creation and distribution of value in the modern economy.

The other important one is that economic consequences of inequality of access to data need to be studied. In the case of large technology firms, they may have a lot of data, strong analytic tools and a large computing infrastructure, but smaller firms and start-ups may have a difficult time accessing the same. This may result in new market clusters and competitive disadvantages. Data as a factor of production can thus help to improve the understanding of productivity gaps, barriers to entry, innovation capacities and the evolution of competition.

The study is also of policy and regulatory relevance. As more and more personal and organizational data becomes commercially available, problems arise with regard to the privacy of information, rights to ownership, information governance, security, competition and economic benefits. If information is to be used as an economic resource, the question of who is creating the information, who is in control of it, who can benefit from it, and how the benefits should be managed needs to be considered. These are important considerations in developing economies where a high level of digitalisation is growing at a fast pace, with variations in institutional and technological capacity between industry and sector and region and country.

In addition, the study can help to deepen the understanding of labour-market transformation and human capital. The data, technology, and labour dynamic is evolving as many organisations are turning to data-informed decision making and automation. The data science field, along with related areas such as analytics and cybersecurity, is generating new roles and traditional roles are being reimagined with the addition of AI. Therefore, analysing data together with labour and capital can be used to gain a better picture of the modifications of the production structure.

Last but not least, the study makes a good sense because the current economic systems often fail to reflect the peculiarities of the generation of value through data. Data as a new factor of production can be examined systematically to help bridge the disciplines of economics, business management, information systems and technology studies. It can serve as a conceptual base to see how data helps with productivity, innovation, competitive advantage and economic development, can acknowledge the problems of privacy, concentration, governance, and equitable access, and can foster open dialogue about the problems.

The study “The Economics of Data: Treating Information as a New Factor of Production”, therefore, has an important meaning because it touches a fundamental change in the way that economic activity is organized in the modern world, and aims to clarify how information is becoming an increasingly productive resource in addition to the traditional factors of production.

**Objectives of the Study**

1. To examine the economic significance of data and evaluate its emergence as a distinct factor of production alongside land, labour, capital, and entrepreneurship.
2. To analyse the role of data in value creation and productivity, particularly in data-driven business models and digital economies.

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3. To examine how organizations use data as a strategic resource for improving decision-making, innovation, operational efficiency, and competitive advantage.
4. To assess the contribution of data-driven technologies such as artificial intelligence, machine learning, cloud computing, and big data analytics to economic production.
5. To investigate the economic characteristics of data, including its non-rivalrous nature, scalability, reusability, network effects, and potential for generating increasing returns.

**Literature Review**

Digital platforms, artificial intelligence, cloud computing and business models relying on the processing of massive amounts of data have revolutionized the economic function of information. Economically, production is traditionally attributed to the factors of land, labour and capital. As more and more companies collect, process, aggregate, and utilize data to generate revenue, however, scholars have begun to view data as a valuable, relevant, and important productive input for the economy. Data can also be easily reused and shared with other data, as well as applied to various economic activities at the same time, unlike traditional inputs. This unique nature is relevant for productivity, innovation, competition, asset valuation as well as economic policy.

Jones and Tonetti (2020) offer one of the key theories regarding data as an economic resource. They stress the non-rivalry of data, that is that one economic agent's use of data does not exclude another agent from using the same data. This is what sets data apart from many other production factors and gives rise to the potential for returns to data building and dissemination. The social value of data may be higher than its private value because data may create knowledge spillovers between firms and sectors, they argue.

Likewise, Farboodi and Veldkamp (2021) created a macroeconomic framework where they linked data accumulation with investments, productivity and technology. According to their work, in the various economies produced and consumed data is becoming increasingly important, and data is also used for making better decisions and technological development. A feedback loop forms, such that information affects subsequent economic activity, and economic activity affects information. Such a relationship would offer a theoretical framework to think of data as a special input into the modern production system.

For the information-economics perspective, Goldfarb and Tucker (2019) analysed the economic implications of digitization, and showed how digital technologies lower the cost of collecting, processing, storing and communicating information. Reducing information costs affects market structures, consumer behaviour, organization processes and innovation. Their work is applicable to the data-as-a-factor view since the economic value of data is intimately coupled with the falling cost of converting raw data into economically valuable knowledge.

Jones and Tonetti (2020) also differentiate data from conventional capital because of its capacity to create value over multiple and concurrent uses. While physical capital can be overused or used up, data can be used for many different purposes without being exhausted. This can therefore mean that the data can yield benefits beyond the specific organisation that initially gathers it, especially if the data is shared or linked with complementary technologies like AI and machine learning.

Cong et al. (2021) also explore the impact of data on production, constructing a framework to describe the relationship between data and firm productivity and economic growth. Their research shows that data alone can be of economic value when backed by the analysis skills and organizational resources. Important, the productivity benefits of data rely on complementary investments such as technology and human capital. Therefore, it is not enough to see data as a source of value by itself – its value comes from the interaction with other production factors.

From the data marketplace point of view, Huang and Dou (2021) explicitly conceptualized data as a factor of production. They explained that as machine learning and AI became more and more common, the need for data has grown, and mechanisms are now being developed for

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companies to share data. They point to data lifecycle maturity and asset specificity as key attributes that affect the development of data markets. The authors also note as a significant obstacle to efficient data allocation transaction costs and the immaturity of the market infrastructure.

Institutional work has also been done on the economics of data. Data has unique economic properties, driven by its context, quality, availability and uses, OECD (2021). Data can be of value for several users, and by merging data sets with each other, value can be added. Such traits make it difficult to apply traditional ownership, pricing, tax and national accounting principles. The argument was enhanced by more recent scholarship, which suggested that data needs to be brought into the current theories of production. In their study, Wu and Wang (2024) explored data as a factor of production following the New Structural Economics paradigm. They contended that the introduction of data into the factor endowment structures can be a valuable tool in understanding the disparities in economic development and industrial transformation. They also point to the fact that the productivity impact of data is domain- and stage-dependent, meaning that data does not have a consistent economic value across all economic activities.

Ouyang (2024) also made a valuable contribution by exploring the potential for linking the digital and real economies through data. With the increasing use of data, Ouyang said it is becoming part of the production, circulation, consumption and distribution process, enhancing resource allocation, balancing supply and demand, fostering innovation and driving industrial transformation. The idea of data as more than a technological tool is extended and it is regarded as a factor capable of linking different phases of the economic cycle.

The institutional and governance aspects of data are also beginning to receive increasing focus. Aho (2024) explored the different uses of data in the Chinese economic system and demonstrated that data is now viewed as a quasi-public economic good, and not merely private information. The recognition of data as a factor of production has implications not only for the firm, but also for government policy, resource allocation, infrastructure and institutional governance.

It has also been extensively investigated recently how data vary. A 2025 study on endogenous growth and data heterogeneity investigates both producer and consumer data and brings these two types into an endogenous growth model. The study shows that the source and the nature of the data affects the economic contribution of data, indicating that the contribution of data to economic growth might not be fully captured by just counting data.

Data should also not be confused with “new oil” or traditional physical-based assets (OECD and WTO 2025). They believe that data supports certain uses, can be amplified with other data sets and can be reused without being depleted. These attributes render data at the same time a production factor, intangible asset, intermediate input and a form of capital. This versatility poses substantial problems for the conventional economic measurement and accounting systems.

The assetization of data is an emerging field of literature. Zhang (2026) designed a systematic analytical framework on data assets and accounting and corporate finance. The study distinguishes between data, data resources and data assets and explores the potential to transform data from collection and evaluation of compliance to data valuation, financial reporting and financing applications. Analysis places data economic value beyond the realm of operational decisions and into balance sheets and financing plans.

Recent studies, in turn, suggest the ties between data markets and productivity. Research on data-factor marketization indicates that there is potential to enhance the management of resources, transaction costs, digital transformation and innovation through the mechanism of data allocation and exchange. Yet, property rights issues, market standards, quality issues and information asymmetries still remain as obstacles to the development of efficient data markets.

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## Material and Methodology

This study uses a descriptive and exploratory research design that addresses the economic relevance of data as a new input to the production process and elucidates the role of data in enhancing productivity, innovation, competitiveness and value creation in the digital economy. The sources of the secondary data are mainly peer-reviewed journals, academic books, reports of international organizations, government publications, industry reports and reliable economic and technology databases. Systematic literature review of relevant literature published in regard to data economics, digital transformation, information assets, data-driven innovation, artificial intelligence, productivity and the economics of intangible assets. Content analysis and thematic analysis are used methods to identify repetitive patterns related to data ownership, data valuation, data accessibility, data governance, productivity improvement, and the change of production processes from traditional to new ones. Comparative interpretation is employed to analyze the differences between data and traditional factors of production: land, labour and capital. Selected examples from technology-heavy industries are also included in the analysis in order to understand how organizations create economic value from the utilization of data. Sources are selected because they are relevant to the writing, credible, soundly researched and are helpful in meeting the research objectives. The results are then conceptually synthesized to develop an understanding of how data is increasingly becoming an economic resource and an integral component of production, market structures, innovation and decision making in organizations. Ethical research practices are upheld throughout the study, with all sources properly attributed, accurate academic citations are used and published material is not misrepresented or used without permission.

## Results and Discussion

The analysis indicates that data is increasingly being used as a new economic asset, and is influencing the way companies manage production and leverage their resources and value creation. The traditional factors for economic production have been land, labour, capital and entrepreneurship. As the digitisation of business activity increases, though, information as a tool can also have a direct impact on productivity, by enhancing the quality of economic decisions and their timeliness. Companies that can gather, categorize, interpret and use information well can gain insights into customer preferences, population predictions, inventory optimization, pinpoint operational inefficiencies and create new products and services. Therefore, data is not only a product of the economy but also a factor that can greatly influence the efficiency and competitiveness of economic production systems.

The quality, availability, timeliness and usefulness of data for action learning are all related to economic value, one of the findings of the analysis that is relevant. Economic value is not just from a lot of unstructured or inaccurate information. Data is valuable when the organization has the technology, analytical tools, people and systems to convert raw data into valuable knowledge. This is different from the traditional production factors. Physical capital is often consumed, digital information can be consumed and re-used in multiple ways. The same data can be used to make marketing decisions, predict finances, manage supply chains, develop new products, and manage customer relationships. This non-rival quality opens up the possibility of deriving a number of economic returns from the same source of data.

Data-driven production can aid in productivity enhancement and cost cutting is also shown in the analysis. Predictive analytics and artificial intelligence are being leveraged more and more to detect trends that are not obvious using traditional decision-making processes. In the manufacturing sector, the information can be used for predictive maintenance and reduce downtime resulting from unexpected equipment failures. Customer and transaction data can be used in retail to enhance demand forecasting and inventory management. Within the financial services sector, information can be utilized to enhance credit risk assessment, fraud detection and risk management. Human resource management, including workforce management,

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employee development and recruiting, can benefit from workforce data. The uses above indicate that data is not only valuable to an industry, but that data can also be leveraged as a complement to physical and human capital.

Another important finding is as well on the interaction between data and innovation. By enabling organisations to experiment with new business models, develop tailored products, access untapped demand, and develop a digital service, data can make a significant contribution. This relationship is very apparent with platform-based enterprises where users interactions with the platform provide information that can then be leveraged to enhance the platform and draw in more users. They have access to more data as a result of greater participation, better data analysis provides a better service, and a better service leads to increased participation. All of these dynamics can give a tremendous advantage to business organizations that have access to gigantic amount of data and have a lot of information. While it is possible that they can make it more difficult for smaller companies to compete with them, too, because they might not have access to the same data resources or infrastructure to process the data.

The results also indicate the growing significance of intangible assets for the competitiveness of firms that are related to data. The economic value of the generation of datasets, algorithms, databases and information infrastructures within a company may not be measured by traditional accounting mechanisms. As a result, it is possible for the resources important to a business to be different from the resources that appear on its balance sheet. Data can therefore impact enterprise value, but not necessarily be a traditional productive asset. It is particularly applicable for companies that are technologically based where the competitive advantage is built on a competitive knowledge base, databases, analytical models, or digital ecosystems.

Additionally, the discussion reveals that the use of data as a factor of production is an economically and socially challenging issue. If the data is of economic value then questions of data ownership, privacy, cyber security, consent, and unequal access come into play. Individuals generate valuable data online and in their digital relationships—data that can accrue at a differential rate. The large tech firms can have access to large amounts of data that can result in economies of scale, and can help to ensure market concentration. This raises issues about the nature of competition in data-driven markets, and how any small player will be able to get a sustainable competitive advantage over larger players when the amount of data increases.

The analysis also suggests that there is still a need for human capital in data-rich economies. Only people and organizations can add value to data that would otherwise be ' inert' economic value if they can interpret and apply it. The important players in transforming information to economic outcomes are the data scientists, managers, entrepreneurs, analysts, engineers and others who are proficient in using it. So data is not necessarily a substitute for the other factors of production. It is therefore more and more adopted as a ‘supple’ factor that will increase the efficiency of the use of labor, capital, entrepreneurship and organization. The economic benefits will likely be greatest when coupled with intelligent people, technology and decision making along with the best data.

From the macro-economic perspective, the growth of data as a productive resource has repercussions on economic growth, competitiveness and economic development policy. There is a possibility for countries with good digital infrastructure, data-processing capacities, research ecosystems and digital skills to gain more from data-driven economic activities. But countries or regions that are less connected, know little about digital skills or less developed in institutional aspects may have huge digital productivity gap. This introduces another level of Economic inequality – Information infrastructure and the ability to use information to create productive knowledge increasingly affect economic participation.

The results show that data is becoming an economic asset and is different from the other factors of production. It is increasingly relevant in the current economies because of its non-rivalry, reusability and ability to give information and enhance other productive factors. However, its contribution to the economy depends on its institutional, technological, human and

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organizational capabilities. The results then reinforce the thesis that the economics of production ought to increasingly acknowledge information and data as a key factor of production and at the same time take care of privacy, governance, competition, ownership and equitable access. Much more than a ‘technological revolution,' the transition to a ‘data-driven economy' represents a paradigm shift in how value is created, shared and measured in the economy.

**Limitations of the study**

There are some limitations to the study that need to be taken into consideration when interpreting the results of this study. The value of data is hard to measure due to the fact that there is no common market price for data and that the value of the data can also depend on the quality of the data, the timeliness of the data, its accessibility, its ownership, etc. and the context in which it is used. Second, data is studied from an economic and conceptual point of view, as it is an emerging factor of production, and thus cannot fully reflect the technical complexity of data creation, processing, storage and use. The fast-evolving artificial intelligence, cloud computing, big data analysis and digital platforms also pose problems with the relevance of the analysis over time. Moreover, the results might not be generalizable due to variations in data governance, privacy policies, digital infrastructure, or technology maturity between countries. The study may also encounter challenges in obtaining sound and comparable information on the economic value of information since many organisations consider data-related investments and revenues to be proprietary information. Moreover, the results of the analysis might not capture all intangible benefits that data creates, such as better decision making, innovation, customer experience and organisation learning. Lastly, the fact that data has become a factor of production brings up complicated ethical and social questions regarding privacy, ownership, surveillance, inequality and the distribution of economic benefits, questions that may need to be explored more in-depth than this study has attempted to address.

**Future Scope**

The scope of future research on “The Economics of Data: Treating Information as a New Factor of Production” is also wide, especially as data becomes more and more relevant to production, innovation, competition in the markets and economic decisions. Future research can investigate the economic value of data in various sectors in the finance and health industries, manufacturing, retail, education, and digital services, as well as the need to create more dependable methods for measuring data by its economic value. Scientists can also explore the connection between sharing, privacy, economic value, and data ownership to develop practical guidance on how organizations can maximize economic value without violating individual privacy rights. As AI, machine learning, cloud computing and IoT continue to grow rapidly, there is a need for additional research into the implications of high quality, real-time data for automation, innovation and competitiveness at the firm level. Additionally, the rise of data-driven business models and digital platforms and their implications on market concentration, entrepreneurship, employment, and income distribution are key topics. Other possible areas for further research could be accounting for and valuing data, as the strategic and intangible value of data is not captured in traditional financial reporting systems. The comparative studies between developed and developing economies could provide insights into the differences between data infrastructure, digital capabilities, regulation, and data access. Furthermore, the field of data governance, cross-border data transfers, taxation of digital services and competition law on data will become more prominent. These investigations may inform the economic and regulatory landscape that recognizes data as a valuable asset and promotes innovation, level playing fields, privacy and inclusive digital economic growth.

**Conclusion**

Data now plays a more important role than ever in today's economies, and is recognized as a

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factor of production, in addition to land, labour and capital. Data collection and processing, data analysis and data application can contribute to the organizations to improve their productivity, understand consumer behavior, develop new products, reduce cost and make decisions. The utility of data is however not just measured by the quantity of data, but also by its quality, accessibility, relevance, analytical capacity and institutional context. The Digital era brought on by artificial intelligence, Big Data, cloud computing and digital platforms has been a further boost to the productive potential of data and introduced questions on its privacy, data ownership, the concentration of power, cyber security, inequality and ethics. An economic system that values the contribution of information to increased material productivity, and considers the social cost of using information as a new factor of production is needed. Governments and organizations need to have a data governance framework that is transparent, beef up data security and privacy protections, encourage responsible data sharing, and promote access to digital infrastructure and skills, with equity in mind. Lastly, good data management can contribute to innovation, competitiveness, jobs and sustainable economic growth, but only if it is accompanied by technological change and good governance, inclusive policies and a fair economic and social balance.

**References**


1. Acemoglu, D., & Restrepo, P. (2018). Artificial intelligence, automation and work. In A. Agrawal, J. Gans, & A. Goldfarb (Eds.), *The economics of artificial intelligence: An agenda* (pp. 197–236). University of Chicago Press.
2. Acquisti, A., Taylor, C., & Wagman, L. (2016). The economics of privacy. *Journal of Economic Literature, 54*(2), 442–492. https://doi.org/10.1257/jel.54.2.442
3. Arrieta-Ibarra, I., Goff, L., Jiménez Hernández, D., Lanier, J., & Weyl, E. G. (2018). Should we treat data as labor? Moving beyond "free." *AEA Papers and Proceedings, 108*, 38–42. https://doi.org/10.1257/pandp.20181003
4. Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives, 29*(3), 3–30. https://doi.org/10.1257/jep.29.3.3
5. Brynjolfsson, E., Hitt, L. M., & Kim, H. H. (2011). Strength in numbers: How does data-driven decision making affect firm performance? *ICIS 2011 Proceedings*, 1–25.
6. Brynjolfsson, E., Hitt, L. M., & Yang, S. (2002). Intangible assets: Computers and organizational capital. *Brookings Papers on Economic Activity, 2002*(1), 137–181. https://doi.org/10.1353/eca.2002.0003
7. Brynjolfsson, E., Rock, D., & Syverson, C. (2021). The productivity J-curve: How intangibles complement general purpose technologies. *American Economic Journal: Macroeconomics, 13*(1), 333–372. https://doi.org/10.1257/mac.20180386
8. Brynjolfsson, E., Rock, D., & Syverson, C. (2019). Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics. In A. Agrawal, J. Gans, & A. Goldfarb (Eds.), *The economics of artificial intelligence: An agenda* (pp. 23–57). University of Chicago Press.
9. Cockburn, I. M., Henderson, R., & Stern, S. (2018). The impact of artificial intelligence on innovation: An exploratory analysis. In A. Agrawal, J. Gans, & A. Goldfarb (Eds.), *The economics of artificial intelligence: An agenda* (pp. 115–146). University of Chicago Press.
10. Corrado, C., Haskel, J., & Jona-Lasinio, C. (2017). Knowledge spillovers, ICT and productivity growth. *Oxford Bulletin of Economics and Statistics, 79*(4), 592–618. https://doi.org/10.1111/obes.12170
11. Corrado, C., Haskel, J., Jona-Lasinio, C., & Iommi, M. (2022). Intangible investment in the EU and the U.S. before and since the Great Recession and its contribution to productivity growth. *Journal of Infrastructure, Policy and Development, 6*(1), 1–30.

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12. Goldfarb, A., & Tucker, C. (2019). Digital economics. *Journal of Economic Literature, 57*(1), 3–43. https://doi.org/10.1257/jel.20171452
13. Goldfarb, A., & Tucker, C. (2012). Privacy and innovation. *Innovation Policy and the Economy, 12*(1), 65–90. https://doi.org/10.1086/663156
14. Greenstein, S., Forman, C., & Goldfarb, A. (2018). How geography shapes—and is shaped by—the Internet. In G. L. Clark, M. P. Feldman, M. S. Gertler, & D. Wójcik (Eds.), *The new Oxford handbook of economic geography* (pp. 269–285). Oxford University Press.
15. Haskel, J., & Westlake, S. (2018). *Capitalism without capital: The rise of the intangible economy*. Princeton University Press.
16. Jones, C. I., & Tonetti, C. (2020). Nonrivalry and the economics of data. *American Economic Review, 110*(9), 2819–2858. https://doi.org/10.1257/aer.20191330
17. Kitchin, R. (2014). *The data revolution: Big data, open data, data infrastructures and their consequences*. SAGE Publications.
18. Mayer-Schönberger, V., & Cukier, K. (2013). *Big data: A revolution that will transform how we live, work, and think*. Houghton Mifflin Harcourt.
19. OECD. (2019). *Enhancing access to and sharing of data: Reconciling risks and benefits for data re-use across societies*. OECD Publishing. https://doi.org/10.1787/276aaca8-en
20. OECD. (2021). *Data portability, interoperability and digital platform competition*. OECD Publishing.
21. OECD. (2022). *Measuring the economic value of data and data flows*. OECD Publishing.
22. OECD. (2024). *OECD digital economy outlook 2024 (Volume 1): Embracing the technology frontier*. OECD Publishing. https://doi.org/10.1787/a1689dc5-en
23. Piketty, T. (2014). *Capital in the twenty-first century*. Harvard University Press.
24. Sadowski, J. (2019). When data is capital: Datafication, accumulation, and extraction. *Big Data & Society, 6*(1), 1–12. https://doi.org/10.1177/2053951718820549
25. Srnicek, N. (2017). *Platform capitalism*. Polity Press.
26. Stigler, G. J. (1961). The economics of information. *Journal of Political Economy, 69*(3), 213–225. https://doi.org/10.1086/258464
27. Varian, H. R. (2014). Beyond big data. *Business Economics, 49*, 27–31. https://doi.org/10.1057/be.2014.1
28. World Bank. (2021). *World development report 2021: Data for better lives*. World Bank. https://doi.org/10.1596/978-1-4648-1600-0
29. Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. PublicAffairs.
30. Coyle, D., Tennison, J., Kay, L., & Vickers, P. (2024). *The economic value of data: A review and research agenda*. National Institute of Economic and Social Research.