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# IT Industry and Its Contribution to the Development of Indian Economy- A Perspective

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**ABSTRACT**
*Economic development has embedded with the contribution of IT of any country and India is no exception to the same. However, the way the economy grew in India because of IT is mainly attributable to the fact the Indian Govt had taken a fair -free market attitude towards regulating the IT industry in the initial stages of its birth. The journey towards the growth of the economy has been primarily on the back of IT backbone, and despite the hiccups in infrastructure, Indian corporates and brand India has been accepted as a powerhouse in the IT industry, earning huge foreign exchange, providing employment, and enhancing the value- added offerings that the industry can provide. The history of Indian IT can be traced to the Y2K revolution, followed by the development of ERP systems, the internet boom of the early 1990s, and in the next decade due to the explosion of financial services, mobile technologies, and widespread computerization efforts in Banks, NBCs, Railways, and lax departments.*
*The IT Services industry contributed USD80bn in April -Dec 2021, with IT services, health care, and education seeing the formation of recognized startups as of March*
*2022. The action of the Govt - including the Startup India initiative and Production linked Incentive programs, have helped the IT industry to grow and attain more unicorns and soonicorns. With the advent of new-age technologies like blockchain, bitcoin, applications of Machine learning, Artificial Intelligence, growth of Neo-banks, digital banks, and FinTechs, it is expected the IT services sector will grow at a faster pace and help attain a higher GDP level of growth for India, thus promising a very interesting future for India amidst the prevailing global recessionary tendencies.*
***Keywords***: *IT-Industry, Y2K, Business Process Outsourcing, Knowledge Process Outsourcing, Fintech, Block Chain, AI & ML applications, GDP, Economic development.*

## 1. INTRODUCTION:

The Role of IT in the economic development of any country is crucial and India is no exception to the same. However, the way the economy grew in India because of IT is mainly attributable to the fact the Indian Govt had taken a laissez fair -free market attitude towards regulating the IT industry in the initial stages of its birth. Starting from the early 1980s when IBM and Digital mainframes were most popular it has now come to a stage where computing power in the hands of the customer is much higher than was the power of Supercomputer in the 1990s The main companies were a few - IBM, TCS, ICIM, Digital equipment, and HCL- which over some time realized the importance of IT and started into the hardware business. The Y2K syndrome of late 1998-99 helped prop up the demand for software professionals, aided by the growth of manufacturing and demand for ERP from an MRP setup. This necessarily called for SAP and other ERP framework

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systems which were being actively sought after by manufacturing industries and other industries. The service industry was growing at that stage. After the Y 2K issue had been overcome, the industry started moving into the value chain on IT, by taking recourse to ERP, and training in New ERP systems -eg Oracle, SAP.JD Edwards, Peoplesoft, etc. Output and productivity further increased in the late 2010s and the boom in the service industry was triggered by the growth of IT and NFCs and banks started to computerize their operations.

These have later leapfrogged into bigger initiatives, systems, etc creating a set of eco-system that accelerated the growth of the IT industry. Alongside industries in manufacturing, services started experiencing the benefit of productivity, and improved effectiveness of operations and profits.

The shift was visible and as the economy grows, it was visible as to the role of IT as a major partner in the eco-system development. the authors review the past literature in this regard and then offer their views on the way forward.

## 2. REVIEW OF LITERATURE:

The earlier studies on the Role of IT in the development of an Economy are adopted as a first step by the authors, who have reviewed the same. This study is proposed to investigate the aspect of different perspectives on growth and development arising due to the adoption of IT in an economy and how it is getting related to or impacting the development and growth of the economy.

There has been a debate for many years about whether the IT revolution has led to improved productivity. The productivity paradox refers to studies conducted in the 1980s that demonstrated no correlation between IT investment and productivity in the US economy. Since then, research at the business and national levels has consistently demonstrated that there is a considerable and positive effect of IT investment on labor productivity and economic growth. The review concludes that the productivity paradox has been successfully disproved. Augmented IT investment is inked. to greater productivity growth at equally corporate and national levels. The research also comes to the firm-level conclusion that complementary organizational capital investments like decentralized decision-making systems, job training, and business process redesign might explain the vast variety of performance of IT investments among various companies. It is not just a too! for streamlining current procedures; it also plays a crucial role in enabling organizational changes that can boost productivity. Because of sluggish economic development, the failure of numerous Internet-related businesses, and cuts in IT spending by other companies that were no longer under competition from Internet enterprises, IT capital investment started to fall dramatically in the middle of 2000. The IT industry has been devastated by this decrease in investment, and the U.S. economy's economic and product development may be slowed as a result. This assessment demonstrates that despite how upsetting the volatility in the technology sector has been for executives and investors alike, it should not be used as an excuse to ignore the fundamental changes that have resulted from businesses investing in IT. Despite the failure of many Internet-related businesses, innovative businesses continue to set the standard for IT investment returns Dedrick, J., Gurbaxani, V., & Kraemer, K. L. (2003)).

Information and communication technologies (ICT) are widely

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acknowledged as providing enormous prospects for the global population's overall social and economic growth.

Countries or areas have little possibility of development without its adoption. ICT can support underprivileged women's microbusinesses, yet this technology is still underutilized in many nations. The success of a government program to use ICT to eradicate poverty is discussed in this article. The case study "ICT micro-enterprises by a self-help group of poor women" tells the tale of a self-help group that exploits ICT's promise to end poverty by empowering women economically. It demonstrates how efficiently ICT can be applied as a tool for microbusinesses, which are supported by underprivileged women, under special schemes. The SWOT analysis, which evaluates the strengths, weaknesses, opportunities, and threats for ICT-based microenterprises demonstrates how underprivileged women might support such businesses for their economic emancipation if a nation has the enabling environment required to allow the establishment of ICT micro-enterprises. (Prasad, P. N., &Sreedevi, V. (2007). Another study concentrates on the factors that affect Indian small and medium-sized businesses (SMEs) ability to go global. The goal is to look into and assess the business climate before considering how crucial it is to foster and support entrepreneurship to provide Indian SMEs a chance to compete on a global scale. It is suggested that the use of technology is the main strategy for encouraging or boosting the growth of entrepreneurship. SME participation in international marketplaces in developed and developing nations is now possible due to developments in information technology and better communication infrastructure. Since governmental reform in 1991, SMEs in India have had to contend with a more intense level of competition. Possibility of sale of goods and services 24/7 from anywhere in the world, highlighting the strategies for Indian SMEs to increase their competitiveness. (Todd, P. R., & Javalgi, R. R. G. (2007)). Information technology (IT) may influence economic growth. The use of information technology to cut transaction costs is the channel that is highlighted here. The authors talk about the nature of transaction costs, how they might affect economic results, and how IT affects them. They offer a theoretical analysis of how a decrease in transaction costs might impact the volume of intermediate goods produced, and how that volume might impact the direction in which the economy develops as a result. When discoursing this complex case study in relation to the theoretical concept of transaction costs, they next draw on our fieldwork in rural India where they looked at the economics of rural Internet kiosks, link it to transaction costs, and draw a conclusion on possible IT impact on developing economies (Singh, N. (2008). According to the Indian government, the IT sector is one of the country's most important industries and a key factor in attaining national objectives, including the expansion of the economy. The information technology industry has developed into a mature and important contributor to worldwide economic growth. Revenue in the IT industry, which includes the software and services, IT-enabled services (1TES), and hardware subsectors, has been on the rise for many years. The size of this industry segment has increased by 35% annually over the previous decade.

According to NASSCOM, the Indian economy's gross domestic product (GDP) for the information technology sector is /

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7o. This paper examines the development and performance of India's information technology sector, and how, holistically and broadly speaking, information technology supports India's economic development. (Dubey, M., & Garg, A. (2014)). The proper operation of the banking sector in this era of globalization depends greatly on technical support. This study focuses on how technology has affected the Indian banking industry. One cannot imagine the prosperity of the banking business shortof information technology and communication, which have increased the banking sector's importance in the Indian economy. Information technology describes the collection, handling, archiving, and dissemination of various kinds of information through the use of computer and communication systems. Information technology is a framework for obtaining and developing IT to accomplish certain strategic objectives. Technology is essential for developing a financial system that is effective and capable of meeting the demands of an expanding economy. Banks in India have made noteworthy investments in technology over the past 1.5 decades, including Tele Banking, Mobile Banking, Net Banking, Automated Teller Machines (ATMs), Credit Cards, Debit Cards, Smart Cards, Customer Relationship Management (CRM) Software, Electronic Payment Systems, and Data Warehousing and Data Mining Solutions. These investments are intended to improve the quality of customer services and the speed at which banking transactions are processed.

Banks have made significant IT investments to increase their performance. However, differences in the deployment, use, and effectiveness of IT are what determine whether performance can be improved. (Rani, I. (2015)). The sources of economic growth in India's economy since the 19805 are examined in this essay, with a focus on the contribution of information and communication technology (ICT). Through two key avenues, the effect of ICT on economic growth is examined.

ICT investment's direct effects on the growth of the overall economy and of manufacturing, as well as its indirect effects on Total Factor Productivity Growth (TFPG) in ICT-using and ICT-producing sectors The findings point to an expanding role for ICT investment, primarily in the service sector, in generating overall economic growth in India. Additionally, the economy has not been able to fully diffuse the ICT spillover effect, which has limited the productivity bost from ICT use. The manufacturing sectors trail far behind, despite rising productivity development in ICT employing market services and their contribution to overall productivity growth. While there is still a lot of room for ICT use in the industrial sector, India's export- oriented ICT sector has helped the country's rapidly expanding service economy increase efficiency. The article highlights the need for a more thorough sectoral examination of the influence of ICT on economic growth, evaluating computer-related and software services separately, and it suggests other ways to improve the data on ICT investment. (Erumban, A. A., & Das, D. K. (2016)) India continues to be a market with a high potential worldwide, offering a variety of chances due to its highly linked and digitally equipped economy. India, which has the second-largest population in the world, has a significant and expanding end- user market. With 937 million mobile subscribers, 278 million internet users, and a USD 14 billion e-Commerce business, India is ready to develop into the

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digital world. Since the 1980s, the Indian IT industry has extended significantly. GDP, employment, and foreign exchange profits, the industry has made significant contributions to the economy. Nearly every sector of the economy, including services at banks, post offices, trains, and airports, has seen an upsurge in competence and productivity majorly due to the IT industry.

Government offices are now more productive due to governance. The paper offer insights into how the IT industry contributes to India's growth. (Singh, I., & Kaur, N. (2017). A rapidly developing Indian economy includes information technology as a significant participant. The government of India has positioned the information technology sector as one of the countrys major and leading industries. This sector is crucial to accomplishing government policy objectives including capital and economic development. The IT industry has grown over time and now plays a significant role in the expansion of the world economy. The information technology (IT) sector, comprised of the hardware, software, and information technology-enabled services (ITES) industries, has been experiencing steady revenue growth over the past few years. India continues to be a market with a high potential worldwide because of its highly linked economy and readiness for digital transformation, and also has the greatest end-user market for technology. The IT sector is also in charge of boosting the productivity and proficiency of many other economic sectors, including banking services, post offices, railroads, airports, research, and development, etc. In this study, the authors look at the various ways that India's IT sector has boosted the country’s economy.

The IT sector's size has grown at a 35% annual pace. According to NASSCOM, the Indian economy's gross domestic product (GDP) for the information technology sector is 7%. This study makes a comprehensive and wide-ranging contribution to the debate about information technology plans and their impact on India's economic development. (Kandula, G(2020)).

## 3. OBJECTIVES OF THE STUDY

*The study has the following objectives:-*

i) To understand the importance of the Role played by IT in the growth of Indian industry in general

ii) To identify the role played by the IT industry in the development of the Service industry in general and IT services in particular

iii) To understand the importance and relevance of the IT industry and its contribution to the economic growth of India

iv) To understand the role played by the IT industry in the growth of the defense and space satellite industry, in India.

## 4. METHODOLOGY

The study is exploratory and looks at past literature delineating the role of IT and its implications for the development of the economy The approach is therefore desired to be exploratory while at the same time is of investigative and needs to be balanced based on the efforts taken by corporates, the sudden growth arising due to internet technologies become more widely prominent and ubiquitous, increase in computing power in the hands of customers, suppliers and other stakeholders, higher expectations from management which are a pointer to the direction
and findings the study takes.

## 5. FINDINGS:

The authors have gone through the past

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literature and the evolution of IT since the 1980s have observed the following:-

i) Early-stage IT was left unattended by or regulated by Govt as it was the inception and since not controlled or licensed - the innovative entrepreneur takes this forward to its conclusions to build giant corporations - based solely on the ability, courage, and audacity of entrepreneurs to dream big.

ii) Higher computing power due to technology advancement saw the growth of new applications, systems -distributed computing and expanding economy necessitated a need for ERP and integration of various systems which gave birth to an excellent software eco- system - originating as it is from the Y2K opportunity, along with the advent of thin client- server approach, which later due to advent of cloud computing has transformed the way business is done.

iii) The growth of the internet and mobile telephony have helped accelerate the integration of mobile apps based on Android applications to connect to the main system on a remote basis due to wireless bandwidth being made available. These create a huge opportunity for the software industry to grow in various dimensions, including software, interface devices, hardware, services, and support for both the hardware and software.

iv) The growth of IT synchronized in terms of timelines with 1991 liberalization and new policy adopted by the Indian Govt, which kickstarted the economic development process as it was freeing the economy from the shackles of old regulations and this helped in the growth of entities in IT sector at a faster pace.

v) The advent of a few groups of young men with a common vision brought together the concept of IT services, leading to the growth of Infosys, Mindtree HCL, TCS, Wipro, etc

vi) As the markets progress it led to other industries also adopting the IT adoption principle for improving the efficiency and success of their industrial entities.

vii) Subsequent growth leads to higher costs of hardware which got upgraded every few months and this brought into the picture the cloud data storage and processing, and with higher power available it provided computing in the cloud - which become muchly affordable with lower investment and lower risk in an ever-changing industry. It helps the unit to focus on its core and grow to meet the customer's needs.

viii) SAAS model came up in the industry which gave a variety of product offerings to the customer and enhanced the value-addition offerings from IT corporates at affordable costs, which increased the penetration of IT into the industry.

ix) The literacy levels on basic business applications have become a given and this enhanced the business prospects for smaller and medium businesses too in the rural sector of India stimulating the demand and thus the economic growth.

x) The advent of small entrepreneurship in the IT industry has given rise to a range of software products and applications of a variety which are greatly enhancing productivity and efficiency gains in the industry-enhancing GDP.

xi) The push to the digitalization of payments due to the advent of Covid-19 had proved to be a boon in disguise as overnight, major parts of the Indian economy had accepted digital payments effortlessly, which otherwise would have taken a larger time frame. A range of apps from Bharat-Pe, Phone-Pe, Paytm, Mobi-kwik, Google-pay, etc has given a variety of options to customers and merchants in trade.

xii)The growing talent base in the young population had led to technologists

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turning entrepreneurs as key to providing a fillip to growth using IT. The advent of Fintechs is a major factor in this direction, and the offerings from these new entities have started competing very effectively at lower transaction costs with the banks, and other brick-and-mortar nbfcs. The current investor interest in Fintechs also indicates high confidence in the Indian growth story.

Xiii)All Industry sectors ranging from Manufacturing, Services, Logistics, Healthcare, Food delivery, Hospitality, transport Aggregators, Telecom, Retail, Education, Automobile and Engineering, Agriculture, Banking, and Railways, as well as government tax departments have implemented full-fledged IT systems and have started to apply Artificial Intelligence and Machine learning models and tools to enable them to increase their productivity and effectiveness, despite constraints in the pathway.

xiv) Increased integration of technologies has dramatically reduced transaction costs and the new business models are becoming asset-light and built on digital technologies integrated with popular platforms, and mobile technologies to have a larger reach and penetration of technology, which perhaps has not happened in years in India as well in other countries.

xv) The space industry and defense industry could progress more due to higher levels of IT technologies being internalized in terms of skill sets, and data processing ability using complex models which are very much required in these industries. The mission to Mars and other missile technologies oriented programs on ballistic missiles are achievable only due to competency of a high level using IT applications in Science and Technology

xvi) BPO and KPO-related business growth orientation, along with the growth of the It industry occasioned due to outsourcing by the US and other global MNCs is attributable to a great extent to the stride made by India in information technology services.

xvii) Blockchain and bitcoin technologies are also creating a new type of trust-based business model which enables more interaction among B2C and B2B and increase the capacity of the ecosystem to move up the value chain. It is these technologies that are ultimately likely to help India attain the USD5 trillion status.

xviii) Financial markets today in India, are extensively using technologies for trading, monitoring, controlling, auditing and surveillance, prosecution too and the regulator is ready for the task

xix) The role of IT in making India a USD5Trillion Economy is very significant, with a huge market base both in India and globally competitive in providing software services, though quite lower in the development of software products. This is however expected to see a major change as MINCs set up their development centers outside their home country in India.

xx) The payment ecosystem has been further accentuated by UPI-based payments which enable costless direct transfer of funds and can be used in public distribution, going forward.

xxi) The support given by the Govt in the process has been very encouraging, in the form of incubation centers, DS&T, Atal innovation center, start-up India initiatives, and productivity linked incentives (PLI) for manufacturing entities. More however needs to be done to improve the business climate as also the making the process of doing business in India more friendly to investors, lest the country loses a good opportunity.

xxii) All Income tax filings returns and even assessments have moved online and

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so is the situation on GSTR filings under indirect taxes, as well as Customs duty payment using the
ICE-GATE mechanism. As regards Foreign trade policy too, a different aspect of submission of returns documents etc has been automated and made online. Tax Assessments have shifted to online and faceless, saving a huge cost bill for the Govt departments, and enhancing efficiency and productivity. The automation, using IT, has thus helped the department to clear its cases on a rapid basis, and lowered the transaction costs and administration costs over the past two decades, and it is further going to accelerate, as new models develop.

## 6. LIMITATIONS:

The present paper is an exploratory study on the subject, and the empirical aspect of the study considering the various factors for IT influencing economic development and their empirical inter-relationship is not brought out.

## 7. CONCLUSION:

The performance of the Indian IT industry in the last two decades has been quite stellar and going forward it is likely to accelerate. As per a NASSCOM study, there are over 10,000 active start-ups in India and over 41 unicorns have risen in 2021, despite the covid 19 crisis during the period. Experts contend that the Covid 19 was a prime factor in the economy taking the digital jump. The growth of Fintech has also improved the financial markets, enhanced financial inclusion, and brought more participants to benefit from the same, thus growing the business entity quite well. The time for India to be recognized as an economic superpower has perhaps come of age and there are indications of the same emerging in the next few years. With the support of the Govt and the vast talent pool available and a lot of young entrepreneurs willing to take a plunge in the startup and technologies sector, it is expected that India may give rise to more unicorns, albeit at an accelerated pace in the next few years. Combined with the development of space technologies, and the defense industry's competencies, as also due to spin-offs impacting the start-ups, a collaborative and cooperation-based model on sharing basis is likely to develop, which can push the Indian economy to the next higher growth orbit.

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