Tech-Business Analytics in Primary Industry Sector

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ABSTRACT

Purpose: *The TBA in the primary industry sector is to organize the efficiency and sustainability of agricultural extraction activities. The primary sector is heavily reliant on natural resources and environmental conditions, and TBA can help businesses in this sector make data-driven decisions to optimize their operations and reduce their environmental impact. For example, TBA can help agricultural businesses optimize their crop yields by analysing data from weather sensors, soil sensors, and other sources. By using predictive analytics, businesses can anticipate weather patterns and adjust their planting schedules and crop management practices accordingly. This can lead to higher crop yields, improved resource utilization, and reduced environmental impact. Similarly, TBA can help natural resource extraction businesses optimize their operations by analysing data from sensors, drones, and other sources. By using advanced analytics techniques, businesses can identify opportunities to improve resource utilization, reduce waste, and minimize the impact of their activities on the environment. Hence, the primary industry sector faces many challenges, including climate change, resource depletion, and environmental degradation. By using TBA, businesses in this sector can make data-driven decisions to improve their operations, reduce their environmental impact, and ensure the long-term sustainability of their activities.*

Design/Methodology/Approach: *The TBA in primary industry sector involves a combination of data collection, analysis, and interpretation techniques. The specific methodology used will depend on the industry and the specific business objectives. Hence, the TBA methodology for the primary industry sector is focused on using data-driven insights to improve efficiency, productivity, and sustainability. By collecting and analysing data from various sources, businesses in this sector can make informed decisions that lead to improved outcomes for both the business and the environment.*

Findings/Result: *It is discussed in the paper how Tech Business Analytics in the Primary industry sector will have managed the growth itself from its evolution to till date.*

Originality/Value: *An explanation of how Tech Business Analytics in the Primary industry sector differs from business analytics. A generic architecture is also available, which looks at 30 recently presented TBA in Primary industry sector research proposals and is useful for technical purposes.*

Paper Type: *Exploratory research.*

Keywords: Business Analytics (BA), ICCT underlying technologies, Tech-Business Analytics, TBA, Industry Performance, Data Science, Big Data Analytics, Research gap in Business Analytics, ABCD Listing

1. INTRODUCTION :

The TBA is a powerful tool that can be used to improve the efficiency, productivity, and sustainability of businesses in the primary industry sector. The primary industry sector encompasses agricultural and natural resource extraction activities, which are heavily reliant on natural resources and environmental conditions involves the collection, analysis, and interpretation of data from various sources, including sensors, drones, and other technologies. By using advanced analytics techniques, businesses in the primary industry sector can gain insights into their operations has been explained by Kumar, S. et al. (2022) [1]. This is accelerating its capacity to help enterprises produce better results with fewer resources. Utilising technology while using fewer people can speed up the process a business goes through to create a product and deliver it to a customer. In this part, issues with needs-based, want-based, societal, and phantasmagorical desires are discussed. The use of technology to enhance societal trade has a promising future. ICCT's underlying technologies and big data technologies were integrated, according to Kumar, S. et al. (2023) [2], Tech-business analytics (TBA) is the name of the latest study. This study aims to gain a deeper understanding of the concept of TBA and how it affects an organization's innovation outcomes. A platform that merges data analytics and ICCT underpinning methods is known as tech-business analytics, as explained by Kumar, S. et al. in 2023 [3]. The primary industry sector is followed by the quaternary industry sector to simplify or resolve industry concerns. Tech-Business Analytics' goal is to enhance the attributes and standard of goods and services across a range of sectors by utilising technology and data analysis. To do this, data from a variety of sources are used to uncover patterns in consumer behaviour, market trends, and other elements that may affect how well a good or service is received by a target market. For example, TBA can be used to optimize crop yields by analyzing data from weather sensors, soil moisture sensors, and other sources. By using predictive analytics, businesses can anticipate weather patterns and adjust their planting schedules and crop management practices accordingly. Similarly, TBA can help natural resource extraction businesses optimize their operations by analyzing data from sensors, drones, and other sources. Hence, the primary industry sector faces many challenges, including climate change, resource depletion, and environmental degradation. By using TBA, businesses in this sector can make informed decisions that lead to improved efficiency, productivity, and sustainability.

2. INDUSTRY SECTORS :

This exploratory analyse the effect of BI systems on TBA based on research by Yiu, L. D et al. (2020) [4]. An analysis of a survey that was given to a large group of professionals associated with various E&P operations and service firms is presented by Bravo, C. et al. [5] in their publication from 2014. This poll reveals the industry's current level of AI expertise, the most popular application domains, and what users anticipate from AI-based solutions. Business intelligence and analytics (BIA) is defined by Lim, E. P. et al. (2013) [6] as the creation of technology, systems, practices, and applications to assess crucial business data to learn new things about markets and businesses.

The hotel sector is currently one of the most intensely competitive in the country, according to Tong-On, P. et al. (2021) [7]. As an engine for innovation, it is overflowing with innovative technologies. An industry that collects a lot of data in many different forms is the hotel business. The purpose of the study is to investigate how data analytics is used for business intelligence and how it affects corporate performance in Thailand's hotel sector. Business analytics has gained popularity in the current era of the experience economy, according to Chahal, H. et al. (2019) [8]. Primarily, the growth of the Internet and information technology has made business analytics a thriving application field. The domains of information technology, quantitative methods, and the decision sciences, on the other hand, have all been significantly impacted, which is similarly impossible to dispute. According to Zamani, E. D. et al. (2022) [9], Business intelligence and analytics (BI&A) have become a significant field of study for both practitioners and researchers, Chen, H. et al. (2012) [10] have noted. Analytics has emerged as this decade's technology driver, according to Sharda, R., et al. (2014) [11]. Businesses are developing new organisational units focused on analytics that help them become more productive and efficient in their operations. To assist them in their work, decision-makers are increasingly using computers. Even consumers use analytics tools, either directly or indirectly, to choose between ordinary activities like shopping, getting medical care, and going out to watch a movie. The discipline of decision support systems (DSS)/business intelligence (BI) is quickly developing to become more focused on novel uses

of data streams that were not even gathered some time ago, much less analysed in any meaningful way. This is addressing how analytics is changing in business and academics in this paper, according to Bowers, M. R., et al. (2018) [12]. We used to text-mine to examine job advertisements for analytics-related professions online to determine the demands of the sector. To determine the topic coverage in relation to industry needs, we also performed a survey of academic programmes in analytics-related master's programmes. We discuss the holes that we think need to be filled based on these two research. According to Kumar, S., et al. (2020) [13], there are new domains of data analytics and decision prediction that use data gathered from various systems employing Internet of Things technologies. The following are the major industry sectors of the economy:

2.1 Primary Industry Sector:

Farming, fishing, and mining all involve the extraction of resources. Sometimes the term "extraction sector" is used to describe the primary sector, which deals with the extraction of unprocessed materials. The economy's primary industry sector, commonly referred to as the agricultural sector, is the area where natural resources are mined and produced. Farming, fishing, forestry, mining, and oil and gas drilling are a few of the activities that fall within this sector. The natural environment's raw resources are gathered and extracted in the primary industry sector to create products that can be used by people. For instance, in farming, crops are produced, gathered, and then processed into food items that may be sold to consumers. In mining, minerals are taken from the earth and transformed into metals or other materials that can be utilised in production. The primary industry sector is significant because it provides the raw materials required. Economies that are reliant on primary industries are often referred to as "resource-dependent" economies. There are initiatives to lessen these businesses' harmful effects on the environment through sustainable practises because they can also cause deforestation, soil erosion, and water pollution.

2.2 Secondary Industry Sector:

The secondary sector is responsible for producing and selling finished goods. Production includes activities such as the development of aluminium-bodied vehicles, construction projects including buildings for houses and businesses, and the delivery of products to households such as electricity, gas, and telephones. The manufacturing sector, often referred to as the secondary industry sector, is the area of the economy that deals with the processing and conversion of raw materials into completed items. Construction, manufacturing, and energy generation are all included in this industry. The primary industry's raw materials are transferred to the secondary industry sector, where they are converted into completed goods that can be sold to customers or used by other. For instance, in the manufacturing industry, raw materials like metals, polymers, and textiles are turned into goods like cars, gadgets, and apparel. The secondary industry sector is significant because it increases the value of raw resources by turning them into useful goods. Additionally, it boosts the economy by adding jobs. However, it can also have detrimental effects on the environment, such as pollution from manufacturing and emissions from energy generation. Therefore, efforts are being made to lessen the sector's impact through sustainable practices, such as the utilisation of renewable energy sources and energy-efficient production techniques.

2.3 Service / tertiary Industry Sector:

This is concentrated on the general public's purchase of manufactured goods. It provides banking and insurance in addition to other services. The economic sector that offers services to people and other businesses is the tertiary industry sector, commonly referred to as the service sector. Transportation, retail, healthcare, education, and finance are just a few of the industries that fall under this umbrella. Enterprises in the tertiary industry sector offer services to satisfy the demands and preferences of customers or other enterprises. For instance, in the healthcare industry, doctors and nurses provide medical services to patients, while in the retail industry, businesses provide clients with products and services. Because it offers a variety of services that raise living standards and promotes economic progress, the tertiary industry sector is significant. Additionally, it produces revenue for both businesses and people, as well as jobs. As it grows as nations get more developed and their inhabitants become wealthier, the sector is frequently viewed as a driver of economic growth in modern economies. The industry must, however, also contend with issues including escalating competition as well as the need

to adjust to shifting consumer demands and technological advancements. The industry may also have an influence on the environment due to factors including building energy use and transportation-related pollutants. As a result, initiatives are being made to promote sustainable practises within the industry, such as the construction of energy-efficient structures and the utilisation of renewable energy sources.

2.4 Quaternary Industry Sector:

There are also the highest-ranking decision-makers in business, trade, and education. Several sectors' relative importance has changed: - Agriculture and food production will be the primary industries in a primitive economy, employing most people. An economy can expand thanks to improved technology by requiring less labour in the agricultural sector and allowing more people to work in the manufacturing sector. An area of the service sector that is concentrated on the knowledge economy is referred to as the quaternary industry sector by this new label. It covers businesses engaged in information and communication technologies, technology, and innovation. Software development, data analysis, scientific research, and consulting are all included in the quaternary industry sector. These businesses are frequently characterised by the employment of innovative technology and the creation of intangible goods like ideas, information, and knowledge. The quaternary industry sector is significant because it is frequently regarded as an engine for innovation and economic expansion in contemporary economies. It produces current information and technology that can be used in other areas of the economy, as well as high-skilled jobs. The industry must constantly develop to be competitive, and there is a chance of intellectual property issues, thus these are obstacles the industry must also overcome. Energy utilisation in data centres and the creation of electronic waste are two additional environmental effects of the business. Overall, the quaternary industry sector is a significant and quickly expanding component of the contemporary economy, and its influence is anticipated to keep growing in the future.

3. ABOUT THE PRIMARY INDUSTRY SECTOR AND ITS IMPORTANCE :

According to Schmoch, U. et al. (2003) [14], technological advancements are one of the main aspects that explain why modern nations are so competitive economically. To enhance economic research and decision-making, it is crucial to continuously track technology growth across all sectors, nations, and regions. A single indicator that accounts for all facets and stages of innovation cannot, however, adequately capture the evolution of technology. According to Hedviáková, M. et al. (2019) [15], KPI provides sufficient data to determine whether to increase investments such investments add no value and should be stopped in favour of leaving the sector to other (more competitive) nations. Indicators of KPIs are more significant in Industry 4.0. The article was processed using both primary and secondary sources. According to an explanation provided by Baca, S. P. et al. (2000) [16], investors have segmented their allocations in the past because country effects have traditionally been the main factor. To find out if this condition still exists, we went out to explore. The proportional weighting of national and economic factors in the stock returns of the largest equities markets in the world has changed significantly, according to our research. According to Awan, U., et al. (2019) [17], the manufacture and supply of sports, leather, and surgical products for international businesses is the primary activity of Sialkot's industrial sector. To investigate CSR priorities among SMEs, we employed a qualitative methodology. According to Papapetrou, M. et al.'s (2018) [18] explanation, the technical potential of industrial waste heat is investigated in EU countries with an emphasis on how much can be recovered and used. Here, a different methodology that was developed using waste heat fractions from a thorough examination of the UK sector from 2000 to 2003 is suggested. These fractions represent the wasteful and recoverable portion of heat usage. Energy use and the rise in carbon dioxide (CO2) emissions in China are both attributable to the industrial sector, according to Ouyang, X., et al. (2015) [19]. The industrial sector in China must reduce CO2 emissions and conserve energy if a low-carbon transition is to be successful. According to Bühler, F. et al. (2016) [20], this article should give an in-depth examination of the Danish industry utilising the energy and exergy methodologies, which account for 80% of the industrial sector's total primary energy usage. This study attempts to analyse the effects of corporate governance and capital structure on firm performance, according to Ahmed, F., et al. (2019) [21]. Between 2006 and 2016, annual data from two significant industries—automotive and fertilizers—were subjected to panel pooled regression analysis. Results indicate that board size and profitability are inversely correlated for the fertilizers and automobile sectors, respectively. Board size is positively

correlated with profitability while audit committee is negatively correlated. Short-term and long-term debt, debt to equity, and the current ratio are used to assess the capital structure. According to Dolge, K. et al. (2020) [22], the findings suggest that energy-intensive industries like the production of wood and non-metallic minerals have significant room for improving their energy efficiency. The basic problems facing each industry might be identified and communicated to the decision-makers. According to Lu, L., et al. (2021) [23], the novel coronavirus (Covid-19) outbreak has had a substantial influence on industries all over the world and caused a global public health catastrophe and economic crisis.

The primary industry sector is vital because it provides the raw materials necessary to produce goods and services in other sectors of the economy. For example, agricultural products such as wheat and corn are used to produce food products, and timber is used to manufacture paper and other wood-based products. Moreover, the primary industry sector is a significant source of employment for many people around the world, especially in rural areas where other job opportunities may be limited. Also, the primary industry sector is often a significant contributor to many developing countries' economies.

Despite its importance, the primary industry sector faces many challenges, including climate change, resource depletion, and environmental degradation. Therefore, there is a growing need to develop sustainable practices and technologies that allow businesses in this sector to improve their operations while reducing their environmental impact. Hence, the primary industry sector plays a critical role in the global economy and is essential for meeting the basic needs of society. As such, it is crucial to develop innovative solutions that enable businesses in this sector to operate sustainably and responsibly while continuing to provide the raw materials necessary for economic growth and development. The primary sector of the Indian economy is the most important. As farming processes evolved and the agriculture industry boomed, more food was produced than ever before. The primary industry, agriculture, employs more than half of the country's workers and accounts for a quarter of the country's GDP. Some of the reasons why the primary sector is so crucial in our economy are as follows:

The main sector is the economic foundation. The primary sector meets the raw material requirements of the secondary sector. The primary sector oversees the economy's food supply. In our country, the primary sector employs a substantial number of people. Agriculture is a major source of income in rural areas with many unskilled workers. Over 20% of the country's GDP is generated by this industry. The Indian economy is divided into three sectors:

This sector mostly produces finished goods from the primary sector's production. Agriculture and allied industries employ more than half of India's population and generate over 15% of the country's GDP. The performance of the primary sector determines the health of the other two sectors. The secondary sector, which includes industries, will run smoothly if agriculture does well and provides strong yields. Agricultural products are employed in a wide range of industries. India's primary sector is still the country's largest economic sector, and it continues to play a significant role in the country's overall socioeconomic growth. The primary sector's major concern is the extraction of natural resources. Fishing, farming, and mining are all part of the package. To plan, govern, and constantly drive the economy in the direction of growth, both economic planners and the government of a country must comprehend the structure of the economy. For a country's population to enjoy a higher quality of life and generate sufficient surpluses to help them cope with hardship, its economic growth must be continuous and predictable. The total volume of production produced by all sectors – agriculture, industry, and service industries – is vital to a countries or region's long-term growth and development. As a result, modernising the Indian economy, particularly the Indian primary sector, is crucial. Bigger agricultural yields per unit area and a higher percentage of GDP will result from modernising agriculture. This starts a chain reaction in which rural families' income increases, their purchasing power increases, and the market expands. Primary industries include agriculture, forestry, fishing, and mining, to name a few. This industry provides food to the rest of the economy. The primary sector is usually the most important in developing countries, whereas it is usually the least important in developed countries. Some of the reasons for the importance of the primary sector in our economy are as follows:

(1) India's primary sector accounts for more than 20% of the country's GDP.
(2) It employs more than 55 percent of the workforce.
(3) The most labour-intensive sector of the Indian economy.

(4) It encompasses agriculture, dairy, fishery, and forestry, all of which are vital to India's economy.
(5) The term "economy" refers to anything related to the production, consumption, and exchange of products and services in a certain area. Laws, customs, and other factors regulate individuals, organisations, and governments.
(6) Agriculture, mining, and other components of the primary economy have been added to the mix. It has a lot to offer as well.
(7) Consider agriculture, which accounts for around 16% of GDP and employs more than half of the population.
(8) Given that agriculture is the main source of income for most of India's population when multiple government programmes achieve success on paper but fail to reach people in the form of jobs, agriculture becomes the only alternative. The primary sector also serves as a basis for the secondary sector because gasoline is required to operate an automobile. The primary sector provides the fuel for the secondary sector to function. If the primary sector did not exist, we would be completely reliant on other countries for food. Because we do not produce enough work, it gives employment. By ensuring our self-sufficiency, the primary sector fosters stability.
(9) The primary sector holds a lot of promise because it contains hidden jobs and can create the same amount of revenue as a tenth of the current workforce. However, because the government is unable to provide enough labour, most of the populace relies on it for survival.
(10) As a result, when you add it all up, you get the primary sector contributes to economic and political stability in the country. It creates jobs and expands R&D opportunities. It is used as a fuel in the secondary industry.

4. EFFECT OF TECHNOLOGY IMPLEMENTATION IN PRIMARY INDUSTRY SECTOR :

Although it is widely agreed that promoting energy-saving technology is essential for driving the green transformation of economic development, Yang, Z. et al. (2017) [24] investigated whether diverse technological sources have distinct effects on the advancement of energy-saving technology. According to Ouyang, X. et al. (2020) [25], encouraging technical advancements through environmental regulation is one of the crucial ways to bring about a green transition. Based on the provincial panel data of China's industrial sectors between the years 2005 and 2015, this study explores the impact of environmental legislation on technical breakthroughs. Premkumar, G. (2003) [26] had mentioned that one of the economic sectors with the fastest growth rates is small business. Information systems (IS) are becoming increasingly important to the businesses in this area. Large organisations have been the main subject of traditional are study. The challenges, possibilities, and management issues faced by small businesses in the IS sector are, and the body of research is too tiny to offer helpful recommendations. According to Zhang, Q. et al. (2017) [27], the recovery and utilisation of waste energy presents a significant opportunity for the worldwide iron and steel industry to reduce its reliance on primary energy and increase its energy efficiency. But because there isn't a thorough and useful methodology, it is difficult to accurately measure how much waste energy is produced. Dong, J., et al. (2021) [28] had highlighted that in contrast to earlier studies, TPB indicates the (non)effects of select demographic moderators on the model using a non-Western sample, as explained by White Baker, E. et al. (2007) [29]. People are crucial for improving industrial enterprises' performance and for gaining a competitive edge, according to Al-Ghamdi, M. et al. (2015) [30]. High-quality human resource management empowers businesses to compete on product and service quality, unique products, and technical innovation. Although it has long been understood that effective human resource management is crucial for a country to be able to innovate successfully, there are few comparative data that can be used to fully understand the complex relationship between Saudi Arabia's human resources management and its technological performance [64]. Energy reforms are crucial for technological advancement, according to Necoechea-Porras, P. D., et al. (2021) [31] because they aim to support an open market by lowering costs, boosting competition, and advancing technology. The energy conservation measures put in place in China's manufacturing industry, according to Li, K., et al. (2016) [32], are far from being at the best level. Tougher enforcement would be beneficial for the manufacturing industry's transition to a greener economy. China may be experiencing energy and environmental issues, according to Lin, B. et al. (2017) [33]. The diversity of various industrial sectors is crucial for implementing a more effective and focused energy policy.

The implementation of technology in the primary industry sector has had a significant impact on the way businesses operate, leading to improved efficiency, productivity, and sustainability. Here are some specific effects of technology implementation in the primary industry sector:

(1) Improved Resource Management: Technology has enabled businesses in the primary industry sector to manage their resources more effectively. For example, sensors & other environmental factors that affect crop yields. This allows businesses to optimize their resource use and reduce waste.

(2) Increased Productivity: Technology has enabled businesses in the primary industry sector to increase their productivity by automating many of their processes. For example, robotic harvesters can be used to pick crops more efficiently than manual labour, leading to increased productivity and reduced labour costs.

(3) Enhanced Safety: Technology has also improved safety in the primary industry sector by reducing the need for manual labour in dangerous or hazardous conditions. For example, drones can be used to survey mines or inspect oil rigs, reducing the need for workers to perform these tasks in person.

(4) Improved Sustainability: Technology has enabled businesses in the primary industry sector to operate more sustainably for precision agriculture techniques can be used to reduce the use of fertilizers and pesticides, leading to reduced pollution and improved soil health.

(5) Increased Data Insights: Technology has also enabled businesses in the primary industry sector. For example, by analysing data from sensors and other devices, businesses can optimize their operations and improve their bottom line. Hence, the implementation of technology in the primary industry sector has had a transformative effect on the way businesses operate, leading to improved efficiency, productivity, and sustainability.

Scientific and technological transformation is the driving force behind the scientific and economic policies implemented to ensure today's economic growth and development. Despite these positive developments, the difficulties brought about by technological breakthroughs in commercial life led in job insecurity. On the one hand, technological developments eliminated specific jobs and work areas, negatively impacting employment; on the other hand, it created new job opportunities and taught new ways to perform jobs. Underdeveloped countries have suffered because of this predicament, as they face enormous technological. In foreign marketplaces, e-commerce enabled manufacturers and consumers to meet and transact. Technological improvements have caused countries to compete. Economic uncertainty is heightened by the quick pace of technology innovation, making forecasting harder. Increased vulnerability to global volatility, a severe competitive climate, and a lack of security are all elements that lead to economic gloom. Economies are becoming more vulnerable to financial disasters as global interdependence grows. We can witness the effects of technical advancement in the financial markets, for example. Many banks and intermediaries have started to adapt their systems to technological advances and offer online banking services.

It is necessary to emphasise the importance of education currently. Education, by retraining people and supporting individuals and communities in adjusting to changing circumstances, may play a significant role in this continual process. As a result, governments should maximize the benefits (growth) of technological developments by encouraging and sharing the beneficial aspects of the process while minimizing unfavourable outcomes. As technology and globalization trends change, manufacturing-led development policies are being questioned.

The accessibility of modern technology at any time and in any location is another factor that contributes to its attractiveness. However, one critique of modern technology adoption is that it results in employment losses. This tarnishing is even more obvious when technology is geared at present products and markets. This may be true to some extent if technology is employed for managerial chores and improvements in production processes rather than directly benefiting end users. However, such efforts provide users with indirect benefits including cost savings, better services, and higher product quality.

Technologies might potentially generate jobs if new markets are projected to develop because of developments in technology. The recent explosion of mobile phones is a fantastic example. If modern technology enhances services, jobs may be generated. The expansion of Internet-enabled information processing systems in the services industry is another such. For instance, the manifestation of contemporary technology wherever, anytime, and in any aspect may be seen in financial transactions. These technologies also boost services while adding jobs to the service sector. Recent technological developments suggest that it may not be fully accurate to characterize these advancements as job losses.

Another aspect that influences how technical progress affects employment is the stage of economic growth. The adoption of innovative technologies may lead to employment losses in the underdeveloped, industrialized world where market expandability is constrained; however, this may not be the case in developing nations with untapped markets. Businesses do not need to rely on cost-cutting strategies to survive because of the cheap cost of labour in developing nations. Instead, they may invest in technology that helps them grow their markets. Due to recent developments in communication technology, the banking and insurance businesses have been able to reach out to previously untapped regions of the country, creating new job opportunities.

5. EFFECT OF ICCT UNDERLYING TECHNOLOGIES INCLUDING BUSINESS ANALYTICS IN PRIMARY INDUSTRY :

The implementation of ICCT (Information and Communication Technology) underlying technologies, including business analytics, has had a significant impact on the primary industry sector. Here are some specific effects of ICCT underlying technologies, including business analytics, in the primary industry sector:

(1) Improved Decision Making: Business analytics can be used in sensors and other IoT devices, allowing businesses in the primary industry sector.

(2) Increased Efficiency: ICCT technologies can be used to automate many of the processes involved in primary industry operations, leading to increased efficiency and reduced labor costs. For example, predictive maintenance techniques can be used to schedule maintenance tasks before a machine breaks down, reducing downtime and increasing productivity.

(3) Enhanced Sustainability: ICCT technologies can also be used to improve sustainability in the primary industry sector. For example, precision agriculture techniques can be used to reduce the use of fertilizers and pesticides, leading to reduced pollution and improved soil health.

(4) Improved Supply Chain Management: ICCT technologies are used to supply chain management in the primary industry sector.

(5) Enhanced Safety: ICCT technologies can be improve safety in the primary industry sector. Hence, the implementation of ICCT underlying technologies, including business analytics, has had a transformative effect on the primary industry sector, leading to improved efficiency, sustainability, and safety, and enabling businesses to make informed decisions based on data-driven insights.

Technology is said to make it possible to execute a variety of techniques for resolving environmental issues, according to Aithal, P. S., et al. (2022) [34]. Nanotechnology holds the promise of managing the earth's ecological and natural environment to support resilient living things. In this article, it went into detail to analyse how the ICCT's underlying technologies contribute to the preservation of the planet's sustainable living systems. The TBA can be used to solve semi-structured and unstructured problems of various industry sectors was described by Kumar, S. et al. [35] in their article published in 2023. Tech-business analytics (TBA) is the name of the latest research project. According to Kumar, S. et al. (2020) [36], this study analyses the innovative disciplines of data analytics and decision prediction using information gathered from several systems employing Internet of Things technology. Using a broad sample of businesses, Hollenstein, H. (2004) [37] advised that the adoption of Information and Communication Technologies (ICT) be studied. Based on the rank and epidemic models of technology adoption, the analysis was conducted. The explanatory variables encompass a wide range of predicted technology adoption costs and benefits, allowing for the influence of uncertainty and adjustment costs to be fully understood. It was recommended by Colombo, M. G. et al. (2013) [38] to make a distinction between using the broadband infrastructure and using complementing services, or other broadband software applications. The empirical analysis considers a sample of 799 enterprises that were studied from 1998 to 2004 and are typical of the population of Italian SMEs. Our econometric projections show that the impact of SMEs adopting basic broadband applications is minimal (or even adverse). According to Azvine, B., et al. (2005) [39], analysing data to forecast consumer preferences for goods and services and to enhance the effectiveness of enterprise management systems has always been a necessary component of operating a successful company. However, it is now crucial that real-time data analysis

be accompanied by actions that can be taken immediately to alter the parameters of business processes in response to the analysis's findings. Business intelligence (BI) system assimilation, or the strategic integration and use of BI systems, was discussed by Elbashir, M. Z. et al. (2011) [40]. Enterprise system databases are used by BI systems to give fundamental management control system (MCS) capacity by utilizing analytics and performance management concepts. Our findings show that building a suitable technological foundation and integrating BI systems for organizational gain depends critically on an organization's capacity to absorb fresh external information and strategically use it. According to Aithal, P. S. et al. (2019) [41], technology is a scientific application that is utilized to address a variety of challenging social issues and improve the quality of human life. Numerous industries have identified and are utilizing such all-purpose technologies to conduct business and address or mitigate industry-specific issues. ICT is presented in Obayelu, A., et al. (2006) [42]'s study. Nigeria's biggest problem is poverty in a land of riches. Because they have access to different support systems, men and women in poverty use a variety of coping mechanisms. Therefore, the social dimension of poverty is primarily a gender issue, and gender is a key issue in the ICCT profession, Mettler T. et al. [43]. The usage of business intelligence (BI) is viewed as a potential remedy for this current issue. For this, many definitions of business intelligence are analysed and distilled into a framework.

One of the most important aspects of creating jobs now is how much technology is utilized at the corporate level. Due to a data shortage, it was difficult to take enterprises' export orientation into account, therefore market expansion is restricted to the local market. According to the report, companies may increase their market by using innovative technology, which would create more jobs. According to the survey, emerging technologies are not accepted at the expense of jobs. Market expandability will not be widely used since it has a significant effect on employment creation. The size, age, and profitability of a corporation are further characteristics that have affected employment creation. In the financial services industry, company age has emerged as a significant employer, with a downward tendency. This information suggests that younger firms are more equipped to provide jobs than more established ones.

A company's operations can be scaled back to some extent by increasing profitability. Financial services companies utilized profitability as an explanatory variable since there was a lack of information on sales turnover. Non-financial services were also affected by this issue. When acquiring and implementing innovative technology, an organization's size is important. The financial support for such initiatives depends on the size of the company. The discovery is obvious in that regard.

The study's findings imply that companies must look after their workers to stay competitive. In India, where there is significant room for market growth, reskilling, and professional fulfilment are equally crucial for business success and growing employment. According to the study, the adoption of recent technologies does not necessarily mean job losses; rather, when used in conjunction with an effective corporate strategy, recent technology can increase employment.

The primary problem with the study is that it relies on a static labour demand model rather than a simple linear one. This issue was caused by a lack of observations. The reduction in flexibility was noticeable even after a one-year delay in labor demand. A firm had to occasionally be removed from the analysis since it only possessed data for one year. Naturally, the technology sector is the most important. A projected 135 percent increase in output over the next several years is expected from the IT industry, which receives half of all venture capital funding. The subsectors that will have the most impact are big data, machine learning, and AI. As you move down the list, a recurring theme becomes apparent.

Every sector on the list will gain something from technological advancements. In the case of energy, it is the growing popularity and effectiveness of renewable energy sources as well as the idea of "energy trading" via technology. Financial technology and cryptocurrency are now hot topics in the finance industry. What does this mean for aspiring entrepreneurs and anybody else interested in starting one of the companies we identified as having a chance to succeed in the coming ten years?

6. REVIEW BASED RELATED RESEARCH WORK :

The research on IoT and big data analytics is examined, according to Kumar S. et al. (2020) [44]. The analysis of analytics as one aspect in the growth of the IoT sector and IoT data. As it gives information on Country-specific and sectoral aspects are not considered in our analysis, Behl, A. (2020) [45] has done a thorough analysis to analyse the research for people intending to create a technology firm. The

main body of work related to the review is then stated by Hausberg, J. P. et al. (2021) [46]. Consequently, based on its assessment of the paper.

Future potential research opportunities using the primary, secondary, tertiary, and quaternary sectors, as well as IoT-based manufacturing and service industries, are also being examined, according to Aithal, P. S. et al. (2020) [47]. This was identified by Saucedo-Martinez, J. A. et al. (2018) [48]. based on content from a qualitative analysis. by integrating some technology into the industrial sector. Numerous high-tech business entities and businesses were mentioned by Bellucci, M. et al. in 2020 [49]. A bibliometric analysis was carried out on 187 papers that were published on JIC. The industry is not one of the subjects for analysis that is regularly mentioned. The document that highlights the key ideas and discusses our findings was expressed by Cunningham, J. A. et al. in 2017 [50]. We followed a similar procedure for our sectoral investigation as well. The "manufacturing sector" is the subject of over half (46%) of all study. Finally, according to Zandiatashbar, A. et al. (2019) [51], it provides the findings of four firm-level analyses of 778 industrial and service enterprises that are organised into 51 important hub airports using network analysis based on Arc GIS. According to Marra, A. et al. (2015) [52], it is crucial for private sector businesses since a thorough Boolean search of all web-based clean-tech business components contains hotspots that may be used to look at the many research. High-tech businesses are dependent on a crucial market area, according to Weinstein, A. (2013) [53]. an examination of market options' differences. This study also has the potential to reveal trends. According to Dolgui, A. et al. (2021) [54], the primary areas of interest and findings in this field of study are risk analytics, resilience and ripple effects in supply chains, and exact mathematical programming techniques. In the technological sector, Patton, D. et al.'s [55] replication was evident. Policymakers should provide both researchers the chance to conduct their studies so that they may review each interview and construct an iterative, analytical process that examines the proposal development.

Table 1: Issues related to Primary Industry Sector

S. No.	Area	Issue/Focus	Outcome	Reference
1	Using big data analytics, conduct a cross-cultural assessment of the causes of firm success and competitiveness.	The study's purpose is to figure out how IT companies may employ big data analytics to get a competitive edge and boost their overall performance.	The research provides crucial information for digital firms operating in two neighbouring nations that are geographically distinct from one another yet have distinct levels of technological proficiency.	Abbasi, A. et al. (2016). [56]
2	The Evolution of the Researcher's Position in Turkish Market Research	It contributes to the literature on market research and research methodology by providing a complete assessment of the industry's current state in Turkey as an emerging market, as well as a future prognosis.	To actively participate in the discipline's change, professionals are required to make daring judgments and to lead with agility.	Berendt, B. (2008). [57]

3	Lean Six Sigma is being employed in digital evolving technology organizations to enhance operational performance.	The purpose of this research is to learn more about the issues that digital emergent technology companies experience while utilizing Lean Six Sigma (LSS) to improve operational efficiency.	There is hardly any research on the industry-specific enablers for effective LSS deployment in the digital emerging technologies sector.	Chen, H. et al. (2012). [58]
4	Employee responses to process changes facilitated by IT in the healthcare sector	IBPS have gotten a lot of press since its being used by businesses all over the world to integrate and standardize intra- and inter-organizational business processes, yielding superior organizational outcomes.	We add to the body of knowledge by providing fresh perspectives on how workers respond to and use process innovations that alter their work processes.	Davenport, T. H. (2006). [59]
5	Do the sources of internal control of a corporation matter?	Combining the idea of the top echelons with occupational communities, the research investigates how shared values and behavioral standards from many sources affect executive decision-making (OCs). It investigated how corporate IC activities are affected by internal and external sources of OC.	The outcome is a fresh viewpoint on CFO decision-making that highlights the importance of OCs among senior echelons. Recent failures of top financial executives in the sector support the results' implications for CFO recruiting and advancement.	Davenport, T. H., et al (2007). [60]
6	Using TBA, Competitive Advantage may be maintained	The model will help practitioners think about the resources they will need while using BI.	This article also demonstrated how knowledge management systems may be used to improve the provision and standard of residential senior care.	Faggella, D. (2018). [61]
7	The value proposition for Cognizant India is being redesigned.	Cognizant Technology Solutions, one of India's IT behemoths, has been developing new strategies and business models to meet global IT demand.	One of the top professional services organizations in the world, it adapts customers' commercial, operational, and technological models for the digital age. Our distinctive industry-based, consulting approach enables customers to plan, create, and manage	Gnatovich, R. (2007). [62]

			more creative and effective enterprises.	
8	A platform for connecting with the analytics sector is Jigsaw Academy.	Jigsaw Academy provided basic, intermediate, and advanced data analytics and Big Data courses to students and working professionals via the internet. Many students from India's leading colleges were regarded to have a solid theoretical understanding of the processes involved in data analysis and figure crunching.	We will provide your software a strong data analytics component with the support of our team of data and development professionals, and we'll assist you with cleaning, analysing, and visualising your data at scale. You may produce insightful data with Akvo that helps you make better decisions and identifies the fastest route to an impact.	Grover, V. et al. (2018). [63]
9	Accelerating the adoption of housing innovations	We will start by creating a taxonomy of housing-related advancements. Second, to create a coherent framework that considers the forces that both promote and stifle innovation in the housing market. Third, to generate ideas for future research into innovation adoption.	Although we have Christian origins, Habitat for Humanity India collaborates with people from all racial, religious, and social backgrounds to construct homes for families in need across the country.	Gupta, A., et al. (2013). [64]
10	Where we are currently and where are we going in the study of defence logistics?	Its goal is to inform readers about hot topics in supply chain management and logistics for the military industry.	L/SCM is a vital facilitator of organizational performance, both in industrial, and for-profit organizations and for military operations. For this field's knowledge to advance and practice to continuously get better, research is a crucial process. However, there is also a chance to use our expertise to increase our understanding of L/SCM in both settings, even though there may be a gap between civilian and military studies.	Hopkins, M. S. (2011). [65]

Table 2: Issues related to Tech-Business Analytics in Primary Industry Sector

S. No.	Area	Issue/Focus	Outcome	Reference
1	A strategic value-based analytical strategy for	The BDA adoption and application factors in Indian business. The uptake of BDA in	The comprehension of the Indian-centric variables influencing the use and implementation of BDA in	Kohavi, R. et al. (2002). [66]

	Indian organisations.	developed economies has been researched thus far. This study looks at the variables that affect the use and uptake of BDAs in emerging economies.	organizations the goal of this project is to combine the PSV and TOE frameworks to create and investigate a BDA adoption model.	
2	Case study on big data analytics and facility management	This study aims to explore the data elements, data transmission, gaps, and difficulties related to employing data analytics in facilities management. Instead, than attempting to discover a permanent answer, the goal is to gather crucial data, comprehend the challenges, and lay a strong platform for future study.	Higher education institutions' facilities management departments do diverse duties such as building automation, continuous commissioning, and preventative maintenance, all of which need a significant amount of data and technology.	Lim, E. P. et al. (2012). [67]
3	Value-adding applications of BDA.	By putting a particular emphasis on the role of companies' capabilities, trends, and bottlenecks.	The findings highlight the crucial aspects that must be considered for the efficient use. The implementation of information derived from big data is a significant but understudied topic, and this work addresses it to further the scholarly discussion in this area of study.	McDermott, J. (20 17). [68]
4	The characteristics, varieties, and comparisons of innovation in the key Brazilian economic sectors	Its purpose to innovate the processes of companies in Brazil.	The variables of the constructs "innovation process" and "innovation sectoral patterns" that were investigated allowed for both a comparison study and a characterization of the representative firms included in the sample.	Morris, H., et al. (2003). [69]
5	Evidence on the digital skills gap from the tourist industry in Europe	Its objective is to spread the results of European research on the lack of digital skills in the travel and hospitality sectors.	Employees in the tourist and hospitality industries have a digital skills gap,	Nelson, G. (2017). [70]

6	The ICT industry in Malta depends heavily on foreign labour.	The study's purpose is to learn more about Malta's ICT sector's labor and skills shortages, as well as the country's reliance on foreign workers.,	If not addressed, labor shortages may impede economic expansion. ICT graduates are not produced in sufficient numbers each year. This industry will depend on the immigration of highly trained foreign workers to survive and further solidify its position within the Maltese economy.	Pick, J., et al. (2017). [71]
7	Emerging technologies in procurement include data analytics and cognitive analytics.	It uses a qualitative approach and technology platforms, and a brief poll of local subject matter experts.	This aids in the identification of pertinent research areas for further study.	Power, D. (2006). [72]
8	Examine supply chain digitalization facilitators using an interpretative structural modelling approach.	Over time, technological improvements have helped to streamline supply chain processes. The supply chain is being forced to be more imaginative than it has ever been because of the demand economy. The supply chain's digitization meets this requirement.	To undertake diverse supply chain operations, modern technologies must be adopted methodically. This study helps policymakers better plan their resources and execute efforts to digitalize the supply chain. One of the early studies that used the ISM approach to analyze the supply chain enablers for digitization is this one.	Pratt, M. (2017). [73]
9	Researchers are examining how artificial intelligence could assist in managing the risk associated with the agriculture supply chain.	The use of AI in supply chain management (SCM) in India is still in its infancy.	This study offers information to all other employees in supply chain management to provide the good governance.	Rose, R. (2016). [74]
10	Implications for small tourist firms from Ethiopian entrepreneurs' causal and	Its goal is to investigate the long-term consequences of Ethiopian entrepreneurs' causation and effectuation behavior on the performance of	They focus on the effects of entrepreneurial behavior—particularly in an African context—on the effectiveness of small tourist businesses, including causality and effectuation. Drawing on actual data from small tourist	Sharda, R., et al. (2014). [75]

	effectuation behaviour	their newly founded small enterprises. It expands the idea of effectuation to encompass entrepreneurial behavior and firm success, as well as putting one of the operationalized scales to the test in an African setting.	businesses (tour operators) in Ethiopia, it is in the literature on entrepreneurship.	

6.1 Description on Current status:

Through the appropriate application of business analytics, a road to market leadership is identified in the current study, indicating that three more difficult barriers should be the main emphasis. The first thing that must be done is to "standardise" the data collecting, aggregation, and storage processes. Then, to establish the ideal environment for business analytics to provide useful findings and suggestions, an "organisational culture evolution" is required that transcends intuition and embraces data-driven decision-making.

6.2 Desired status:

In addition to generating financial returns, tech-business analytics can be utilised to optimise corporate processes and it is an effective tool to analyse.

6.3 Research gap:

To reap the rewards of business analytics, businesses must make large investments in personnel and technology. Despite this, many businesses currently use business analytics, and it may provide them a competitive edge. The main challenge facing businesses today is figuring out how to best utilise the essential investments in personnel and technology to help them maintain a competitive edge.

6.4 Research Agendas:

When using tech-business analytics, businesses can choose from three diverse types of research agendas.

(1) Descriptive Research Agenda: Describe the situation as it is right now and give a summary of the facts are the main goals of this kind of research. Descriptive research often entails gathering and analysing data to respond to queries such "what happened?" and "what is happening right now?" This kind of research agenda is helpful for discovering trends and patterns in data, and it can assist organisations in making decisions based on up-to-date information.

(2) Predictive Research Agenda: Forecasting future occurrences or outcomes using previous data is the main goal of predictive research. This kind of study can be used to pinpoint prospective hazards and commercial possibilities, as well as to guide decisions about strategy, planning, and resource allocation. To create prediction models, predictive research frequently uses statistical modelling and machine learning approaches.

(3) Prescriptive Research Agenda: Providing suggestions for actions that should be made in light of data analysis is the main goal of prescriptive research. The optimum course of action is frequently determined by this type of research employing optimisation strategies and decision analysis. Prescriptive research has applications for organisations in the management of risk, supply chains, and resource allocation.

7. OBJECTIVES BASED ON REVIEW :

(1) To know the importance of technology in the Primary Industry Sector.
(2) To develop the concept of Tech-Business Analytics in the Primary industry sector.
(3) To analyse the model of Tech-business Analytics in the Primary industry sector.

(4) To study the Advantages, Benefits, Constraints, and Disadvantages of Tech-business Analytics in the Primary industry sector using the ABCD analysis framework.
(5) Implementation, and Impact of Tech -business Analytics on the productivity of the Primary industry sector.

8. METHODOLOGY :

When it comes to designating a "new" phenomenon, stakeholders have diverse interests. When it comes to building a shared understanding of the concept of business analytics, keep in mind that definitions may vary depending on context and application. The BA program at a university, for example, might define the term differently than a vendor promoting their business analytics methodology.
Even though this study used an empirical approach, the results were influenced by decision support bias. Word clouds and word occurrences must be decoded. The investigation's scope was extensive, and the focus was on acquiring a complete understanding of the business analytics issue. Experts in statistics and machine learning, for example, are attempting to improve regression algorithms, while information technology researchers are constructing new databases and processing infrastructures. Both fields are considered research because they are put together under business analytics. BA implementation research aims to apply well-known technologies from the component fields to real-life scenarios. As a result, the usage of BA case studies is common. These studies are more comprehensive than the first, emphasizing business outcomes rather than technical ones.

9. CONCEPT OF TECH-BUSINESS ANALYTICS IN PRIMARY INDUSTRY SECTOR :

(1) Identification of predictable behaviourist takes place sequentially or concurrently with other acts is known as association and sequence analysis.
(2) In order to accurately predict future events or beta behaviours recasting analyses historical data from a certain time.
(3) Predictive Business Analytics: Predictive Business Analytics combines several statistical approaches to develop predicted models that collect data from datasets, find trends, and compute a predictive score for a variety of organizations.
(4) Optimization: Following the discovery of patterns and the creation of projections, businesses may utilize the best-case scenarios.
(5) Data Visualization: This technique develops graphic representations of data, such as charts and graphs, to facilitate rapid and simple comprehension.

10. MODEL OF TECH-BUSINESS ANALYTICS IN PRIMARY INDUSTRY SECTOR :

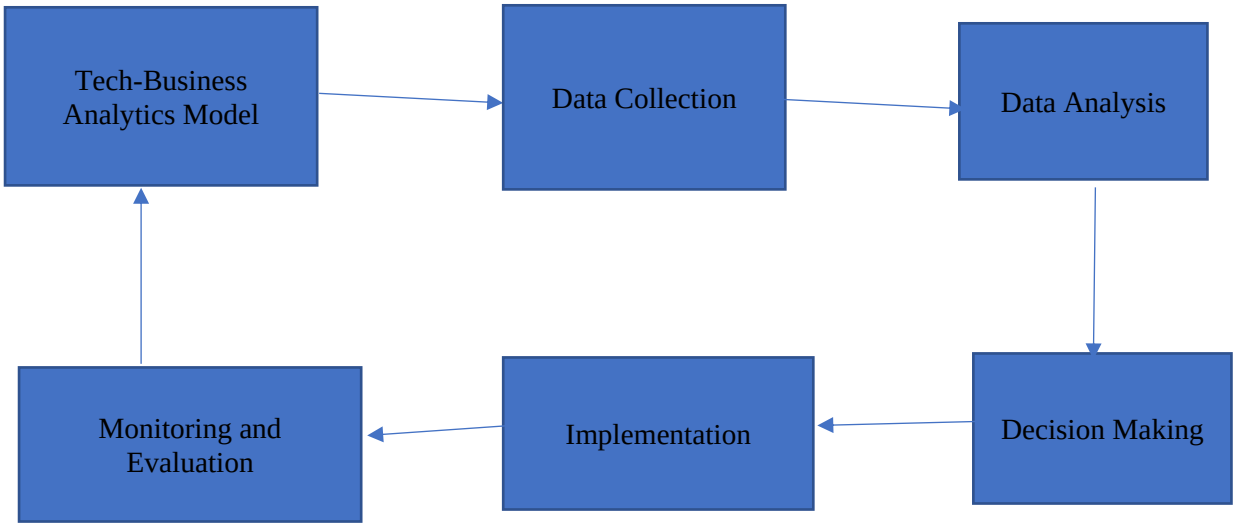

Fig. 1: Model of Tech-Business Analytics in Primary Industry Sector

The Tech-Business Analytics (TBA) model can be applied to the primary industry sector to improve the quality and features of products and services. Here is a proposed model of TBA in the primary industry sector:

(1) Data Collection: The first step in the TBA model is to collect data in IoT devices, and other systems used in the primary industry sector. This data can include information about soil moisture levels, weather patterns, crop yields, and other environmental factors.

(2) Data Analysis: The next step is to analyse the collected data using business analytics tools and techniques. This can include descriptive, predictive, and prescriptive analytics to gain insights into trends, patterns, and anomalies in the data.

(3) Decision Making: Based on the insights gained from data analysis, businesses in the primary industry sector can make informed decisions about resource management, crop yields, and other operational aspects. For example, data on soil moisture levels can be used to optimize irrigation, reducing water waste, and improving crop yields.

(4) Implementation: The insights gained from data analysis can be implemented using various technologies, including precision agriculture techniques, robotics, and automation tools. This can lead to increased efficiency, productivity, and sustainability in the primary industry sector.

(5) Monitoring and Evaluation: Finally, businesses can monitor and evaluate the impact of the TBA model on their operations, using data-driven insights to continuously improve their processes and products.

Hence, the TBA model can be applied to the primary industry sector to improve the quality and features of products and services, leading to increased efficiency, productivity, and sustainability. By collecting and analysing data, making informed decisions, implementing technologies, and continuously monitoring and evaluating their operations, businesses can optimize their operations and remain competitive in the rapidly evolving primary industry sector. Utilizing statistical analysis, it is possible to get insights and make future data-driven decisions by looking at the data and performance of an organisation. This method is referred to as tech-business analytics (TBA). The combination of techniques, tools, and procedures utilised for this is known as TBA. The goal of TBA is to pinpoint the data that matter and have the potential to increase the major industry sector's profits, output, and effectiveness. The TBA Model forecasts that big data and ICCT-enabled technologies will have a significant impact on the future of tech-business analytics.

The main industry area where the organization needs to make appropriate judgments has a tool called tech-business analytics. Due to their capacity to boost profitability, expand market share, and give potential shareholders a higher return, these choices are likely to have an effect on the entire business. There is no doubting that technology has an influence on a large number of enterprises, but when utilized wisely, TBA has the potential to improve your business by giving a range of firms in a key industrial area a competitive edge.

Tech- Business analytics are used in a wide range of businesses and organizations. As technology advances, more and more businesses are coming up with innovative methods to use big data to their advantage to increase revenues and enhance customer experience. You can leverage tech-business analytics to expedite the ordering process for customers utilising the drive-thru. You can determine your peak hours and when to optimise efficiency by using TBA to track the traffic that passes through the drive-thru. The TBA model predicts the organization's future sales, earnings, and other important variables. This gives businesses the ability to anticipate and plan for changes that may happen yearly, seasonally, or on any other scale.

11. ABCD LISTING OF TECH-BUSINESS ANALYTICS IN PRIMARY INDUSTRY SECTOR:

In order to create a new type of business analytics that can be used to address semi-structured and unstructured issues in a variety of industry sectors, including primary, secondary, tertiary, and quaternary industry sectors, Kumar, S. et al. (2023) [76] suggested integrating big data technology with the ICCT's underlying technologies. The further investigation is dubbed Tech-business analytics (TBA). According to Aithal, P. S., et al. (2022) [77], technology makes it possible to employ a variety of techniques for resolving environmental issues the TBA have been highlighted by Kumar, S., et al. (2022) [78] as accelerating technology's capacity to help organisations produce better results with fewer resources. Utilising technology while using fewer people can speed up the process of a company creating a product and delivering it to a customer. The issues surrounding wants-based, needs-based,

sociocultural, and phantasmagorical desires are covered in this section. The use of technology to advance business in society has a promising future. According to Reddy, B. V. (2020), [79], it lacks a significant, innovative tech corporation like Google and has a scarcity of British tech companies that are listed there. The UK Government considers the promotion as a policy priority due to its worry over the loss of UK tech enterprises to overseas acquirers. Adopting management accounting systems is a significant milestone in the development of young, expanding businesses, according to Davila, A. et al. (2005) [80]. According to Lueg, R. et al. (2014) [81], the authors analyse a fledgling company with an emphasis on high-tech R&D using a case study methodology. The researchers make use of the recently created "VIP framework" to explain the observations. According to the research, the company's business processes (BP) must match the declared business model. According to Fernandez, R. et al. (2020) [82], there are obvious economic winners and losers because of the coronavirus and its political control. As a result of the pandemic, investors flocked to blue chip tech stocks, sometimes referred to as "Big Tech," which unquestionably dominates the first group. Globally, the usage of streaming services, digital commerce, and communication has significantly increased, which is what led to this. Huawei Technologies is a Chinese high-tech company. According to Hawes, C. (2015) [83], Research spin-offs, according to Salvador, E. (2012) [84], underline the potential significance of scientific parks-incubators. According to Huang, Y. et al. (2021) [85], the growth and development of the financial system, which was spearheaded by sizable state-owned banks, was described. The stability and growing sophistication of the ensuing financial system created the way for the current level of economic growth. As seen by the recent expansion in digital and green finance, the economic environment and government goals in the PRC started to alter starting in the 2010s. These changes were driven by a shift towards higher quality growth through technology innovation, financial inclusion, and environmental sustainability. Ivanovski, K. et al. (2018) [86] highlighted that numerous convergence clubs for aggregate energy consumption per capita and for energy consumption per capita. The existence of many equilibria for the majority of sectors reflects the tendency for states with comparable climatic, economic, and population characteristics, among others, to display comparable energy consumption patterns. No contemporary authority has ever made the commercial cultivation, sale, or possession of cannabis for recreational use lawful, according to Caulkins, J. P. et al. (2012) [87]. In this essay, significant design decisions are highlighted together with insights into how legalisation would affect consumption and production costs According to Hsu, S. et al. (2019) [88], fintech has advanced financial services by using big data analysis, blockchain technology, and cloud computing. These technologies have all improved the efficiency of conventional online transactions. Particularly in China, these breakthroughs have the power to drastically alter society. The idea was put up by Oumlil, A. B. (2013) [89] to create the context of a high-tech international corporation. According to Wang, J. et al. (2016) [90], the growth of angel investing is a direct outcome of the rising tide of successful, cash-coated entrepreneurs who are coming out of the high-tech and Internet sectors. Presently, the market has been improved by the existence of numerous matchmaking services and angel groups. Although Chinese BAs are younger, make fewer investments, and don't fully understand BA investing, the authors demonstrate that their investment behaviour is similar to that of BAs in western nations.

TBA is often used to analyse data from a multitude of sources in business companies. It also aids in the making of judgments based on the most up-to-date data. TBA provides such a large quantity of data to back up that judgments that one can be confident are completely informed for just one, but multiple scenarios (Aithal et al (2023). [91]).

11.1 Advantages of Tech-business Analytics in the Primary industry sector with stakeholder as supplier:

Table 3: Key aspects and Advantages of stakeholder as supplier

S. No.	Key Aspects	Advantages of stakeholder as supplier
1.	Improved Efficiency	TBA can help identify areas of inefficiency in the primary industry sector and provide insights on how to optimize resource management, reduce waste, and improve productivity.

2.	Increased Productivity	TBA can help businesses in the primary industry sector, livestock breeding, and other operational aspects and higher yields.
3.	Better Risk Management	TBA can help businesses in the primary industry sector identify and mitigate risks related to weather patterns, market fluctuations, and other factors that can impact their operations.
4.	Enhanced Sustainability	TBA can help businesses in the primary industry sector optimize their resource use, reduce waste, and adopt more sustainable practices, leading to improved environmental outcomes.
5.	Improved Decision Making	TBA can provide businesses in the primary industry sector with data-driven insights that enable informed decision-making, leading to better outcomes and reduced risk.
6.	Increased Competitiveness	By adopting TBA, businesses in the primary industry sector can remain competitive in a rapidly evolving market, enabling them to identify new opportunities and improve their products and services.

Hence, the use of TBA in the primary industry sector can offer several advantages, including increased efficiency, productivity, and sustainability, improved decision-making, and better risk management, leading to increased competitiveness in the marketplace.

11.2 Benefits of Tech-business Analytics in Primary industry sector with stakeholder as supplier :

Table 4: Key aspects and Benefits of stakeholder as supplier

S. No.	Key Aspects	Benefits of stakeholder as supplier
1.	Improved Crop and Livestock Management	TBA can help primary industry businesses optimize their crop and livestock management.
2.	Increased Efficiency and Cost Savings	By using TBA to optimize their operations, primary industry businesses can identify areas of inefficiency and waste, leading to increased efficiency and cost savings.
3.	Enhanced Sustainability	TBA can help primary industry businesses adopt more sustainable practices by analysing data on resource use and environmental impacts and identifying opportunities to reduce waste and improve efficiency.
4.	Better Decision-Making	TBA provides primary industry businesses with data-driven insights that enable better decision-making, such as determining the most profitable crops to grow or identifying areas for improvement in the supply chain.
5.	Improved Risk Management	TBA can help primary industry businesses identify and mitigate risks, such as weather-related crop losses, market fluctuations, or supply chain disruptions, to minimize the impact of these events on their operations.
6.	Increased Competitive Advantage	By adopting TBA, primary industry businesses can gain a competitive advantage to providing high-quality products to customers.

11.3 Challenges of Tech-business Analytics in Primary industry sector with stakeholder as supplier:

Table 5 : Key aspects and Challenges of stakeholder as supplier

S. No.	Key Aspects	Challenges of stakeholder as supplier
1.	Data Availability and Quality	TBA relies on accurate and high-quality data to provide insights and recommendations. However, data collection and management can be challenging in the primary industry sector, particularly in remote or rural areas where access to data may be limited.
2.	Technical Expertise	Implementing TBA requires specialized technical skills and expertise, which may not be readily available in the primary industry sector. Businesses may need to invest in training or hire external consultants to implement and maintain TBA systems.
3.	Integration with Existing Systems	TBA for businesses that have already invested in legacy systems or hardware.
4.	Cost	Implementing TBA can be costly, particularly for small or medium-sized businesses in the primary industry sector.
5.	Resistance to Change	Implementing TBA may require changes to existing processes and workflows, which can be challenging to implement if there is resistance to change from employees or stakeholders.
6.	Privacy and Security	TBA involves the collection and storage of sensitive data, such as crop yields or livestock health information.

Hence, while TBA can offer significant benefits to the primary industry sector, businesses must carefully consider the challenges and potential barriers to implementation to ensure that they can realize the full benefits of TBA.

11.4 Drawbacks of Tech-business Analytics in the Primary industry sector with stakeholder as supplier :

Table 6: Key aspects and Drawbacks of stakeholder as supplier

S. No.	Key Aspects	Drawbacks of stakeholder as supplier
1.	Limited access to technology	The primary industry sector operates in remote areas with limited access to technology, which makes it difficult to collect and analyse data in real-time.
2.	Complexity of data	The primary industry sector involves complex data sets, which can be difficult to analyse using traditional business analytics methods. For example, agriculture data sets may include information on weather patterns, soil types, and crop yields, which require specialized analytics tools and expertise.
3.	Lack of skilled personnel	The primary industry sector has traditionally been labour-intensive, with a massive portion of the workforce consisting of manual laborers. As a result, there is a shortage of skilled personnel who can analyse and interpret data using modern business analytics tools.
4.	Uncertainty and unpredictability	The primary industry sector is subject to a wide range of unpredictable factors such as weather patterns, natural disasters, and commodity price fluctuations. These factors can make it challenging to predict outcomes accurately and plan.
5.	Ethical considerations	The primary industry sector has unique ethical considerations related to sustainability and environmental impact. While business analytics can help optimize

		operations and reduce waste, it may not always align with sustainable practices and environmental stewardship.

Hence, the primary industry sector faces several challenges when it comes to implementing tech-driven business analytics. While there are benefits to leveraging data-driven insights, companies in this sector must carefully consider the drawbacks and limitations to ensure they make informed decisions that align with their business values and goals.

11.5 Advantages of Tech-business Analytics in the Primary industry sector with stakeholder as producer:

For those involved in the primary industry sector, especially producers, tech-driven business analytics has countless benefits. Several advantages are listed below:

Table 7: Key aspects and Advantages of stakeholder as producer

S. No.	Key Aspects	Advantages of stakeholder as producer
1.	Improved decision-making	Producers benefit from the insightful data analysis that business analytics offers. They are then able to optimise their processes and increase production by making decisions that are based on accurate and timely information. Producers can make strategic decisions about resource allocation, production planning, and product development by utilising analytics to recognise market trends, evaluate demand patterns, and detect market trends.
2.	Enhanced resource management	Managing limited resources, like land, water, and energy, is a common task for the primary industries sector. By examining data on consumption, production procedures, and environmental issues, tech-driven analytics helps producers to maximise the use of these resources. As a result, there are cost savings and better resource utilisation, as well as an ability to uncover inefficiencies, reduce waste, and implement sustainable practises.
3.	Supply chain optimization	Producers who manage their supply networks well might gain a lot from analytics. Producers can locate bottlenecks, improve inventory management, and restructure distribution procedures by analysing data linked to inventory levels, manufacturing capacity, transportation logistics, and client demand.
4.	Market insights and customer behaviour analysis	Insights into market trends, consumer preferences, and purchasing patterns are available to manufacturers thanks to business analytics. Producers can get a more comprehensive understanding of their target market by analysing data from multiple sources, including sales records, customer surveys, and social media. With the use of this data, they may customise their offerings, marketing plans, and efforts to engage customers, which will help them gain market share and become more competitive.
5.	Risk assessment and mitigation	Among the hazards faced by producers in the primary industrial sector include price volatility, climatic occurrences, and regulatory changes. By examining historical data, market patterns, and outside influences, tech-driven analytics can assist in evaluating and reducing these risks. To reduce the impact of uncertainty on their operations, producers might proactively identify potential risks, create backup plans, and take wise decisions.

6.	Real-time monitoring and predictive analytics	Producers are now able to get real-time data from their operations because to the development of IoT (Internet of Things) devices and sensors. Business analytics gives them the ability to track key performance indicators, spot outliers or departures from intended benchmarks, and act swiftly to fix the problem. Additionally, predictive analytics algorithms may examine both historical and current data to estimate future trends, demand patterns, and potential problems, enabling manufacturers to plan and modify their tactics accordingly.

Therefore, tech-driven business analytics enables producers in the primary industry sector to make data-informed decisions, optimise their operations, improve resource management, and gain a competitive edge in the market.

11.6 Benefits of Tech-business Analytics in Primary industry sector with stakeholder as producer:

For those involved in the primary industry sector, particularly producers, tech-driven business analytics has various advantages. Several advantages are listed below:

Table 8 : Key aspects and Benefits of stakeholder as producer

S. No.	Key Aspects	Benefits of stakeholder as producer
1.	Improved operational efficiency	Producers can streamline their processes and boost productivity by utilising tech-driven business data. Producers can pinpoint areas for improvement, reorganise workflows, and get rid of bottlenecks through data analysis. This results in lower costs, more productivity, and better overall operational performance.
2.	Enhanced decision-making	With the use of business analytics, decision-makers can gain insightful knowledge and data-driven knowledge. Producers can make wise choices about product development, resource allocation, pricing strategies, and market expansion by analysing data on market trends, customer preferences, and production processes. As a result, decisions are made more wisely, which benefits the company's performance.
3.	Increased competitiveness	Producers can obtain a competitive edge in the market by using tech-driven business data. Producers can spot new opportunities, hone their goods and services to satisfy client requirements, and create powerful marketing plans by researching market trends and consumer behaviour. They may maintain their lead over rivals, entice additional clients, and increase their market share thanks to this.
4.	Optimal resource management	The primary industry sector, which depends on resources including land, water, and energy, must practise effective resource management. Business analytics examines data on consumption trends, production procedures, and environmental issues to assist manufacturers in making the best use of these resources. Producers can minimise costs, minimise waste, and enhance resource utilisation by identifying inefficiencies and putting sustainable practises into practise.
5.	Supply chain optimization	For producers, supply chain optimisation involves a big part of technology-driven analytics. Producers can optimise their supply chain activities by looking at data on inventory levels, production capacity, logistics of transportation, and

		consumer demand. It also results in shorter lead times, lower costs, and higher customer satisfaction. All these things contribute to better inventory management.
6.	Risk management	Risks involving market volatility, natural disasters, and regulatory changes are just a few that the primary industry sector is subject to. Producers can efficiently evaluate and reduce these risks thanks to business analytics. Producers can identify potential risks, create backup plans, and take proactive action to lessen the impact of uncertainty on their operations by analysing historical data, market trends, and external influences.
7.	Predictive analytics	Producers can use predictive analytics to their advantage thanks to technology-driven business analytics. Producers can predict future trends, foresee client demand, and spot potential problems in advance by analysing historical and real-time data. This makes it possible to plan ahead, allocate resources better, and make better decisions, which improves corporate performance.

Tech-driven business analytics provide producers in the primary industry sector with several advantages, such as increased operational effectiveness, improved decision-making, raised competitiveness, optimal resource management, supply chain optimisation, efficient risk management, and the power of predictive analytics. These benefits support producers' efforts to expand their businesses, cut expenses, and prosper over the long term.

11.7 Challenges of Tech-business Analytics in Primary industry sector with stakeholder as producer:

While tech-driven business analytics has many benefits, there are a number of implementation and usage issues that main industry stakeholders, especially manufacturers, may run into. The following are some major obstacles:

Table 9: Key aspects and Challenges of stakeholder as producer

S. No.	Key Aspects	Challenges of stakeholder as producer
1.	Data quality and availability	TBA in large volumes of various data from numerous sources, including sensors, machinery, and production processes, are frequently dealt with by the primary industry sector. It might be difficult to ensure that data is accurate, complete, and consistent. Furthermore, gathering and integrating data from diverse sources can be difficult and time-consuming.
2.	Data privacy and security	Handling sensitive data pertaining to business operations, confidential information, and consumer information is the main industry sector. It is crucial to maintain data security and privacy because any data breaches or unauthorised access could have serious repercussions. It might be difficult for producers to comply with data protection laws, put in place effective security measures, and guarantee secure data transit and storage.
3.	Technical infrastructure and integration	For analytics projects, producers might need to make investments in new IT infrastructure, software, and hardware. Various data sources, legacy systems, and third-party apps might be difficult to integrate and may call for specialised knowledge.
4.	Skills and talent gap	Data analysts, statisticians, and domain experts with domain knowledge are needed to extract useful insights from data. The

		major industry sector, however, frequently faces a talent shortage in data analytics.
5.	Change management and cultural barriers	Organisational change and a cultural shift towards data-driven decision-making are required for the implementation of tech-driven analytics. Producers could encounter resistance to change and a reluctance to adopt modern technology and procedures. Successful implementation depends on employing strong change management techniques, gaining support from stakeholders, and promoting a data-driven culture.
6.	Scalability and complexity	Data analysis becomes more difficult as producers expand their businesses or vary their product lines. It becomes more difficult to analyse massive amounts of data in real-time, and traditional analytics tools can find it difficult to stay up. Producers must make investments in scalable analytics tools and systems that can manage the volume and complexity of data that is only going to grow.
7.	Cost considerations	It can cost a lot of money for manufacturers, especially small and medium-sized businesses, to implement tech-driven business analytics. Investing in analytics software, updating your equipment, managing your data, and hiring qualified staff can be expensive. Producers need to make sure that the advantages of analytics outweigh the expenses by carefully evaluating the return on investment.

Hence, while tech-driven business analytics has enormous potential, primary industry sector stakeholders, especially producers, must overcome obstacles related to data availability and quality, data privacy and security, technical infrastructure, skills gap, change management, scalability, and cost considerations. To effectively utilise the advantages of analytics and promote successful outcomes in the primary industrial sector, it is imperative to address these difficulties.

11.8 Drawbacks of Tech-business Analytics in the Primary industry sector with stakeholder as producer:

While tech-driven business analytics has many advantages, there are several difficulties and constraints that major industry sector stakeholders, notably producers, may experience. Inconveniences include the following:

Table 10: Key aspects and Drawbacks of stakeholder as producer

S. No.	Key Aspects	Drawbacks of stakeholder as producer
1.	Reliance on data accuracy	A lot of accurate and trustworthy data are needed for tech-business analytics. The accuracy and completeness of data might be difficult to ensure in the primary industrial sector because data collecting may include numerous sources and processes.
2.	Complexity and learning curve	It might be difficult to implement and use tech-driven analytics solutions, necessitating specialised expertise and abilities. Understanding and implementing analytics tools and methodologies may require a high learning curve for producers. It may be challenging for non-technical stakeholders to fully utilise the analytics capabilities due to the complexity of data processing and interpretation.
3.	Cost and resource requirements	Costs associated with implementing tech-business analytics can be high, particularly for small and medium-sized enterprises. Investments in analytical tools, infrastructure upgrades, and qualified employees may be necessary. Given

		the possible return on investment and the cost-effectiveness of implementing analytics solutions, producers may need to carefully balance resources and budget.
4.	Limited applicability to certain sectors	In some segments of the main industry, tech-driven business analytics may have limits. For instance, the amount of data available for analysis may be constrained in industries where production procedures are manual and non-digital. It may also be challenging to properly utilise conventional analytics approaches in some industries due to specific difficulties.
5.	Ethical and privacy considerations	The use of technology-driven analytics poses moral questions about privacy, data utilisation, and potential biases in judgement. Producers must develop ethical data governance practises and make sure that data protection laws are followed. Concerns about the usage of client data must also be addressed, and transparency in the analytics procedures must be maintained.
6.	Overreliance on data-driven decision-making	Analytics should not be utilised as a substitute for human judgement; rather, it should be used as a tool to help make decisions. Effective decision-making requires striking the ideal balance between data-driven insights and human expertise.
7.	Limited predictive capabilities	Even though predictive analytics can offer insightful information, it might be difficult to forecast results in the primary industry sector precisely because of several external factors, including market swings, weather, and geopolitical events. Predictive models' performance in some circumstances may be constrained by uncertainties and unforeseen circumstances that affect their accuracy and dependability.

To sum up, while tech-driven business analytics has many benefits, those involved in the primary industrial sector, especially producers, need to be mindful of its downsides and constraints. These include issues with data accuracy, complexity, expense, restricted applicability, moral considerations, potential biases, and the requirement for a balanced approach to decision-making. Producers may reduce risks and use the use of analytics to propel success in their' by being aware of and resolving these disadvantages.

12. IMPLEMENTATION, AND IMPACT OF TECH -BUSINESS ANALYTICS ON THE PRODUCTIVITY OF PRIMARY INDUSTRY SECTOR :

12.1 Implementation:

By utilizing data-driven insights, companies can optimize their operations, reduce waste, and increase efficiency. Some of the ways that tech-business analytics can improve productivity in the primary industry sector include:

Table 11: - Implementation of TBA on the productivity of Primary Industry Sector.

S. No.	Key Aspects	Implementation
1.	Predictive maintenance	By analysing data from sensors and monitoring equipment, businesses in the primary industry sector can predict when maintenance is needed, reducing downtime and increasing equipment uptime.
2.	Precision agriculture	With the help of business analytics, farmers can analyse data on soil type, weather patterns, and crop yields to make informed decisions about planting, fertilizing, and harvesting. This can increase crop yields, reduce waste, and improve resource efficiency.

3.	Supply chain optimization	With the help of business analytics, businesses in the primary industry sector can optimize their supply chain, reducing lead times, minimizing stock outs, and improving overall efficiency.
4.	Energy optimization	By analysing energy usage data, businesses in the primary industry sector can identify opportunities to reduce energy consumption and lower costs.
5.	Quality control	Business analytics can be used to monitor and analyse data on product quality, identifying defects and reducing waste.

Hence, the implementation of tech-business analytics must consider the challenges and limitations of implementing these technologies in this sector, as discussed in the previous answer. By carefully assessing the benefits and drawbacks, businesses in the primary industry sector can make informed decisions about how to leverage technology to improve their operation.

12.2 Impact:

By leveraging data-driven insights, businesses in this sector can optimize their operations, reduce waste, and increase efficiency. Some of the keyways that tech-business analytics can impact productivity in the primary industry sector include:

Table 12: Impact of TBA on the productivity of Primary Industry Sector.

S. No.	Key Aspects	Impact
1.	Improved decision-making	With the help of data-driven insights, businesses can make more informed decisions about how to allocate resources, manage their supply chain, and optimize operations.
2.	Increased efficiency	By analysing data on production processes and equipment performance, businesses can identify opportunities to reduce waste, minimize downtime, and increase efficiency.
3.	Reduced costs	By identifying opportunities to optimize operations and reduce waste, businesses can lower their costs, increasing profitability and competitiveness.
4.	Improved safety	By analysing data on safety incidents and near-misses, businesses can identify patterns and take proactive measures to improve safety.
5.	Enhanced customer satisfaction	By leveraging data-driven insights, businesses can improve the loyalty.

Hence, it is considering the challenges of implementing these technologies in this sector, such as limited access to technology and the complexity of data. By carefully assessing these challenges and implementing technology solutions that align with their business goals and values, businesses in the primary industry sector can maximize the benefits of tech-business analytics and drive productivity gains.

13. CONCLUSION :

In conclusion, tech-business analytics has the potential to revolutionize the primary industry sector, bringing significant benefits to businesses operating in this sector. By leveraging data-driven insights, businesses can optimize their operations, reduce waste, increase efficiency, and improve customer satisfaction. It is important for businesses to carefully assess these challenges and determine the best approach for implementing technology solutions that align with their business goals and values. The success of tech-business analytics in the primary industry sector to effectively analyse complex data sets, and the ability to effectively integrate these solutions into existing operations. With careful planning and implementation, however, businesses in the primary industry sector can unlock the full potential of tech-business analytics and drive productivity gains that will support growth and success for years to come.

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