

Navigating Covid-19 impact on business health and startup profitability through Mathematical analysis.

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Abstract –

E-consultations, telemedicine, real-time diagnostics, and access to digital therapies made possible by immersion technology tools are just a few of the improvements in the healthcare sector. Precision medicine is made possible by genetic analysis, clinical data storage, big data, and analytics. New technology and solutions that address the needs for clinical diagnosis, treatment, and illness management are among the healthcare industry developments we are seeing today. Technology for treating, managing, and immunizing patients as well as for cleaning, limiting transmission, and monitoring disease spread increased as a result of the global COVID-19 pandemic. E-consultations, telemedicine, real-time diagnostics, and access to digital therapies made possible by immersion technology tools are just a few of the improvements in the healthcare sector. Precision medicine is made possible by genetic analysis, clinical data storage, big data, and analytics. Startups use real-time, remote monitoring equipment to tailor treatment planning and execution for specific patients. Hospitals are becoming smarter as a result of the deployment of artificial intelligence (AI), the internet of things (IoT), and data management techniques.

Key word- COVID -19, Business health, Business Startup, Mathematical Calculations, stability, Sizeable profit

Introduction –

The Top 10 Healthcare Industry Trends & 20 Promising Startups were identified by Innovation Network. We examined a sample of 3622 worldwide startups and scale ups for our in-depth study on the Top Healthcare Industry Trends and Startups. This study provides data-driven innovation intelligence that enhances strategic decision-making by providing an overview of startups and developing technologies in the healthcare sector. These insights were obtained by utilizing the 2 500 000+ startups and scale ups worldwide covered by our Big Data & Artificial Intelligence-powered Start Ups Insights Discovery Platform. The platform discovers pertinent startups and scale ups early on and provides a thorough overview of new innovations within a certain industry in a timely manner.

Top 10 Healthcare Industry Trends

1. Artificial Intelligence
2. Internet of Medical Things
3. Telemedicine
4. Big Data & Analytics
5. Immersive Technology
6. Mobile Health
7. 3D Printing
8. Block chain
9. Cloud Computing
10. Genomics

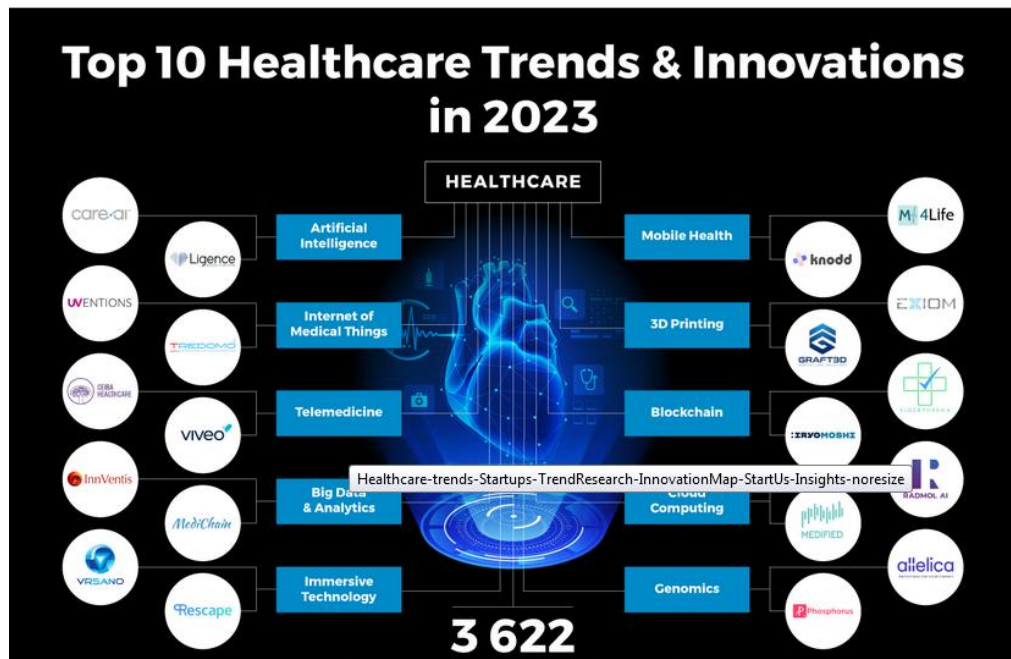


Fig – 1 Trends & Innovations in 2023

Literature Review—To investigate how firm entrance has changed in reaction to the Covid-19 epidemic, we use data on business registrations in the UK. Contrary to what is typically observed during recessions, we show that company entrance increased throughout the epidemic. Individual entrepreneurs starting their own businesses for the first time, especially in online retail, are what's driving the increase in new company formation. We demonstrate that it takes 10 weeks for a firm to be registered following a shock to footfall and use Google mobility data to link the surge in firm creation to drops in brick and mortar retail footfall. We combine entry data with Indeed's online job postings to examine the effects of recently formed businesses. Our results demonstrate that the growth in vacancy postings is a direct result of the increased firm formation. **(1)** After the COVID-19 lockdowns, small firms and start-ups have begun to reopen, but they are still encountering many difficulties, largely because of shifting consumer tastes and the need to adjust business models. This study tries to pinpoint the crucial elements that start-ups should pay attention to as they navigate the COVID-19 pandemic storm. (Varma, D., & Dutta, P. (2022). Restarting MSMEs and start-ups post COVID-19: A grounded theory approach to identify success factors to tackle changed business landscape. *Benchmarking: An International Journal*, (ahead-of-print)). Small enterprises and start-ups have begun to remove post-coronavirus disease 2019 (COVID-19) lockdowns, but they have encountered many difficulties, mostly because of altered consumer tastes and the requirement to adjust business models. The study finds that for start-ups to be successful during COVID-19, employee and customer safety, smart cost management, internet presence, and doorstep services are essential. In order to pinpoint the crucial strategic and operational elements that start-ups need to polish in the wake of COVID-19, this research adopts a novel technique. By providing a useful manual on how start-ups might learn and adapt by taking a look at how other start-ups are thriving today, the case study contributes to scientific research that aims to understand the influence of COVID-19 on organizations. **(2)** The COVID-19 pandemic impacted the food and beverage sector very severely. The complete breakdown of the supply chain and lack of customers was particularly challenging for start-ups in the industry. Those that survived were the ones who made a timely and smooth transition in business models to become more technology driven. However, the issues faced and the ground realities of the extent of struggle that these start-ups went through are less understood in the scholarly literature, with most accounts being anecdotal. The purpose of this paper is to address these issues. **(3)** The authors simulate the variations between business startups before Covid-19 and startups after Covid-19. Administrative information about individual loan records for 82,798 people and total lending of £759 million between 2012 and 2021 was collected from the UK Government Department for Business, Energy and Industrial Strategy (BEIS). The dependant variable in the profit regression model, which is coded one if the start happened after February 2020 and zero between February 2020 and 2012, was estimated. **(4)** Almansour, M. (2022). Food start-ups: leveraging digital marketing and disruptive information systems innovations to survive in the post-COVID environment. *European Journal of Innovation Management*) the authors simulate the variations between business startups before Covid-19 and startups after Covid-19. Administrative

information about individual loan records for 82,798 people and total lending of £759 million between 2012 and 2021 was collected from the UK Government Department for Business, Energy and Industrial Strategy (BEIS). The dependant variable in the probit regression model, which is coded one if the start happened after February 2020 and zero between February 2020 and 2012, was estimated. (5) Cowling, M., & Dvouletý, O. (2023). Who is brave enough to start a new business during the Covid-19 pandemic?. *Baltic Journal of Management*.) We will research Airbnb and Uber, two of the largest companies in the ride-sharing and hospitality industries, to examine its impact on the sharing economy model. The strategy is to do a comparative analysis of the shared economy's contributions to the online community and its post-pandemic possibilities. The study will make use of conversations and analyses of interviews with customers and industry experts from various sectors of the shared economy. The role of the institutional and governmental regulatory framework for enhancing the sharing economy business model will also be evaluated in this essay. The research paper also offers a thorough analysis of customer responses to businesses during the pandemic based on a few factors and the frequency of use of these services. (6) Vinod, P. P., & Sharma, D. (2021). COVID-19 impact on the sharing economy post-pandemic. *Australasian Accounting, Business and Finance Journal*) This paper attempts to provide an overview of artificial intelligence (AI) and other AI-enabled technologies as well as an analysis of how COVID-19 impacts a number of different sectors, including healthcare, manufacturing, retail, food services, education, media and entertainment, banking and insurance, travel and tourism. The writers also go over the strategies for using information technology to implement business strategies, change businesses, and encourage the usage of these technologies in existing or upcoming emergencies. (7) Artificial intelligence adoption in the post COVID-19 new-normal and role of smart technologies in transforming business: a review. *Journal of Science and Technology Policy Management*.) A sudden, simultaneous, and rapid crisis has been brought on by the Covid-19 epidemic. It sparked the beginning of a new era for global trade at a pivotal moment. This serves as an example of how the epidemic and its resulting effects on global trade have been handled by countries. It also looks at how businesses have changed how they operate and how they have responded as a result of the grave danger to their global interconnectivity. The discussion of the effects of COVID-19 on global business covers a wide range of topics, from the opposing forces that disrupt globalization and usher in a new era by decoupling technological, production, and knowledge flows to their stimulating aspects and the strategic responses on the business, industry, and state levels. Covid-19 effects on international business theory and practise are interpreted from multiple angles. (8) On an international scale, the effects of COVID-19 were felt throughout many different economic sectors. Even though the effects were not uniform across the board, one thing remained true: Every industry and nation, including India and the country's insurance industry, had trouble adjusting to the new normal. The insurance sector offered general insurance as well as non-life insurance. The insurance sector experienced conflicting results from COVID-19. The impact of COVID-19 on the insurance industry was not consistent; some products had a substantial uptick in sales while others experienced a significant downtick. The purpose of this study is to explore and evaluate the

overall impact of COVID-19 on the insurance business with a focus on the actions that need to be made to have the insurance industry ready to deal with it. **(9)** Profitability Analysis of New Material Company-Taking Orient Zirconic Industry as an Example. Guangdong Orient Zirconic Ind Sci & Tech Co., Ltd. was founded in 1995 and received approval to list on the Shenzhen Stock Exchange in September 2007. **(10)** It is also known as Orient Zirconic Industry and has the stock number 002167). It is a significant high-tech company with a focus on the development, manufacture, and operation of goods from the zirconium series in the national torch programme. It has production facilities in Shantou, Lechang, Leiyang, Jiaozuo, and Chuxiong, among five other locations in China. The products come in seven series and more than a hundred different variations and specifications, such as composite zirconia and zirconia ceramic structural components, zircon titanium ore, zirconium silicate, zirconium oxychloride, fused zirconium, and zirconium dioxide. It has accomplished the technological and product chain jump and has a zirconium that is essentially flawless. **Harchekar, J. S., & Bapat, S. (2022)** **(11)**. Information technology and its effects on the banking industry, mentioned Marketing campaign aimed at educating banking customers about E-channels and the services made available through them. Through this ongoing marketing campaign, customers are made aware of the features and benefits of using the service through these E-channels, including the ability to save time, effort, money, and other things.

Methodology– Used secondary data to estimate the precise idea of the effects and influences of online and offline teaching and learning on students and teachers. Additional ups and downs along the process. Each event has its advantages and disadvantages, value, and restrictions. Likewise Covid 19. Researcher stick to management with the influence of covid pandemic on Business idea with new star ups. Due to travel restrictions, social isolation, limitations on the sale of particular commodities and customers cutting costs and postponing projects, sales have suffered a severe fall. Due to the dramatic decline in sales, businesses are finding it difficult to recover fixed expenses in the absence of income growth. Healthcare industries worldwide are battling a severe supply and demand imbalance as well as other SCM difficulties. Due to manufacturing plant closures that have caused a lack of medicines, testing kits, and other key supplies, global medical supply chains are in a precarious situation. The current major post-COVID-19 issues include price volatility, cyber security threats, and debt difficulties. Businesses can take steps right once to lessen these risks. Businesses should review their price reductions, rebates, and promotions to stay competitive. They should also make sure that input costs are managed efficiently. The contact-intensive services industry has been significantly impacted by the COVID-19 outbreak, the ensuing lockdown, and social distancing measures. The services industry shrank by over 16% in the first half of the fiscal year 2020–21. The COVID-19 epidemic, the following lockdown, and social segregation measures have had a substantial impact on the contact-intensive services sector. In the first six months of the fiscal year 2020–21, the services sector had a decline of almost 16%. 3 622 healthcare startups and scaleups are covered by Global Startup in India.

The distribution of the 3622 exemplary startups and scaleups that we examined for this study is

shown in the Global Startup Heat Map below. The Heat Map, which was produced using the StartUs Insights Discovery Platform, shows that the majority of these businesses are based in the United States; however we also notice a surge in activity in India.

1. Artificial Intelligence – In Business gave more profit and also with more precisions. Crucial to keep an eye on the trends influencing healthcare technology in 2023 as we move forward. Modern hospitals and care facilities rely heavily on legacy infrastructure and software, but it's necessary to think about how those systems might be integrated with newer technology or eventually replaced by more dependable ones. Improvements in performance, productivity, efficiency, and security should be prioritized without compromising dependability or accessibility.
2. Hosting in the cloud and data storage

Required the internet connections with high quality so more Business. The majority of cloud storage services offer reasonably safe storage options, however they may not always be in compliance with laws governing protected health information. Any healthcare organization requiring electronic health records (EVR) needs HIPAA compliant cloud hosting options to ensure performance and efficiency.

3. Teleconferencing and data hosting aren't the only capabilities that could be beneficial for your business, though. Security, location services, appointment management, secure messaging, reviews of healthcare providers, visit histories, and wearable integration are other features that may be useful.
4. Wearable and IoT in Healthcare – More technical's used .New soft ware's has to installed. So investment increased, more and more ideas used for the Business .The potential of wearables and Internet of Things (IoT) technology in the healthcare sector has considerably increased. Many now refer to this micro processing trend as the "Internet of Medical Things" for use in telemedicine and telehealth applications. At the beginning of 2021, 11.3 billion IoT devices were online. The market for IoT medical devices is anticipated to grow from USD 26.5 billion in 2021 to USD 94.2 billion by 2026. IoT cannot be disregarded as the healthcare sector becomes more interconnected thanks to these technologies.
5. WEARABLES -The development of wearable technology is one of the most significant advancements in the healthcare sector. It is highly valuable to be able to keep track of a patient's condition throughout the day remotely or for an individual to keep track of their own condition. According to a Deloitte survey, 39% of consumers own a smart watch. Consumer smart watches are becoming increasingly prevalent, and their potential for usage in healthcare applications should be taken into consideration. Now Business increased to produce new and latest types of Smart watch .The heart rate is one of the most fundamental measurements that a smart watch may make that can be helpful for keeping track of someone's health. A smart watch can measure other things as well, though. With pedometers and blood oxygen saturation sensors, these gadgets can also keep an eye on physical wellness.

6. End-to-End Telehealthcare is possible with ViveoHealth. An end-to-end telehealthcare platform that connects insurance and healthcare is provided by the Estonian firm Viveo Health. The start-up offers clinics, physicians, individuals, and businesses a platform for online doctor consultations. It enables users to schedule appointments and video call with healthcare professionals. By using the app, users of the platform can also get medical advice, prescriptions, or referrals straight from doctors. This gave the birth to the new business Startup as the consultation .
7. Mobile Health (mHealth) -Recent research by our innovation analysts focused on new businesses and developing technologies in the healthcare sector. We choose to share our experiences with you because there are numerous entrepreneurs developing a wide range of solutions. This time, we're examining 5 exciting mobile health applications.
8. The foundation of all management activities in businesses is company profitability analysis, which is the primary subject of enterprise financial analysis. It has to do with how businesses developed and survived. In order for the company's leaders to have a complete understanding of the operating conditions of the company, the overall management level, and make predictions for future development so as to provide a reliable basis for the formulation of business strategies and development strategies, the company's profitability analysis process refers to the use of specific indicators, through a set of perfect evaluation system, to evaluate the company's actual profitability.
9. In study, quantitative methods are primarily used to compile financial data for the Orient Zirconic Industry during the past few years, pick pertinent financial indicators, analyse changes and trends, and then perform horizontal and vertical comparisons. The profitability of Orient Zirconic Industry has been thoroughly examined and evaluated from four angles, including return on net assets, gross profit margin, cost profit margin, and operational profit ratio.
10. Innovation and constant evolution
11. For high-tech businesses in the non-ferrous metal sector, like Oriental Zirconium, new products must constantly be introduced. To do this, businesses must have adequate R&D capabilities, invest in R&D, and hire more technical personnel. By consistently releasing new items, businesses can get a sizable market share, expand their market influence, and stabilise their position in the market. Enterprises should also focus on brand marketing in order to raise consumer knowledge of their products and company culture, boost industry reputation, and leave a positive impression on customers.

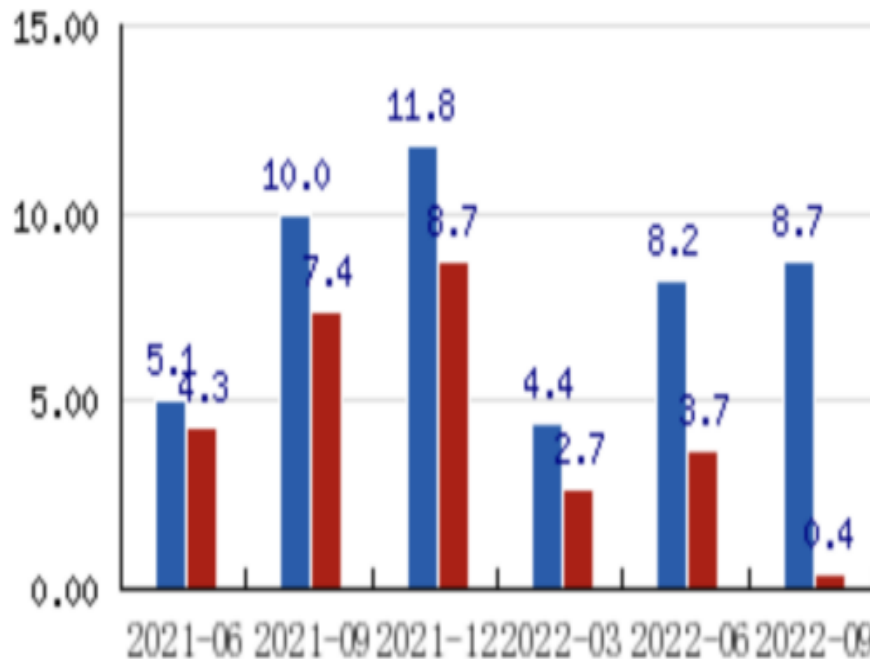


Fig.- 2 Profitability Analysis of New Material Company - Taking Orient Zirconic Industry as an Example

Conclusion-

Due to COVID -19 situations Health care Industry got flourished and more and more startups in .The Top 10 Healthcare Industry Trends' Impact.

Startups in the health technology industry use

- 1) artificial intelligence (AI)
- 2) The internet of medical things (IoMT) to remotely monitor patients in real time.
- 3) For patients unable to often visit hospitals, telemedicine technologies improve access to healthcare services.
- 4) To produce fresh insights, big data and analytics systems process both structured and unstructured medical data as well as biomedical literature.
- 5) Startups in the medical technology industry can create improved digital therapy experiences using virtual reality (VR),
- 6) augmented reality (AR),
- 7) Mixed reality (MR).
- 8) The development of high-quality prosthetics and organ transplants is made possible by 3D printing,
- 9) Bioprinting, which also lowers the possibility of graft rejection.
- 10) Immersive Technology
- 11) 3 622 healthcare startups and scaleups are included in the global startup heat map.

Limitations –

- 1) Data available for Rural and Urban area but not with exact interpretation. Results may vary.
- 2) Units may differ with data.
- 3) Big Data analysis is very tricky and difficult to handle .
- 4) Statistical analysis give most powerful results but it must be taken by the senior person with big experience in that particular field .

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