GROWTH AND SUSTAINABILITY MODEL FOR MEDIUM AND LARGE SIZE

HEALTHCARE ORGANIZATIONS IN POST-PANDEMIC INDIA

by

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DISSERTATION

Presented to the Swiss School of Business and Management Geneva

In Partial Fulfillment

Of the Requirements

For the Degree

DOCTOR OF BUSINESS ADMINISTRATION

SWISS SCHOOL OF BUSINESS AND MANAGEMENT GENEVA

MARCH, 2025

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Dedication

I dedicate this work to my family, whose unwavering support, patience, and encouragement have been my greatest source of strength throughout this journey. To my family, my spouse, and my loved ones, your belief in me has been the driving force behind my perseverance.

Acknowledgements

I would like to express my deepest gratitude to **Dr. Minja**, my mentor, for his invaluable guidance, insightful feedback, and continuous encouragement throughout this research. His expertise and unwavering support have been instrumental in shaping this study.

A special thanks to my employer and management for providing the necessary support and flexibility to pursue this academic endeavor. I am also grateful to my industry peers in the healthcare sector globally, whose insights and experiences have enriched my understanding of the subject.

Lastly, I extend my heartfelt appreciation to my friends and colleagues for their encouragement, and most importantly, to my family for their patience, sacrifices, and constant motivation. This journey would not have been possible without your unwavering belief in me.

ABSTRACT

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2025

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The aim of this research is also to deepen our knowledge of crisis management in the healthcare industry. This study compares the pre- and post-COVID-19 expansion and sustainability strategies of medium- and large-sized healthcare organisations in India. It delves further into how these methods could shape healthcare in India going forward. To further understand the tactical and strategic reactions to the epidemic, this study uses a mixed-method approach, integrating quantitative survey data with qualitative findings from prior research. The sample consists of senior management and key decision-makers from hospitals and healthcare institutions across various regions of India.

The study shows that healthcare institutions operated through multiple challenging situations, including insufficient resources, funding limitations, personnel shortages, and high patient demands. The crisis compelled educational institutions to adopt various strategies for crisis mitigation. Healthcare institutions implemented four main approaches

to tackle the crisis, which involved accelerating digital transformation for telemedicine and AI diagnostics, along with employee safety programs, flexible work options, supply chain diversity, and agile decision-making practices. Many institutions revamped their business operations by developing new service offerings while strengthening their commitment to corporate social responsibility (CSR) in society.

These strategies successfully kept organizations active throughout the pandemic while establishing resilient structures that contributed to business expansion. The implementation of digital tools and employee welfare support initiatives will have a lasting impact on healthcare development in India. Healthcare institutions must be prepared and quick to innovate, as the recent pandemic revealed the critical importance of readiness and agility in facing future management challenges in healthcare. These strategies demonstrate strong potential to enhance the sustainability and growth of healthcare facilities across India in the coming years.

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Abbreviations	Full Form
CSR	Corporate Social Responsibility
EHRs	Electronic Health Records
PPPs	Public-Private Partnerships
WHO	World Health Organisation
NCDs	Noncommunicable Diseases
PMRH	Prime Minister's Rural Health Mission
NRHM	National Rural Health Mission
NSDC	National Skill Development Corporation
CAGR	Compound Annual Growth Rate
UHC	Universal Health Coverage
SDGs	Sustainable Development Goals
SIP	Shelter-In-Place
UNGA	United Nations General Assembly
TBL	Triple Bottom Line
CLI	Composite Leading Indicators
HDI	Human Development Index
ESI	Environmental Sustainability Index
PPE	Personal Protection Equipment
HCWs	Healthcare Workers
ICUs	Intensive Care Units
RISE	Reaching Impact, Saturation, And Epidemic Control

CHAPTER I:

INTRODUCTION

1.1   Introduction

Serving a large and varied population, India's healthcare system is a cornerstone of the country's well-being. Being one of the fastest-growing sectors in the nation, it is driven by rising incomes, higher knowledge of healthcare, and wider insurance availability. But the COVID-19 outbreak brought with it hitherto unseen difficulties that put a great deal of pressure on the industry. Along with testing the current healthcare infrastructure, the worldwide health crisis brought to light serious weaknesses in the system (Malik, 2022).

Medium and large healthcare institutions in India had several difficulties throughout the pandemic. Among these were a sharp shift toward digital health solutions, supply systems that were strained, and excessive patient loads. Lacks beds, medical equipment, and medical personnel significantly affected hospitals' and clinics' ability to deliver sufficient treatment (Baskin & Bartlett, 2021). Further complicating the picture was the financial burden brought on by rising operating expenses and declining revenue from non-COVID-19 services.

Healthcare institutions used a variety of expansion and sustainability plans in reaction to these obstacles to manage the outbreak and its fallout. Among the important tactics was the digitalization of medical services. Electronic health records (EHRs) and telemedicine have grown to be indispensable instruments for preserving continuity of treatment while reducing the possibility of infection (Bhattacharyya & Mandke, 2022). Adding wellness and preventative care programs and broadening services to meet a wider variety of health requirements were two additional crucial strategies in the diversification of healthcare offerings.

Moreover, the improvement of operational effectiveness and resilience was greatly facilitated by strategic alliances. Digital health solutions could be implemented quickly thanks to collaborations with collaborative technologies, and vaccinations and necessary medications could be consistently supplied by pharmaceutical corporations. In especially in underprivileged regions, "public-private partnerships" (PPPs) have also become essential to the expansion of healthcare infrastructure and services (Huraysi et al., 2023).

To build a robust healthcare industry that can weather future crises, one must comprehend and evaluate these tactics. Such research is desperately needed as it would yield insightful information and suggestions for improving the sustainability and resilience of healthcare institutions. The main goals of this research are to identify, measure, and evaluate techniques used by medium-sized and big healthcare organizations in India both during and after the COVID-19 outbreak.

The purpose of this literature analysis is to methodically analyses the growth and sustainability plans that medium and large healthcare organisations in India have implemented. It will give a thorough examination of how these groups have handled COVID, emphasise effective tactics, and pointed up holes in the body of current research. Through investigation of these areas, the assessment will advance knowledge of the elements that have allowed these companies to maintain their resilience and grow amid such trying circumstances.

Overview of the Healthcare Sector in India

The healthcare sector itself is a fast-growing sector in India on account of factors like growing population, rising income levels, improved health consciousness, and availability of better healthcare products and services (CRISIL, 2023). The sector comprises both government and parastatal health institutions, although the parastatals dominate and are widespread in both urban and rural settings. This is notwithstanding the

advancement that has been made in India where challenges as equity in access to health, dearth of health human resources and inadequate public health physical facilities persist (Balarajan et al., 2011). The COVID-19 experience and its effect on the system are what has called for scaling up of investments and concentration on Strengthening the Health System in line with the requirements of modern healthcare system that involves focusing on enhancing the Healthcare Infrastructure, Digital Health Solutions, and Affordable Quality Healthcare Services (Filip et al., 2022). The Government has again put its focus back on UHC and launched schemes like Ayushman Bharat that augur well for India's healthcare sector as the country looks for ways to improve quality, access, and affordability so that all Indian citizens can be assured of access to quality, affordable essential health care when and where they need it (Grewal et al., 2023).

Instead of merely referring to the absence of illness or disability, the "World Health Organisation" (WHO) states that whole physical, mental, and social well-being is the definition of health (Schramme, 2023). Health is an ever-changing state that is the product of body's ability to adapt to its environment, and healthcare encompasses not just medical treatment but also all forms of preventative care. Incentives and discouragements for self-care and privately-paid medical treatment to combat illness are also part of healthcare, which encompasses more than just publicly-funded medical treatment. Market forces alone cannot govern the demand and supply of healthcare because it is generally acknowledged as a public good. (Chaudhary et al., 2021).

To have a fair healthcare system, four conditions must be met. Firstly, everyone should be able to get the treatment they need without having to pay too much. Secondly, a continuing quest for improvement towards a more equitable system, equitable allocation of financial charges for access, and fair division load in rationing care and capability. Lastly, making sure that medical professionals are competent, empathetic, and held

accountable through continuing education. Finally, services geared toward helping the most defenseless members of society, including the elderly, women, and children (Chaudhary et al., 2021). Concerns that healthcare expenses, especially in industrialized nations, may reach unsustainable levels despite the increasing illness burden from noncommunicable diseases (NCDs) and their longer life spans have been voiced in recent years (Ganju et al., 2020). These concerns have recently taken on more importance in light of the worldwide novel coronavirus (COVID-19) epidemic and its effects on people and economies around world (Analysis, 2020).

Regarding the organization of healthcare in India, there exists a tier-care system of three levels aiming on patients' effective treatment depending on the severity of the health issues in population (Chokshi et al., 2016). Primary health care in India is delivered through Community health centres and sub-primary health care structures still have strength in delivering basic health care, especially maternal & child health and preventive services (Ugargol et al., 2023). The second tier in the ladder consists of district hospitals, and the other smaller specialized hospitals with better diagnosing and treating equipment. The third level is made up of enormously service-oriented huge multi-specialty hospitals that involve complicated and extensive treatments surgeries and medical procedures (Mosadeghrad, 2014). This hierarchical structure is supposed to increase accessibility and efficacy of HC services; nevertheless, scarcities and, more importantly, unequal density of healthcare facilities inevitably result in gaps in MR hypothesis, especially in rural and isolated zones (Tao & Han, 2021).

Private company has a stronger presence in the total health care industry where most of the hospitals, clinics, and nursing homes are situated in India (S. Kumar, 2015). A large number of private institutions are very selective and provide excellent infrastructure and resources that are now available internationally (Kajawo, 2020). Medical tourism is

also famous in the private sector of India where patient from different parts of world comes for better and cheaper treatment (Sagar & Latha, 2014). However, this had made emphasis on private healthcare resulting to differential access to health services common in developing nations they are expensive and inaccessible to the poor. The other facilities are in the public domain where costs are relatively low, but challenges including substandard facilities, few medical physicians, and petit hospitals that accommodate a large number of patients are rampant (S. Chatterjee et al., 2013). There remains skewed access to health care with only the public hospitals offering the services to a largely unsatisfied population since such centres are often poorly equipped and resourced compared to their private counterparts. India's healthcare challenges extend beyond infrastructure and include the availability of skilled healthcare professionals (A. Kumar, 2023). There is a chronic shortage of physicians, nurses, and other allied health workers in rural areas, where the majority of people reside. According to data from the WHO, India has a doctor-to-population ratio of roughly 8 to 10,000, which is significantly lower than the global average. This disparity is even more pronounced in more rural and outlying areas. Efforts are being made to address these shortages through medical education reforms, incentivizing doctors to work in underserved areas, and increasing intake in medical and nursing colleges (Nallala et al., 2015). However, training and deploying healthcare professionals to meet needs of a large and diverse population remains a long-term challenge (Frenk et al., 2022).

The epidemic of COVID-19 has taken its toll on India's healthcare system, making it known that the country cannot underestimate the importance of a strong, affordable, and easily accessible healthcare system (Kapoor et al., 2023). When advent of COVID-19 pandemic reached its worst, the healthcare centres nearly collapsed and resources like hospital beds, ventilators and oxygen became so scarce (Faruqui et al., 2021). The issues

identified included increased public health necessitating improvements in rude disaster readiness emergency response systems, and spend health care structures. To these ends, the Indian government stepped up spending on health and introduced measures for the improvement of healthcare infrastructure more so in the rural areas (Kasthuri, 2018). The pandemic also spurred the use of knowledge-based health care like telemedicine, electronic health records, and mobile health, among others with the capability to enhance access to care, particularly in facility-scarce areas (Shen et al., 2021).

One of the most prominent initiatives of Indian government aimed at expanding access to healthcare is Ayushman Bharat, often known as the National Health Protection Scheme or the "Prime Minister's Rural Health Mission" (PMRH) (Grewal et al., 2023). Starting in April 2018, Ayushman Bharat is the largest health insurance scheme for the economically vulnerable population of over 500 million in the world (Kamath & Brand, 2023). The programme aims to offer health insurance for a comprehensive package of preventive, curative, promotive, and palliative medical and surgical interventions for the indemnification of families which could otherwise be impoverished due to healthcare expense (Kodali, 2023). The scheme also aims at starting 150000 health wellness centres in the country that will be dealing with preventive healthcare and health education. Indeed, Ayushman Bharat is a welcome intervention to address UHC however gaps persist where regard to awareness of the scheme, subscriptions under the plan, or delivering the benefits where the need is probably the highest.

Technological growth has also caused changes in how health care is delivered within India by enhancing diagnostic options, treatment methods and patient care (Junaid et al., 2022). Telemedicine is one of the many implemented digital health solutions to increase availability of healthcare services since there are limited healthcare providers in rural areas (Haleem et al., 2021). Telemedicine enables people to consult doctors while

they stay back from their homes; thus, eliminating the need for a country and assuring persons in rural areas of receiving medical advice on time (Maroju et al., 2023). Also, there has been development of high technologies in the medical field including the use of robotic surgery, and diagnostic and health record systems, which has improved the quality of services in private and some public hospitals (Deo & Anjankar, 2023). The government of India launched the NDHM three years ago in 2020 with the holistic plan of establishing a digital health marketplace to embrace EHR, telemedicine, and HIS to bring efficiency and intelligent data in the domain of healthcare (Joe & Yadav, 2004).

Medical tourism is also one of the major segments of healthcare industry of India; which has grown to become a preferred destination for quality and affordable healthcare in the world (Gupta et al., 2015). It ranges from people from African and Middle Eastern countries to Southeast Asian and even some developed countries like the USA coming to India for their treatments, surgeries such as heart, bones, and cancer (Guha et al., 2018). With India having talented doctors outclass medical facilities, and moderate costs, the medical tourism business has grown. Apart from generating revenue it also has potential to display India's healthcare system to rest of world (Ghia & Rambhad, 2023). Nevertheless, the concept of medical tourism is disadvantageous in terms of the sustainability and direction, of healthcare services because such hospitals prioritize such international clientele over locals (Sagar & Latha, 2014).

However, healthcare in India remains a potent example of an uneven innovative field with dramatic distinctions between the highly developed and modernized urban regions and the still traditional rural zones, as well as between the privileged and non-privileged layers of the population (Barik & Thorat, 2015). A large number of healthcare facilities are located in rural areas of developing countries and they do not have basic infrastructure and trained staff to provide quality health care in these regions, consequently,

individuals in these areas depend on traditional or other unskilled health care workers (Tabish, 2019). The government has put measures in place to enhance health care delivery to the populace in rural areas for instance has launched "National Rural Health Mission" (NRHM); nevertheless, the influence has been poor due to poor funding, poor infrastructure and poor implementation among others (Vellakkal et al., 2017).

To meet these challenges, India requires long-term investment in health facilities, human resources in health, and health information technology (Swain et al., 2020). The development of efficient health system to confirm equal access to healthcare for all constituents implies cooperation of public and private initiatives in the fields of preventive healthcare, health literacy, and rational organization of the healthcare system (Poureslami et al., 2017). It is also imperative to improve long-term plans of policies of public health involving the promotion of interventions affecting a population's health that include sanitation, nutrition as well as education (Coe & de Beyer, 2014).

Contribution of the Healthcare Sector to the Indian Economy

The healthcare sector is one of pillars of Indian economy and is significantly contributing to the generation of employment opportunities generation of revenue and overall enhancement of quality of life (A. S. George, 2024). BI encompasses a wide range of industries, including healthcare facilities, diagnostic tools, clinical trials, outsourcing, telemedicine, insurance, and medical tourism, all of which are propelled by rising incomes and health awareness. One of fastest-growing sectors of India's economy, hospitality industry has attracted both local and international investors (Jaiswal, 2019). The sector not only generates direct income through healthcare services but also income derived from industry players such as other pharmaceutical firms, biotech, and manufacturers of medical equipment. Moreover, India's healthcare sector is also an economic generator, currently offering employment to millions of people right from the surgeons to medically trained

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helper (Gadre, 2015). This aspect of medical tourism due to the availability of standard yet fairly charged medical services also boosts the exportation of foreign exchange earnings. The reforms such as Ayushman Bharat by the Indian government, coupled with the developments in digital health solutions are a factor that local industry growth will continue to rise. cumulatively, these posited make the healthcare sector an important element of Industries in India that has enormous possible to contribute towards progress of inclusive growth and enhancement of public health standards (J. K. Sharma, 2019).

In India, there are both public and private healthcare options (A. Kumar, 2023). Approximately 70% of people living in rural India get their medical treatment from private providers, compared to 80% of people living in metropolitan areas. In regions where governmental healthcare facilities are struggling to keep up with patient demand, private sector has been contributory in developing India's healthcare organization. This has helped ease the strain on public healthcare systems by giving people more options when they need medical treatment (Arora, 2024). As a result, India has been coping with the largest population on Earth. There aren't enough hospital beds and doctors and nurses to meet patient needs. There are 1.3 beds available in hospitals for every 1,000 individuals. Plus, there is a severe shortage of doctors and nurses: only 0.65 doctors and 1.3 nurses for every 1,000 people (R. Kumar & Pal, 2018). Since as much as 60% of the country's hospitals are located in just a few large cities, there are also disparities in the availability of treatment. In comparison to the global average of 60–65%, only around 30% of patients in India have surgery. Furthermore, only about 15% to 20% of cancer patients in India undergo radiation treatment, whereas 40% to 50% worldwide do (Bhandarkar et al., 2021). There will be 90 million diabetics in India by 2025, up from 60 million now. In India, hypertension is estimated to affect one out of four adults. Approximately 5.8 million people in India lose their lives each year due to "noncommunicable diseases" (NCDs) such as stroke, cancer,

heart disease, diabetes, and lung disease (Thakur & Nangia, 2022). A growing middle class, an ageing population, longer lifespans, and an increase in chronic illnesses are some of the reasons driving up demand for healthcare services. The infrastructure of healthcare has been improved in large part by private enterprises to fulfil this growing need, especially in locations where public systems are constrained (Rai et al., 2023).

Private hospitals make up around 62% of India's hospital network, with 69,000 being public or non-profit institutions. Included in this figure are 59,264 intensive care units (ICUs), 29,631 ventilators, 1,18 million beds, 43,486 private hospitals. In comparison, there are 25,778 public hospitals with 17,850 ventilators, 35,700 ICUs, and 713,986 beds. (Prabu et al., 2023).

- **Economic Impact of the Private Healthcare Sector**

According to projections, private healthcare industry will be worth $372 billion by the year 2022. Both the Indian economy and number of people employed in the healthcare sector have been positively impacted by the industry's 22% "compound annual growth rate" (CAGR) since 2016. Rising to position of fifth-largest employer in 2015, the healthcare industry boasted 4.7 million direct employees (Datta & Chaudhuri, 2022).

The "National Skill Development Corporation" (NSDC) has forecast the healthcare industry in India would have 2.7 million new job openings from 2017 to 2022. There are now a lot more people to choose from thanks to the growth of private healthcare facilities. Jobs for healthcare workers of all experience levels have resulted from this, helping to lower the unemployment rate across the country (Karan et al., 2023).

The growth of the private healthcare sector has a multiplicative effect on the economy. This causes individuals to shell out more cash for medical treatment and other goods and services (Grewal et al., 2023).

- **Private Healthcare Sector**

The private sector has been instrumental in acquiring cutting-edge medical technology and bringing specialised therapies to the country that were previously unavailable or severely constrained. These technological advancements have made Indian healthcare more accessible, of better quality, and even a desirable location for medical tourists (Mazumdar-Shaw, 2018).

To better serve their patients, private healthcare providers in India frequently team up with world-class universities and researchers to share information, challenge conventional wisdom, and create cutting-edge medical therapies. Collaborations like these make it easier to bring cutting-edge medical techniques and knowledge to India's healthcare system. People all across the world, from locals to tourists, can reap the benefits of these advancements in healthcare, which open up a world of otherwise unattainable treatments and cures (Mahajan, 2023).

Healthcare innovation is being propelled by research and development efforts conducted by private hospitals and healthcare organisations in India. They fund clinical trials, academic collaborations, and medical research so that we can understand the human body and its diseases better and find treatments for them. The advancements made in areas such as regenerative medicine, genetics, and personalised medicine have paved the way for new possibilities in individualised treatment (James & Bhatnagar, 2018).

According to "Healthcare CEO Future Pulse," healthcare CEOs are primarily concerned with staffing needs, acquiring the necessary skills and resources, adapting to new business models, and promoting employee health and wellness (Figueroa et al., 2019). They must ensure that we source a workforce that possesses the necessary skill sets and can easily adjust to new operational procedures. India, like many other countries, seems to be struggling with a lack of qualified healthcare workers (Saxena & Godfrey, 2023). In

particular, India has seen a meteoric rise in the demand for medical professionals since the coronavirus pandemic began. An ever-increasing gap between population growth and healthcare hiring is driving up demand for healthcare workers. According to KPMG's "Strengthening healthcare workforce in India - 2047 agenda" research, the healthcare industry's manpower needs and potential supply will be evaluated from 2017 to 2047 (Mathews Jini Jacob, 2024).
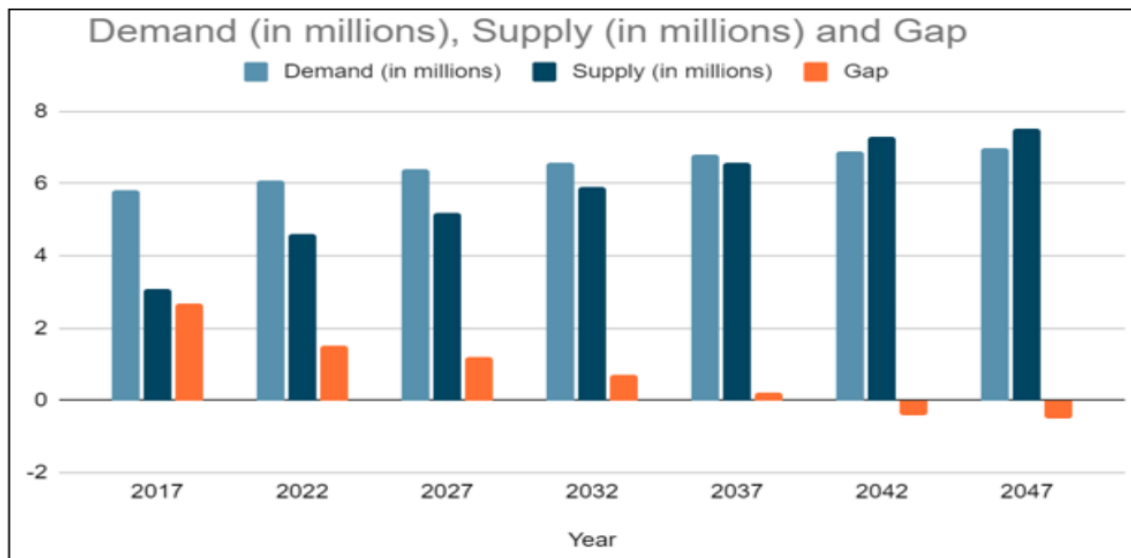
Figure 1.1: Demand and Supply Gaps of the workforce in the healthcare Sector Source: KPMG/FICCI Report – 2022

Research shows that there will be a shortage of healthcare workers until 2037, despite efforts to narrow the gap. From 2042 onward, the demand for and supply of workers will likely reverse. But it does show that the number of people working in this field has grown, which is great. The healthcare industry is expected to generate an additional 2.7 million employment opportunities in India from 2017 to 2022, or approximately 5,000 new positions annually, as stated in "Investment Opportunities in India's Healthcare Sector" report available by NITI Aayog. Everything that has been accomplished is a result of the numerous programs and projects implemented by the government.

The "Universal Health Coverage" (UHC) and good health for all have been the aims and objectives of various development bodies and institutions across the world. In its 17 Sustainable Development Goals (SDGs) aimed at bringing about global transformation by 2030, one goal is also to strive for good health and well-being (G-3) (UNDP) (Kieny et al., 2017). This brings to us the seriousness of the international community towards good health. Besides, increasing per capita incomes, changing lifestyles, and better health awareness demand better healthcare services with robust infrastructure (Kruk et al., 2018). Economic growth and Human capital drive each other. Better healthcare services not only support economic growth but are also driven by robust economic growth. There are four cornerstones of national healthcare systems: access to preventative care, affordability, development of a robust healthcare infrastructure, implementation of mission-mode interventions to advance the health of mothers and children fight against communicable and non-communicable diseases (Nundy et al., 2021). Thus, Health infrastructure constitutes one important constituent of overall healthcare services. The Researcher has tried to study the state of India's health system. During a pandemic, India struggles with health services. This problem forces the researcher to study the state of health services in India considering its population size and its relation to economic growth (D. Kumar et al., 2023).

The healthcare industry in India is now worth more than $40 billion, thanks to this growth. The private sector contributes around 80% of this spending, with the remaining 20% coming from public sources. Therefore, India has both opportunities and challenges to conquer on its path to success. According to Nair (2015). medical tourism in India has grown into a $2 billion industry, making it one of country's most popular tourist destinations. Health tourism is on rise in the country thanks to its abundance of super-specialised hospitals, telemedicine, highly trained medical personnel, and government

incentives. Clinical trials and personalised medicine research benefit greatly from the large population, varied genetic pool, and variety of diseases (Kshatri et al., 2022).

Influence of COVID-19 on Healthcare Organizations

The Pandemic COVID-19 has affected economics and health systems worldwide. The potential monetary toll of the pandemic is sixteen trillion dollars (Cutler & Summers, 2020). As a result, local and national governments in US have passed "shelter-in-place" (SIP) programs that promote social isolation to "flatten the curve." In the past, studies have shown that these strategies effectively decreased the transmission of COVID-19 in US (Amuedo-Dorantes et al., 2021; Courtemanche et al., 2020). However, there is a lack of data on how social isolation and SIP policies affect people's healthcare use (Ziedan et al., 2020). The utilisation of preventative healthcare services, including in-person and telemedicine visits, was previously studied following the March 2020 nationwide emergency declaration. (Whaley et al., 2020).

Our results are from previous research showing that both preventative and elective service utilisation fell sharply, and that telemedicine's replacement of in-person visits did not fill the void (Mehrotra et al., 2020). Based on available data, it is not obvious if decrease in utilisation was a result of patients' fears of contracting COVID-19 while receiving healthcare or a reaction to the introduction of SIP regulations.

At the outset, it is unclear how SIP policies would affect healthcare utilisation. Although these policies may reduce COVID-19 cases, which might boost public confidence and healthcare utilisation, SIP regulations have the opposite effect and could make individuals remain home instead of going to the doctor or hospital (Gauttam et al., 2021). These regulations may prevent the spread of COVID-19, but they may come at a cost if they reduce critical medical care. The possible negative effects of SIP policies on non-COVID care must be weighed against the favourable health implications of SIP

policies regarding COVID if postponed or skipped treatment worsens patient health outcomes. To balance these benefits and drawbacks fairly, we need an accurate estimate of how SIP regulations would affect care that is not related to COVID-19. The endogenous nature of these policies' implementation poses a significant empirical hurdle for measuring their impacts (Goodman-Bacon & Marcus, 2020). It is possible that counties enacted SIP regulations in reaction to or at same time as an increase in COVID cases, however, the exact timing of these policies' introduction varies from one county to the next. This diversity in timing can be utilised to determine how these policies have affected healthcare use. Since the COVID-19 pandemic's trajectory might shift within a county, it is crucial to separate the impacts of SIP policies from those of these changes. Considering the potential for SIP policy endogeneity, we adjust non-parametrically for the time that passed in each county from the first COVID-19 instance to the death.

Using claims data from a comprehensive U.S. sample of persons with employer-sponsored health insurance, we assessed the effects of SIP policies on utilisation of health services. They found that when COVID-19 is introduced, county-level SIP policies are put in place internally (Agrawal et al., 2023). They discovered that when SIP regulations were put in place, people used to use a lot less preventive care and elective services. After accounting for all possible differences in COVID-19 exposure, they find that influence of SIP policies on healthcare utilisation is much smaller. A 37% decrease in mammography utilisation was associated with SIP rules, for instance, when variances in COVID-19 exposure were not accounted for. When controlling for number of weeks since first COVID-19 case and mortality within a county, influence of SIP rules on mammography utilisation is reduced to 12%. Other types of elective and preventative care, such as MRIs, musculoskeletal surgeries, and cataract surgeries, also show comparable decreases. Contrarily, we observe negligible shifts in the rates of non-elective care (such as

chemotherapy and angiograms) and constant rates of delivery (Ali et al., 2023). Health service utilisation has decreased during COVID-19 pandemic, however, this is attributable to factors other than SIP regulations. Care cutbacks vary among counties due to differences in the severity of the COVID-19 epidemic and the application of SIP rules. While our findings do show that SIP policies do reduce spending on preventative and elective care, we also found that these cuts would have happened regardless. The use of mobile phone geo-tracking data on in-person visits to healthcare providers (hospitals, doctors, etc.) allows us to validate our primary findings (Gonçalves-Bradley et al., 2020).

In addition, they examine the evolution of telemedicine in comparison to traditional in-person doctor visits during the pandemic, a time when many providers have switched to telemedicine services in response to CDC guidelines (Centers for Disease Control and Prevention (CDC), 2020). During the public health emergency that ZZZZbegan in middle of March and continued until the middle of June, for instance, more than 9 million Medicare members were able to access telemedicine services (Verma, 2020). In a similar vein, between March 2, 2020, and April 14, 2020, the daily average of telemedicine visits at NYU Langone Health increased from 102.4 to 801.6 (Mann et al., 2020). A study conducted by (Koonin et al., 2020). using data from four national telehealth providers found that, in comparison to the same period in 2019, the number of telehealth visits increased by 154% in the final week of March 2020. We found that, after adjusting for differences in the severity of the COVID-19 pandemic, SIP regulations resulted in a 53% increase in telemedicine use and a 10% reduction in office-based clinician visits. These findings support previous studies. Nevertheless, the decrease in visits to clinics and doctors' offices was only partially compensated for by the absolute change in telemedicine. While telemedicine visits have not entirely supplanted in-person consultations, our findings are consistent with earlier research that has reached the same conclusion (Ziedan et al., 2020).

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Previous studies of employer-based claims data found that telemedicine adoption rates were lower and in-person visits were lower in zip codes with lower incomes or a preponderance of racial/ethnic minority groups (Whaley et al., 2020).

There are some significant public policy insinuations of these findings, in our opinion. To begin, the fact that we have discovered that essential care has been postponed raises the possibility that more policies aimed at re-establishing avoided care may be necessary. Other research have also expressed same issue (Czeisler et al., 2020; Jain & Santhosh, 2020). Second, there may be long-term negative effects on some patients' health if they postpone critical care. Neither health effects of COVID-19 pandemic nor effects of SIP policies consider these extra-COVID-19 health implications (Woolf et al., 2020). Even though certain communities are experiencing disproportionately high rates of postponed care, these implications are still being overlooked in the conversation about how the pandemic is affecting healthcare inequities (Czeisler et al., 2020). Thirdly, supply side of market could be impacted by the pandemic, SIP regulations, and the drop in utilisation that comes with them. For instance, healthcare providers can anticipate significant financial consequences due to the predicted drop in care utilisation. Insurers, on the other hand, stand to gain financially from reduced healthcare utilisation and will hence be better equipped to weather COVID-19 pandemic (Lucia et al., 2020). It would appear that healthcare business is feeling the effects of the drop in healthcare utilisation on employment as well. The number of people working in healthcare facilities declined by 135 thousand, or 2.6%, while the number of people working in ambulatory workforce plummeted by 1.19 million, or 14.9%, in just the first four months of 2020 (Himmelstein & Woolhandler, 2020). Lastly, to back up the findings of the detailed claims data, we employ real-time mobile phone mobility data on weekly trips to doctors' and hospitals' offices (Cantor et al., 2020).

As a result of COVID-19 epidemic, there was an extreme flow in the number of patients needing exhaustive care. Past research has documented the effects of SARS-CoV2 infection on cancer patients (Albiges et al., 2020; Ko et al., 2021). Cancer patient care has also been affected by pandemic, with treatment delays and changes to standards of care being two issues (de Joode et al., 2020; van de Haar et al., 2020).

The government enforced the first-ever statewide lockdown from March 17, 2020, until May 10, 2020, while the COVID-19 pandemic was at its worst. Open and expanded intensive care beds were mandated by health officials for all hospitals, particularly cancer centres, to accommodate patients. They had to postpone non-emergency surgeries because most patients needed beds in critical care unit after their operations. To reduce frequency of hospitalisations and outpatient visits and to forestall COVID-19 problems caused by anticancer treatments, some non-standard therapy proposals were investigated (Gligorov et al., 2020). However, many patients rescheduled their appointments since they were unable to come in during the lockdown for diagnosis, treatment, or follow-up visits (Kempf *et al.*, 2021; Lou *et al.*, 2020). As a result of the lockdown, fewer patients were referred to hospitals for diagnostic exams and cancer screenings in primary care. Some new and anticipated patients may have delayed their hospital visits in October 2020 due to second wave of the virus and the subsequent lockdown. Patients' and healthcare providers' attitudes and behaviours are changing, which can affect cancer patients' chances of survival.

Patients' prognoses can be affected by the time it takes to diagnose and treat cancer (Sekeres et al., 2009), Supplementary Table A. Cancer patient mortality has increased, according to new US and UK estimates, which are based on changes in cancer care brought about by the pandemic (Hangaard Hansen et al., 2018; Richards et al., 1999). Among cancers, a UK study indicated that oesophageal cancer had a 5% rise in cancer-related deaths, breast cancer an 8-10% increase, and colorectal cancer a 15-17% increase in deaths

up to 5 years after diagnosis (Maringe et al., 2020). But how the epidemic will influence hospital resources and patients' return visits is something we won't know for a while (Bardet et al., 2021).

Several studies have shown that the stay-at-home orders and lockdowns implemented during current COVID-19 epidemic significantly changed healthcare utilisation (Baum & Schwartz, 2020; Zwald et al., 2020). Some services, like telemedicine, will be increased while others will be reduced, especially in areas hit severely by the pandemic (Salerno et al., 2020). A lot of people haven't gotten the care they need, such cancer treatments that can prolong life or vaccines.2 5 and 6 Reducing crucial maternal and child health interventions might lead to over a million extra child fatalities, according to estimates, and a World Health Organisation survey indicated that lower-income countries were most affected by disruptions to healthcare services.8 Concurrently, some individuals may have avoided potentially harmful or superfluous medical treatment because of the pandemic (Moynihan et al., 2020; Sorenson et al., 2020). Choosing Wisely is just one of many worldwide initiatives combating the well-documented problem of excessive medication use; the problem is present in over 20 nations.18 Health systems may be able to learn from this "natural experiment" in reduced care to identify and resolve wasteful treatment, and progress towards more sustainability, during the post-pandemic era, when some countries are forced to accomplish more with less resources (Morgan et al., 2019).

Researching how shifts in healthcare use affect health outcomes and expenditures is fraught with methodological difficulties (Glasziou et al., 2013). First, people have skipped appointments for a variety of reasons, such as being sick from the fear of getting an infection while at the doctor's office, being unable to get an appointment because of lockdown regulations, or having services like elective surgeries cancelled or suspended. Second, a detailed and sensitive analysis is needed to separate populations that have

avoided needless care from those that have missed necessary care, and to account for various characteristics that could cause confounding (Born et al., 2019). Take, for example, the fact that there were no immediate negative effects of skipping a treatment episode; it doesn't necessarily mean it was unnecessary. Ignoring these obstacles aside, health systems may be able to maximise resource utilisation post-pandemic provided they identify and characterise the extraordinary changes in utilisation that have occurred recently and the effects these changes have had on health outcomes and costs (Moher et al., 2009).

Consequently, we performed the first systematic review of papers that we are aware of that report changes in healthcare use as a whole as a result of pandemics. Additionally, we hoped that by conducting this study, we might better guide future studies that examine the effects of this natural testing with reduced care on health results and costs, as well as the continuing shifts in utilisation (Long et al., 2020).

Overview of Growth and Sustainability Model

A growth and sustainability strategy for healthcare organizations is required as even while pursuing growth, plans for sustainability and stability are required – post-pandemic (Mostepaniuk et al., 2023). This model looks at economic, environmental and social sustainability as a way of achieving robust and sustainable healthcare systems. Financial viability is built through the determination of more than one source of revenue and managing the resources and expenses effectively and efficiently (Morrell, 2017). Environmental sustainability deals with resource use, efficiency and management of natural resource use where practices such as waste disposal/management, energy efficiency, and resourceful facility design, cut across the facility's ecological issues but at the same contribute to reduction of costs in long run. A socially sustainable organizational practice promotes fair remuneration, provision of therapy for mental disorders, career growth, and staff stability in organizations (Bocean et al., 2022). Public participation is

also important, especially for healthcare organizations addressing health downstream determinants and developing community trust through public health approaches. Sustainability objectives are promoted through digital adaptation because patients can be treated through telemedicine; monitoring and tests can be done without developing new buildings. Further, data analytics contribute to need forecasting for patients, resource allocation and population health management (Nwoke, 2024). PP regularly plays a critical role in contributing to increased coverage of resources, the formation of new and innovative approaches to the problem, and the use of governmental guidelines, that promote sustainable development. In combination, these actions give a full operating model for growth that is sustainable and impactful in future healthcare organization challenges (Mehra & Sharma, 2021).

A development paradigm that has spread like wildfire, SD is now used as a catchphrase by international aid agencies, a topic for academic conferences a term used by development planners, and papers, and a slogan by environmental and development activists (Ukaga et al., 2011). Scopelliti et al. (2018); Shepherd et al. (2016) noting that, unlike other development models, the idea has received extensive media coverage. For the foreseeable future, it appears to be in a strong position to maintain its status as the de facto standard. Many people are disappointed with the notion despite its popularity and extensive use. They still don't have good answers to their queries about what it is, how it is defined, and what it means for development theory and practice. Montaldo (2013); Shahzalal & Hassan (2019) Consequently, SD is in danger of being hackneyed, much like the current term "suitable technology," which everyone uses but nobody can explain exactly.(Mensah & Enu-Kwesi, 2019).

A precise definition of the term and an analysis of its salient characteristics are required in order to move past sustainability clichés and pursue a more tangible agenda for

sustainable development (Gray, 2010; Mensah & Enu-Kwesi, 2019). A lot of people in the field of sustainable development, including academics, think this is necessary. Even though there is no shortage of writing about SD, many people still don't understand what it is, how it came to be, what its foundational principles are, or what it means for human growth. Consequently, despite the abundance of literature on SD, there is a pressing need for more explanation of the muddled issues surrounding the concept. This is due to the fact that decision-makers necessitate not just more accurate statistics and information about the relationships between SD's pillars and principles, but also a more thorough understanding of these relationships and how they propose measures to further human development (Abubakar, 2017; Hylton, 2005).

- **The sustainable development goals**

The 2030 SDG lays forth a strategy for a world in which people and the planet can live in harmony, both today and tomorrow (Bárcena et al., 2018). An organising philosophy, it seeks to balance human growth with the preservation of natural resources. The Rio Process, which was launched at the Earth Summit in Rio de Janeiro in 1992, was the first attempt to permanently establish sustainable development. The "United Nations General Assembly" (UNGA) approved Sustainable Progress Goals (2015–2030) in 2015 and outlined their interconnectedness and inseparability to sustain global progress (Purvis et al., 2019). An international commission that looked at environmental and development issues in 1983, the Brundtland Commission, is largely responsible for this idea of sustainability. Sustainable development is defined as follows by the Brundtland Report. Environmentally sustainable development is defined as that which "meets the needs of the present without compromising the ability of future generations to meet their own needs," according to the study. The Future We Share (Hajian & Kashani, 2021). Sustainability became a central topic in policy talks after the report. Meanwhile, sustainable development

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became more mainstream as a result (Purvis et al., 2019). Global efforts are focused on achieving seventeen Sustainable Development Goals. Sustainability may be an ill-defined term to some. Unfortunately, there is no silver bullet for accomplishing the SDG without first settling on a model.

Figure 1.2: Sustainable Development Goals (Vega Mejía et al., 2018)

The above figure shows the "Global Goals for Sustainable Development" are 17 objectives that the UN set to solve world's biggest issues by 2030. Their goals are to end poverty, hunger, mental, physical, and systemic illness, inadequate education, and gender inequality. The goals also cover health, namely access to clean water and clean energy, sanitation, and economic development. It aims to eradicate poverty, end hunger, ensure access to clean water, innovation promote industry and infrastructure, make cities and promote responsible consumption, settlements safer, and pursue environmental actions. Further, sustainable development aims at conserving life underwater and on land, affiliating peace and justice and implementing aims in partnerships. In unison, the seventeen goals offer nations a yardstick of how they should transform the world into a better place for everyone to live in.

- **The Sustainability of a Healthcare**

There is a lot of pressure on all economic actors, but healthcare organisations in particular, to find solutions to the problems caused by global warming, population ageing, environmental degradation, discrimination, and inequality. In addition, the 2030 Agenda

for Sustainable Development was accepted by all UN Member States in 2015. Beaulieu & Bentahar (2021), and now we have to follow it. When it comes to issues like reasonable and gender equality, clean water, clean energy, sanitation, and general health and well-being, 17 SDGs are crucial, and healthcare organisations' actions directly affect this process.

Moreover, the COVID-19 pandemic has shown how crucial efficient healthcare system is for the general public's social and economic security in times of unexpected disasters (Cafagna et al., 2018; Cavicchi et al., 2022). As a result, the healthcare sector has been under continual double pressure from both the macroeconomic uncertainty and the persistent desire of individuals to enhance their health, with the latter group placing increasing demands on the former (Chauhan, 2020). Consequently, studies investigating the healthcare sector's capacity to achieve the SDGs through the preservation of sustainability practices have increased.

At present, three aspects contribute to an organization's sustainability: economic, social, and environmental (Saha & Chellaiyan, 2020). Environmental sustainability is thus often considered as necessitating the following actions: recycling and reusing resources; minimising waste and damaging emissions; raising public knowledge about environmental issues; and utilising ecologically friendly (green) technology. Activities that aim to build social capital and networks within the community, as well as those that provide and defend human rights, combat prejudice and unfair treatment of individuals, and ensure that all people have equal access to public goods and services are what determine social sustainability. An organisation should aim for economic sustainability if it wants to fight poverty and other economic concerns in community, implement new eco-friendly technology, reduce energy use and waste, and maintain a high level of economic development and living standards (Mostepaniuk et al., 2023).

Internationally recognised as a set of "Sustainable Development Goals" (SDGs). It also marks beginning of the last decade of action, during which our combined efforts and collaborations will decide how far we get in making the 2030 Agenda a reality on a national and international scale (Guiraudon, 2015) Development policies, government priorities, corporate and citizen obligations, and development progress measurement criteria have all been rethought within the SDG framework. Preservation of natural resources, accountability to society, and progress in the economic sphere are the three cornerstones of sustainability. The present trends in social and economic development are straining natural resources and could endanger human civilisations' capacity to thrive (Fiksel et al., 2012). The role of the healthcare industry environmental degradation and damage has become more apparent in recent years (Hensher & McGain, 2020). The global carbon footprint of healthcare is estimated to be 4.4% of all GHG emissions in 2019, with health expenditure making up around 10% of global economic output (Hensher & McGain, 2020). There is a close association between healthcare and sustainability since environmental quality impacts public health. When it comes to the sustainability dilemma, the global business community has seen the monetary and practical effects (Burke Valeras, 2009). The "Triple Bottom Line" (TBL) approach, which takes into account social, economic, and environmental goals as a means to achieve predetermined corporate objectives, has therefore gained traction among Indian corporations (Elkington, 1994) In terms of both employment and revenue, healthcare is one of the biggest sectors in India. It is also a crucial driver of economic growth. According to projections, the healthcare business in India was worth US$ 193.83 billion in 2020 and US$ 372 billion in 2022 (Munton & Collins, 2002).

An integrated systems approach to healthcare sustainability must include sustainability metrics and indicators. When implemented correctly, sustainability metrics can aid managers and policymakers in strategy development, improvement goal setting,

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progress tracking, and system benchmarking. More and more people are wondering how healthcare systems can gauge their sustainability efforts. According to the maxim "what gets measured gets managed," the SDG India Index and Dashboard was used to gauge India's progress towards SDG-3, which states, "Ensure healthy lives and promote well-being for all at all ages." 61 out of 100 was the nation's overall index score. (Bhombe Shridhar G, 2015). Consequently, the healthcare system needs to be re-engineered with structural and systemic modifications, taking into consideration the current state of affairs, utilizing new and sustainable models of healthcare delivery and economic operations (Marimuthu & Paulose, 2016). This indicates that healthcare sustainability methods need to be further advanced. Efficient resource management, cost-effectiveness, and continual development of healthcare services are all aided by leading healthcare practices that incorporate components of sustainability, in addition to environmental conservation (Mehra & Sharma, 2021).

The Need for Sustainable Growth Models in Healthcare

The importance of seeking to develop sustainable models for growth in healthcare could not be more profound because as populations across the globe continue to grow the demand for healthcare rises as well while at the same time, the three aspects of health care that is quality, accessibility and affordability cannot be compromised (Laprise, 2023). Sustainability here is anchored on; the ability to achieve reliable, permanent, and cost-effective growth, which comprises the development of sturdy, and fitting systems and procedures that would effectively meet the current and future healthcare needs as well as respond to any shifting economic situation (Mortimer et al., 2018). This entails proper spending on proper health care to save money in future, efficiency in resource use as well as embracing environmental management for healthcare facilities (Baicker et al., 2012). Also, sustaining models engage the employment of technology in delivering healthcare

services and bridging existing geographical gaps. Given the increasing costs of care, scarcity of workforce, and pressures arising from population ageing and the increasing burden of chronic illnesses, there is a need to develop a strategy that can sustainably create a healthcare system capable of delivering quality care without undermining future resource endowment (Tang et al., 2022). These models have an emphasis on achieving long-term sustainable and equitable healthcare solutions about the immediacies of delivery of services against longer-term environmental, economic, and social considerations (Zurynski et al., 2022).

The quality of healthcare should be a big priority for regional, national, and international establishments since, as every individual experience being a patient at some point in their lives, it is an important issue for everyone. The goal of the national health policy should be to create a system that is equitable, results-oriented, and focused on boosting value and quality. Global healthcare providers and governments should strive for consistency (Mayberry et al., 2008). Sustainable development is considered as being dependent on the healthcare system and efforts to strengthen it. Gilson (2014), an advancement that strives to satisfy necessities of current generation while also ensuring that "future generations can meet their own needs " (WCED, 1987). Nonetheless, healthcare should be financially stable forever, and it should be a top priority for all regional, national, and international players. In a nutshell, sustainable healthcare is a system that can support all people in the long run without compromising any part of the healthcare system in terms of cost, social effect, or environmental influence. Providing a more lucid explanation was Prada et al. (2014) who provided the following definition of sustainable healthcare: "the appropriate balance between the cultural, social, and economic environments designed to meet the healthcare needs of individuals" to achieve "optimal

health care outcomes without compromising the outcomes and ability of future generations to meet their own health care needs."

Healthcare systems today face numerous challenges, including an ageing population, rising demand, and limited resources. This situation is far from sustainable. Safe and equitable access for all people, active and lawful administration, enhanced delivery of care, and a fair distribution of resources between primary and secondary care, prevention and treatment, are all necessary steps towards a healthcare system that can last (Kruk et al., 2018). Making sure both patients and healthcare workers are safe is the first and last step towards sustainably providing healthcare. With the population's security and happiness as its top priorities, this article develops a new model based on these aspects.

A quick look at the social and economic healthcare systems of 28 member states of EU during the past 20 years reveals a highly varied picture (Mackenbach, 2013). The disparities across 28 member states of EU are mostly due to three factors: healthcare spending priorities, social policies, and political situation (Mckee, Martin, Maclehose, Laura and Nolte, 2004) had predicted, before 2004 EU expansion, that new members from central and eastern Europe would have healthcare system issues, primarily because they would spend less on healthcare than the member nations that were already there. Medical care out-of-pocket costs and health expenditure as a share of GDP in the EU28 have both intensified throughout the years, indicating that national authorities have invested more money in healthcare, but that medical care is no longer affordable or accessible (Vardell, 2020). Due to an increase in proportion of population 65 and older (65+) and an expected continuation of this trend, age-related issues have emerged as critical difficulties, necessitating both more demand and specialised care. Damage to the environment has consequences for people's well-being (Carnero, 2015), leading to significant public health concerns associated with a surge in long-term health conditions like respiratory,

cardiovascular, and neurological disorders. Given their effects on well-being, it's clear that healthcare systems in the EU28 are facing some pressing issues, the most pressing of which are related to financial strains, ageing population, and management of chronic diseases. While health spending increased at a faster rate than GDP over the past two decades, the system as a whole has been beneficial (OECD, 2011). The future of healthcare is uncertain, but the difficulty is in developing sustainable, cost-effective systems that can meet the needs of patients while remaining within budget. The need to maintain rising demand and reduce healthcare service costs are the two primary competing demands pulling on healthcare systems around the world (Sepetis, 2020).

Over the years, a wide variety of indicators and composite indices have found widespread use. Some examples include "composite leading indicators" (CLI) for the economy (Camacho & Palmieri, 2021); the human development index (HDI) for society, the environmental sustainability index (ESI) for the environment (Morse, 2019); and innovation index (Commission, 2019). To facilitate resource allocation, worldwide reporting, and national advancement, academic institutions and international/national organisations have created a number of health system indicators and composite indices. (Kaiser et al., 2017). A composite index is a single numerical representation of a broad notion (like health status) that is based on a combination of multiple factors that are mathematically related. You can use this index to find variations in two dimensions: time (over a decade, for example) and space (across countries or regions). When doing a multidimensional analysis, a composite index is helpful since it simplifies interpretation by summarising the issues under consideration. Simultaneously, policymakers may utilise composite index interpretation to their advantage when crafting improved policies, since this information helps to reveal areas in need of intervention and enhancement. Nevertheless, there are valid concerns regarding the utilisation of composite indices,

particularly in cases when they are not adequately built (A. Sharma et al., 2019). Consequently, a transparent process is required to construct a composite index employing components that are concrete, quantifiable, realistic, easily available, and grounded on reliable statistical evidence (Grzebyk & Stec, 2015).

Without a unified EU methodology to track healthcare measures European Commission (2014), this research suggests a different way to spread excellent practices within the EU28 area. Healthcare that is sustainable and works to promote the health of all people fairly requires a new approach. The contemporary challenges faced by the EU28 in terms of population ageing, economic burdens, and chronic illness control necessitate new goals in the development of sustainable healthcare. The purpose of this multi-dimensional analysis-based paper is to find an ISH (i.e., aggregate index of sustainable health).

1.2   Research Problem

The COVID-19 outbreak has brought to light how brittle healthcare systems are everywhere, and India was not an exception. Many difficulties confronted by medium and large-sized healthcare organizations in India have a big effect on their sustainability and operations.

These institutions represent the foundation of nation's healthcare delivery system, and they face the extensive patient load as one of the main obstacles. An enormous number of COVID-19 patients arrived suddenly and massively, taxing healthcare systems. Patients flooded hospitals and clinics, resulting in bed, medical supply, and staffing shortages (Patel et al., 2021). This surge exposed current holes in responsiveness and readiness as well as the ability of the healthcare system. several serious problems that needed quick and creative solutions.

The supply networks' disturbance made matters worse. Personal protection equipment (PPE), ventilators and prescription drugs were among the necessities that

became hard to come by. Healthcare workers' capacity to offer prompt and sufficient care was impeded by this shortage (T. K. George et al., 2023). A big obstacle was the financial fallout from COVID. The financial health of these institutions was put under pressure by rising operating expenses from the purchase of PPE and other supplies as well as a drop in income from elective operations and routine consultations (Grüllingová & Horvatova, 2015).

Opportunities and problems were created by the quick move to digital health solutions. Though telemedicine and "electronic health records" (EHRs) reduced infection risks and allowed continuity of treatment, their rapid adoption necessitated a significant financial outlay and adjustment (Dash et al., 2021). In a short amount of time, the healthcare industry had to integrate new technology, train staff, and guarantee patient data privacy and security.

Given these difficulties, it is imperative to methodically examine the approaches used by medium and big healthcare institutions in India both during and after the COVID. Assessing how well and long-lasting these tactics work will give important information for the next crisis management and healthcare planning. Building a robust healthcare system able to endure future pandemics and other major upheavals requires an understanding of what worked, what didn't, and why.

Furthermore, even if certain tactics have demonstrated quick results, it is yet unknown how they will affect things in the long run. Addressed are concerns regarding the integration of new supply chain models, the financial feasibility of increased service offerings, and the scalability and sustainability of digital health systems (Gambaro et al., 2023). By offering a thorough examination of growth and sustainability strategies used by medium-sized and big healthcare institutions in India both during and after COVID, this research seeks to close these gaps.

1.3   Purpose of Research

The aim and objective of this study are to assess how and to what extent COVID-19 disrupted the functioning, productivity, and planning of large and mid-size healthcare facilities in India. In confidence the study seeks to assess the response to development and sustainability projects that were carried out after the pandemic in regard to issues like distributing resources, services to patients, workforce and management, and overall financial fitness. In addition, the study aims to establish areas that need more attention and should be targeted in future to support the sustainability and resiliency of the health care institutions. In this way, the study aims to contribute to helping policymakers, healthcare managers, and stakeholders have what they need to construct better, stronger, and more sustainable health systems for the future that could weather future shocks and storms while still offering quality, equal, and accessible care to societies.

1.4   Significance of the Study

The relevance of this study involves its ability to solve some of the high-impact problems affecting large and medium healthcare organizations in India during and after the COVID-19 outbreak. This study offers a timely research focus with practical value for assessing the outcomes and impacts of the development and sustainability projects implemented in response to the crisis and their conclusions address the effectiveness of intervention and the after-effects of the crisis on the institution of healthcare and its resources. To this effect, it puts more emphasis on the call for the formulation of sound patterns that when implemented would assist healthcare facilities in being better placed to deal with future sentinel events while at the same time delivering quality healthcare.

Through the analysis of its results, the research also advances knowledge and understanding of healthcare resilience by highlighting deficiencies in extant models and recommendations for augmenting ability of healthcare organizations to respond adversity

and emerge effectively in turbulent settings. The conclusions of the current research provide valuable insights for policymakers, healthcare managers, and stakeholders, as well as recommendations that can be applied towards change. Therefore, the study will resonate to achieve sustainable and fairer a health care system in India and its human resources for health and the communities it serves now and in the future in crises.

1.5 Research Purpose and Questions

This study aims to understand the effects of the COVID-19 pandemic on large and medium healthcare organizations in India, assess post-COVID development and sustainability factors and suggest strategies to build more sustainable healthcare organizations. The general objective of the work is to help healthcare decision-makers develop sound systems that will address emerging future trends while fostering sustainable growth that would lead to quality service delivery.

Research Questions

- **Q.1.** What were the primary concerns with COVID, facing medium-sized and large healthcare institutions?
- **Q.2.** What sustainable and growing strategies were employed to address these issues?
- **Q.3.** To what degree did these strategies sustain operations and expansion?
- **Q.4.** In what ways will these strategies affect Indian healthcare in the long run?

CHAPTER II:

REVIEW OF LITERATURE

2.1   Introduction

The influence of the COVID 19, on the economy has been significant particularly in the healthcare sector. In India, medium and large healthcare organisations have faced a range of challenges and opportunities throughout. Post COVID, the crisis underscored the importance of adaptable healthcare systems as these organisations swiftly adjusted to growing numbers, logistical hurdles and the swift integration of digital health technologies. To address these difficulties, medium and large healthcare organizations in India have put in place strategies for growth and sustainability. These strategies encompass digitizing healthcare services expanding healthcare offerings and establishing alliances to boost resilience and effectiveness. Such approaches are crucial to ensure that healthcare institutions can prosper amidst disruptions.

This review goals to provide an in-depth analysis of how Indian healthcare organizations have navigated through the pandemic. Through examining existing studies and identifying areas for improvement, this review seeks to shed light on the factors that have enabled these organizations to remain resilient and grow their operations during circumstances.

The framework of this literature review comprises; an outline of the healthcare industry, in India emphasizing data points participants and the regulatory landscape; the effects of the COVID 19 crisis on healthcare sector focusing on operational hurdles, financial repercussions and changes in patient behaviour; an analysis of expansion strategies like digital innovation, service variety and strategic collaborations; a delve into sustainability models encompassing financial, environmental and social sustainability; real

life examples showcasing effective strategies and initiatives; and a conversation about discoveries, identification of inadequacies and implications for future investigations.

Through scrutinizing these domains this review aims to offer perspectives on the development and durability of medium and large healthcare entities in India during and post pandemic times. This endeavour serves as a groundwork for studies and real-world applications.

2.2 Integrating Business Models into Healthcare Management: A Comprehensive Theoretical Foundation

Understanding and improving healthcare management practices require a robust theoretical framework. By integrating relevant business models into this framework, the analysis and improvement of healthcare delivery is structured. Several relevant theories and models are discussed in this context which help in a better understanding of healthcare management:

1. **Value-Based Health Care (VBHC)**

Value Based Health Care is a framework to reengineer the health care systems to place value for patients first, or health outcomes per unit of cost used. Michael Porter and Elizabeth Teisberg introduced VBHC in 2006, through which provider organizations are restructured, the focus is on systematic measurement of outcomes and costs, and a shift toward bundled payments is made (Porter & Teisberg, 2006). The basic idea is that better health outcomes at lower costs increase value of care overall. The adoption of VBHC necessitates a change from a volume to a value based care, which emphasises patient centred outcomes and cost effectiveness (van Staalduinen et al., 2022).

2. **Lean Business Models in Healthcare**

The manufacturing-derived lean business model now serves healthcare institutions to achieve waste reduction and cost management and better patient outcomes. A systematic

review revealed that healthcare organizations use different lean practices which include process improvement cost models together with lean thinking models and models of care. These operational methods help healthcare institutions reach better patient results while improving their organizational performance. Healthcare organizations need to change their organizational culture to adopt continuous improvement and value creation before implementing lean methodologies (Ramori et al., 2021a).

3. Technology–Organization–Environment (TOE) Framework

The TOE framework uses three perspectives called technological, organizational and environmental to evaluate how organizations adopt new technologies. Healthcare organizations use this framework to understand how they implement technological innovations which depends on their technological preparedness and organizational culture and external regulatory restrictions. The TOE framework helps healthcare facilities determine adoption obstacles and enablers which produces improved results for integrating healthcare innovations (Jeilani & Hussein, 2025; Ramori et al., 2021b).

4. Service-Dominant Logic (S-D Logic)

Under Service-Dominant Logic people understand service operations as the essential economic transaction foundation instead of tangible goods. The healthcare sector uses S-D Logic to build patient-provider value co-creation through collaborative processes and customized care approaches. The perspective switch from transactional to relational service orientation creates better outcomes and higher satisfaction for patients in healthcare. Healthcare organizations need to transform their value propositions while making patients integral members of their healthcare processes through S-D Logic implementation (Ng & Vargo, 2018).

5. Donabedian Model

Under the Donabedian Model healthcare professionals examine services and measure care quality across three assessment areas known as structure process and outcomes. The context of care delivery consists of facilities along with equipment and human resources which together comprise 'structure'. During healthcare delivery 'Process' describes the transactions which take place between patients and providers. The direct results healthcare creates for patients' health conditions represent 'Outcomes'. This model serves as an essential tool for quality improvement detection while verifying healthcare delivery matches predetermined health results (Shroyer et al., 2015).

6. Business Model Canvas

Strategic management professionals use the Business Model Canvas as a strategic planning template which enables them to create new business models or describe existing ones. The visual representation consists of four elements describing how a firm delivers value through its infrastructure along with its customer and financial aspects. The Business Model Canvas serves healthcare institutions to create and examine business models which fulfill both organizational targets and patient requirements. The tool helps healthcare organizations create visual diagrams to understand all delivery components for better strategic development and new ideas (Sibalija et al., 2021).

7. Pay-for-Performance (P4P) in Healthcare

Under Pay-for-Performance healthcare organizations receive financial rewards when they fulfill assigned performance criteria. The payment model grants financial rewards to providers who reach specified outcomes such as preventive care measures and chronic disease management to enhance quality and efficiency. The implementation of P4P presents multiple difficulties because providers may focus on incentivized activities instead of essential aspects that lack payment incentives. Organizations must carefully select P4P

performance metrics which support healthcare objectives during system implementation (Kovacs et al., 2020).

8. Business Model Framework Applications in Healthcare

A systematic review of business model frameworks applied in healthcare identified six applications: business model description, financial assessment, classification based on pre-defined typologies, business model analysis, development, and evaluation. The review suggests that the choice of business model framework and its elements should be informed by the intent and context of application. Harmonizing the choice of elements can increase generalizability, simplify application, and help organizations achieve the Triple Aim of improving patient experience, improving population health, and reducing costs (Fredriksson et al., 2017).

Integrating these theories and models into the theoretical framework of healthcare management provides a comprehensive approach to analysing and improving healthcare delivery. Each model offers unique insights into different aspects of healthcare, from value creation and quality assessment to technology adoption and business model innovation. A deeper understanding and application of these models can lead to more effective strategies, better patient outcomes, and sustainable healthcare systems.

2.3 Impact of COVID-19 on Medium and Large-Sized Healthcare Institutions in India

Goodarzian *et al.* (2024) Global public policymakers are now focussing on pandemic modelling in response to the COVID-19. However, there is still a big obstacle when it comes to COVID-19 medical waste detoxification centre forecasting and modelling. A Fuzzy Inference System for COVID-19 Medical Waste Forecasting is Depicted in This Work. Based on the signs of the condition, persons are then classified into five groups: suspicious, robust, and moderate COVID-19, as well as severe COVID-19.

For the first time, waste management is taken into account when determining where and how to distribute rubbish in a new fuzzy sustainable model for the COVID-19 medical waste supply chain network. This study aims to build detoxification centres and regulate social responsibility centres during COVID-19 epidemic, minimize environmental effects of medical waste, and minimize costs in the supply chain. Important parameters undergo sensitivity analysis to demonstrate performance of the proposed model. To ensure the given model is accurate, a case study in Iran or Tehran is recommended. The study considers sustainability in the COVID-19 medical waste supply chain network, provides a framework for identifying individuals, and evaluates novel AI methods based on TS and GOA algorithms. The findings suggest that decision-makers should use a FIS for COVID-19 waste forecasting and engage a COVID-19 medical waste purification centre in order to reduce the prevalence of this pandemic.

Marathe, Shukla and Yakkundi (2023) COVID-19 pandemic's increased demand for healthcare services, some nations enlisted the help of private healthcare professionals to supplement state systems. Several Indian state governments regulated COVID-19 treatment prices in response to private hospitals' price increases. A mixed-methods study was carried out to investigate effects of hospital rate regulation in Maharashtra, the first Indian state to do so. One hundred people who had been hospitalized due to COVID or their family and twelve people involved in the health system were questioned using a purposive sample technique. Data reveals that 82.5% of hospitalization episodes resulted in overcharges to patients when compared to official packages. Many private hospitals employed various strategies to avoid rate rules, such as charging twice for products that were already included in official packages. Inadequate regulatory capability on the part of the state and the historical trend of healthcare commercialization in India both contributed to the lack of efficacy of regulations enacted during the COVID period. India should create

extensive yet practical frameworks for regulating private healthcare, including rate standardization, as should other LMICs with substantial private healthcare sectors. This would improve regulatory efforts and enable cheap and equitable treatment for all.

Ahmad and Azeez (2023) research delves into COVID-19 pandemic and its influence on India's healthcare system, specifically looking at how digital healthcare has been implemented. This research delves into the novel approaches used by private and public organisations in the field of virtual health and examines the positive effects of these shifts throughout time. The research looks into how India's digital healthcare system came to be by utilising secondary sources. For this research, they combed through some studies, surveys, and government documents about digital health solution implementation. The research looks at smart gadgets, telemedicine sites, and platforms like Arogya Setu that have been essential in the shift to digital healthcare. Also examined are government initiatives and their results, such as "National Digital Health Mission" (NDHM) and creation of e-hospitals. Digital health records, data mining, and the requisite infrastructure are all highlighted in the report as crucial to the success of digital healthcare.

Salman (2023) The COVID-19 pandemic has altered the global healthcare scene in a way never seen before, exposing weaknesses, spurring innovation, and requiring flexible approaches. The crisis has an influence on infrastructure, policy, and healthcare delivery in addition to urgent health issues. Healthcare systems were under tremendous strain, which led to changes in resource distribution and makeshift medical units. The pandemic caused non-urgent medical treatments to be postponed, and telehealth integration increased, changing the way patients and doctors interact. Enhanced resilience measures are necessary, as highlighted by fragile supply networks. Healthcare professionals shown incredible resilience, and mental health issues underscored the value of holistic care. Scientific progress was hastened by group efforts, which resulted in the rapid discovery of

vaccines. The exacerbation of pre-existing health disparities highlighted the necessity of providing healthcare equitably. Global collaboration and policy improvements were crucial. A paradigm change occurred, with a focus on digital innovation in the medical field. The pandemic's effects highlight the value of flexibility, teamwork, and guaranteeing equitable access to care.

  Sood, Srivastava and Mohanty (2023) The second wave of COVID-19 cases came as a shock to India, revealing country's inadequate infrastructure and people resources to handle critical care needs. They must immediately begin working to construct health systems that are both receptive and robust to deal with the present COVID-19 epidemic and future ones like it. During the second wave of COVID-19, healthcare system faced numerous challenges. Tertiary facilities were already overburdened with patients, and there was a dire shortage of beds, ventilators, medications, and other necessities for tertiary care. Additionally, secondary-level facilities lacked the necessary infrastructure to adequately care for patients. Not having enough money or manpower to build up "intensive care units" (ICUs), having secondary-level hospitals' ICU equipment sit unused, and not having enough operational planning, coordination, or support were further problems. Twenty states in India are receiving technical help from Jhpiego as part of "Reaching Impact, Saturation, and Epidemic Control" (RISE) Program, which is funded by USAID. This assistance is in response to size and urgency of second wave of COVID-19. As part of the nation's reaction to the surge, it is coordinating the identification of implementation regions and methods. The goal of this project is to make sure that the health system is ready for the current and upcoming COVID-19 waves by enhancing critical care services, molecular testing laboratory, medical oxygen management, capacity to respond to future waves, and the ability to effectively plan and manage critical logistics. In partnership with the Indian state and federal governments, this is being carried out with the support of faith-based

organizations, non-governmental organizations, and organizations from the public and private sectors.

Geng *et al.* (2022) An economic catastrophe and health disaster ensued as a result of COVID-19 pandemic, endangering energy efficiency consumption, sustainable food diversity, and nutrition security of households. Research shows that people's focus on environmental dangers could take their eyes off the renewable energy and food security issues that have a real influence on people's actions in this area. Because it mainly reduced income and damaged food systems globally, the COVID-19 pandemic has persistently affected environmental behaviours. Nutritional security, sustainable energy consumption, sustainable food diversity, and household income were all examined in this study as potential COVID-19 implications. Due to non-pharmaceutical constraints, the study obtained data from 728 homes via a self-structured online survey. To derive conclusions from the data, the researchers used t-tests and logistic regression. According to descriptive statistics, over 67% of households have seen a decline in income as a result of COVID-19. To protect their income, households have adjusted their food intake, energy usage, and dietary patterns due to the pandemic. To fulfil their nutritional demands, families consumed low-diversified food more than twice as much as they had before the pandemic, and their energy consumption and food diversity both fell sharply during the epidemic, according to the t-test analysis. According to the findings, nutrient intake was much lower during the COVID-19. Cereals provided more than two-thirds of the total energy and half of nutrients consumed during COVID-19, making them principal provider of daily dietary requirements. Vegetables and fruits used 40% and 30% less energy, respectively, in the home. The results presented that a negative association between dietary diversity and energy efficiency and an increase in monthly income was seen. The likelihood of a decrease in consuming dietary diversity was 0.15 times higher for wage workers compared to

farmers and 0.28 times higher for those with salaried jobs. The likelihood of experiencing decreased food variety consumption was 1.95 times higher in medium homes and 2.64 times higher in big households compared to small households. To mitigate influence of COVID-19 on the calorie intake, dietary variety, and nutritional security of low-income individuals, a nutrition-sensitive program should be launched. The accuracy of the food commodity consumption numbers recorded in this survey is dependent on the recollection abilities of the families surveyed. It will be possible to confirm the interesting findings of this work by doing longitudinal studies using probability sampling with bigger samples.

Ramos-Usuga *et al.* (2022) A group of symptoms known as Long COVID can appear in certain COVID-19-infected individuals and last for some months following infection. Neurobehavioral symptoms and their risk factors have received little attention from researchers, even though they significantly impact people's ability to go about their everyday lives and the quality of life they enjoy. The Neurobehavioral Symptom Inventory was used to collect information on symptoms before, during, and after a COVID-19 diagnosis from 1001 persons from 34 countries who had previously tested positive for virus. Participants reported significant increases in all domains before and during COVID-19. Subjects' physical symptoms improved to a medium degree (during COVID-19 compared to today), their emotional symptoms improved to a tiny degree, and their cognitive symptoms improved to a very small degree, if at all. A higher prevalence of neurobehavioral symptoms was associated with the following factors: gender (female or transgender), unemployment, age (younger), level of education (low), presence of another chronic health condition, lack of oxygen therapy, length of time since diagnosis, severity of COVID-19, and hospitalization. Additionally, those in Europe, Central Asia, and North America reported higher symptoms in all categories than people in Latin America and Sub-Saharan Africa. The findings stress the need to assess and treat neurobehavioral problems

following COVID-19, with a focus on the identified high-risk populations. During the acute and long-term stages of COVID, it is essential to employ general rehabilitation procedures in addition to cognitive therapy based on evidence.

Nath *et al.* (2022) COVID-19 pandemic, regular healthcare services were interrupted in terms of accessibility, availability, and use. This research set out to determine how the COVID-19 pandemic limitations affected provision of healthcare services in India for "non-communicable diseases" (NCDs). Hospitals that are already part of the ICMR-NCDIR (Bangalore) illness registry network were a part of the study. Research site investigators were medical doctors practicing in a wide range of specialities, including oncology, neurology, cardiology, endocrinology, general surgery, and general medicine. From March 2020 through May 2020, a standardised questionnaire was developed to gather information about noncommunicable disease healthcare services provided by the various hospitals. One hundred sixty-seven (or 70%) of the 153 hospitals contacted about the study consented to take part. Only 16 of these institutions were considered once they completely adapted to COVID-19 treatment. So, in the end, they used data from 90 different hospitals. Nearly half of the hospitals (44%) had a complete shutdown of their NCD healthcare services at that time. In April 2020, over 75% of hospitals saw a decrease in outpatient visitation. For over 40% of the institutions, the reduction in admissions for scheduled cancer procedures was greater than 75%. The complete disruption recorded by over one-third of hospitals in April and May 2020 suggests that population-based screening for hypertension, diabetes, and cancer, as well as preventative measures, were negatively impacted. Doctors were said to be readily available at 60% of the facilities. If noncommunicable disease services were to remain uninterrupted, more than ninety-one percent of the institutions would have been ready. There were significant impacts on noncommunicable disease outpatient treatments, elective operations, and population-based

screening, even though there were sufficient people and material resources, according to the research. The majority of healthcare facilities were ready to deal with the pandemic-induced disruption and continue providing care for non-communicable diseases.

Nimavat *et al.* (2022) The COVID-19 pandemic of 2019 has profoundly changed their goals and worries, especially in the healthcare sector. One country that felt the full force of the COVID-19 pandemic's devastating effects was India. A better grasp of the difficulties encountered by healthcare providers during a pandemic is essential. The following databases were utilised to search for relevant literature for this review: PubMed, EMBASE, Web of Science, Scopus, and Google Scholar. As an additional search tool, they employed RCA to enhance the outcomes. Two crucial topics were the subject of the published scholarly articles:(1) the COVID-19 pandemic's effects on Indian healthcare system and (2) the country's healthcare system itself. There have been problems with India's healthcare system before the outbreak. Healthcare services in India have been increasingly burdened by the epidemic. A growing epidemic of both communicable and noncommunicable illnesses has been a major strain on healthcare systems. There was a shift in emphasis from chronic diseases and immunizations to pandemic preparedness and response programs. The disruption of vaccination services due to the pandemic may have more severe short-term and long-term effects. When it came to responding to the COVID-19 epidemic, the Indian healthcare sector was severely underfunded. The National Tuberculosis Elimination Program, maternity and child health services, noncommunicable disease programs, and basic healthcare services must all be restored to stop the pandemic's long-term effects.

Shetty (2022)The healthcare business has been severely impacted by the COVID-19 crisis. Although it was tasked with caring for COVID-19 patients, it also encountered several challenges, just like any other industry. Throughout it all, the sector has been under

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continual pressure to develop novel approaches to patient care. Consumer preferences and habits around healthcare service utilization have seen dramatic changes in recent years. Recognizing these changes in behaviour and adjusting their strategies appropriately will benefit players in this market. Healthcare has surpassed all others in terms of both income and employment in India. The industry is seeing phenomenal growth as a result of enhanced efficiency, broader coverage, and higher investment from both public and private sectors. It is anticipated that future increases in income, increased health consciousness, and shifting perspectives on preventative healthcare will increase demand for healthcare services. Patients from all around the globe are taking advantage of healthcare tourism, which has increased due to the decreased cost of medical procedures.

Kumar and Anupama (2022) A healthcare facility's "inpatient department" (IPD) is a specialised unit that admits patients from "outpatient department" (OPD), "emergency department" (ED), or a patient who has been referred (usually from a lower facility) for planned surgery, a unique medical issue, or other condition that requires appropriate care and attention. The first clinical suspicion of a SARS-CoV-2 infection in India was on January 27, 2020, while the patient was in Kerala. The patient had a recent travel history to Wuhan, China, and on January 30, 2020, the National Institute of Virology in Pune, Maharashtra, confirmed the patient's diagnosis as a SARS-CoV-2 infection. For COVID-19 IPD patients, various states in India have set aside specific numbers of beds in existing hospitals; for instance, the government of Delhi set aside half of the beds in the intensive care unit and the wards because, according to the Indian constitution, health is a matter of the state. A combination of the aforementioned variables, such as fear, and the hospital's new strategy for caring for COVID-19 patients may have reduced the number of patients admitted to "intensive care unit" (ICU) who did not have the virus itself, as other elective procedures for IPD patients were cancelled. This is due to the focus on patients and cases

who have been admitted with COVID-19. In the current COVID-19 era, while he went about his daily business at health clinics, the study's initial author noticed an unusually high number of admissions to the hospital's IPD. To be aware of the actual situation every epidemiological investigation needs to have a sufficient sample size. The purpose of this deductive investigation was to find out whether the COVID-19 period had any effect on the amount of hospital admissions for IPD, and if so, how. The aforementioned question prompted the commencement and development of this investigation. This 41-month, quantitative cross-sectional study aims to ascertain the cumulative effect of COVID-19 on the number of inpatient stays in public, private, rural, and urban health facilities across all 36 states and union territories that are included in the Indian government's "Health Management Information System" (HMIS). The average number of intensive care unit admissions over the 17 months of the COVID-19 pandemic (2020–2021) was 538,7311, down from 74,35770 in the two years preceding the epidemic (2018–2019). There was a 27.55% drop in overall number of IPD hospital admissions during COVID-19 pandemic phase, which translates to 204,8459 fewer admissions overall. Concerningly, during COVID-19 pandemic period, our study found that inpatient hospital admissions for a variety of medical problems other than COVID-19 decreased significantly. our findings should be of interest to policy and decision-makers. Dead bodies were seen floating in India's sacred waterways during current COVID-19 pandemic, especially in UP and Bihar. Now, it's conceivable that these corpses are those of people who died without receiving treatment for significant illnesses other than COVID-19 because they were unable to gain admittance to the IPD.

Sehanovic, Hadziahmetovic and Kurtcehajic (2022) The global spread of COVID-19 pandemic in 2019 has been a tremendous obstacle for healthcare providers in B&H and throughout globe. Overnight, new tactics had to be developed by the healthcare business if

it was to survive. This study goals to evaluate the influence of transformational and transactional leadership styles on workers' intention to remain in Bosnian healthcare organizations during COVID-19 to mitigate importance of emotional commitment. There are significant ramifications for lowering employee turnover and raising organizational commitment as a result of this study's findings, as committed personnel are more driven and provide better results. The study's results were examined using SPSS (v20) software, and 178 samples chosen from B&H's private healthcare facilities underwent mediation testing. Based on the results, effective commitment acts as a mediator between the desire to depart and transactional and transformational leadership styles.

Singh *et al.* (2022) HCWs are at serious risk as the first line of defense against novel coronavirus illness 2019 (COVID-19). To trace the transmission of a COVID-19 infection among patients and other healthcare workers, it is necessary to identify the contacts of a newly detected positive HCW. The two objectives of this study were to: (1) ascertain the prevalence of SARS-CoV-2 infection amongst healthcare workers in tertiary care facilities, and (2) identify risk factors for HCWs to contract the virus. This cross-sectional study involved all healthcare personnel who interacted with a COVID-19 patient in a tertiary-level medical facility in Uttarakhand, Rishikesh, between May 1, 2020, and July 30, 2020. A total of fourteen days following their most recent contact with a patient who tested positive for COVID-19, all exposed healthcare workers were studied again. Data from epidemiology surveys were gathered through framework interviews. Analyses were conducted utilizing SPSS 23.0. They calculated risk ratios for the risk factors influencing the spread of disease, as well as proportions and frequencies for the descriptive variables. Throughout the research, they found that 1,141 healthcare workers from the tertiary care hospital came into contact with COVID-19 recipients. The number of healthcare workers that tested positive for COVID-19 among the exposed professionals was 22. According to

the findings of the univariate analysis, a higher likelihood of secondary SARS cases is strongly correlated with a higher risk of experience. The study shows the risk of asymptomatic carriers spreading COVID-19. To prevent the lack of medical professionals from getting worse, all healthcare personnel must undergo random testing regularly.

Mannan *et al.* (2022) Sixty-five to 85 percent of people seeking their first "tuberculosis "(TB) treatment go to India's dominated private healthcare system. Case notifications for tuberculosis in India were greatly affected by the COVID-19 pandemic in the first half of 2020. This study analyzed how the first wave of COVID-19 in India affected private providers and the changes they made to their operations during the crisis. The "Joint Effort for Elimination of Tuberculosis" (JEET) is a Global Fund–supported program that works in 406 districts across 23 states to offer private sector patients top-notch tuberculosis services. In the first quarter (February–March) of 2021, a rapid survey was conducted involving 11% (2,750) of active providers participating in 15 Indian states under JEET's stringent "Patient Provider Support Agency" (PPSA) methodology. A web-based survey tool was used to interview consenting participants, while providers were contacted by phone or in person. Through the 2020 lockdowns (March–April 2020), before COVID-19, and as of right now (Q1 2021), participants were asked about their practices. After adjusting for survey design and non-response, descriptive statistics and logistic regression were used to summaries the findings. Resulting in 2,011 of the 2,750 sampled providers giving their consent and being surveyed (73 percent response rate). Fifty-one percent were from Gujarat, Maharashtra, and Uttar Pradesh, and almost half were between the ages of thirty and forty-five. In Q1 2021, 70% of clinicians reported fewer outpatients per day than they did before COVID-19. According to 898 (40%) of providers, their facilities were shuttered throughout the lockdown, even though 323 (11%) of them provided minimal services including teleconsultation. 88% of provider facilities were fully

operational in the first quarter of 2021, 10% provided modified services, and 4% made use of teleconsultation. Only 2 percent were completely closed. The majority of providers (92%) said there were no delays in TB testing when comparing Q1 2021 to pre-COVID periods. Despite 60–90% of clinics implementing various infection control measures, merely 6% reported heightened expenditures, primarily for PPE and supplementary infection control methods. Among tuberculosis physicians, 33% were requesting COVID-19 testing alongside tuberculosis testing. Depending on the state and kind of provider, 82% of survey providers adjusted their social distance and appointment scheduling, 83% began taking temperature readings, and 89% added more hygienic measures to their facilities. In addition, 62% of clinicians began using PPE, and 13% modified their clinic physically to avoid infection (i.e., by isolating patient areas or installing air filters). According to 70% of clinicians, TB transmission might be reduced by infection control methods. Conclusion: Most providers were open and TB care expenses were relatively stable in Q1 2021, even though COVID-19 limitations caused a considerable drop in patient attendance at private hospitals. Private-sector TB care providers have adopted some beneficial techniques in response to COVID-19 outbreak. The influence of pandemic on private health sector requires further research because the succeeding waves of COVID-19 were more severe or pervasive.

Puranachaikere *et al.* (2021) worldwide health emergency that has affected people's daily lives because of the measures put in place to stop the outbreak. According to recent research, mental health of medical students—a demographic that is subjected to high levels of stress—deteriorated during the epidemic. The current multicenter study evaluated the stress levels and support needs of Thai medical students during COVID-19 pandemic. For the current study, a cross-sectional questionnaire was used to collect data from medical students in their second through sixth years. Throughout Thailand's six regions, data was

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gathered from several medical schools during the epidemic. Surveys asked about demographics, "Thai version of Perceived Stress Scale-10" (T-PSS-10) to gauge stress levels and causes, help received from medical schools, how satisfied students were with such services, and what more was needed. The surveys received responses from 1,395 medical students. It was 17.8 on the T-PSS-10. Changes in the teaching and assessment systems were the main cause of stress. Compared to students at medium- and small-sized medical schools, those who attended larger institutions reported being much happier with the help they got and tended to receive more support overall. Students ranked the provision of stress-relieving activities as the most desired extra help. Stress levels among medical students increased during the epidemic as opposed to before. Medical students must have access to mental health services, stress-relieving activities, and other strategies.

Devgun *et al.* (2021)From the moment when humanity proclaimed itself the ruler of the cosmos until the present, when COVID-19 pandemic has shown human race's susceptibility to extinction, it faces an existential threat. Unusually, health systems and social, physical, emotional, mental, and financial well-being have been disrupted. Examine how COVID-19 has affected provision of basic healthcare services in different medical facilities in the Punjabi area of Amritsar. This online survey, which was based on the World Health Organization's Pulse Survey on Continuity of Essential Health Services during the COVID-19 pandemic, was administered via Google Forms. Workers at Ayushman Bharat-affiliated public and private healthcare facilities made up the respondents. Employees from 55 of the 92 medical facilities responded, representing a 60% response rate. Prenatal care (Mann Whitney U statistic = 78.00, p=.004), imaging and radio diagnosing services (Mann Whitney U statistic = 48.00, p=.000), and institutional delivery services demonstrated significant differences between the public and private health care sectors (Mann Whitney U statistic = 112.00, p=.046). The public and private health sector institutions saw

comparable effects on all other vital health services. The most often cited cause for the interruption of critical health services during the lockdown was financial concerns. The degree of satisfaction indicated by public and private health care personnel differed significantly (Mann Whitney U statistic = 94.00, p =.02). The district's use of e-health technology and the hiring of enough medical staff in accordance with set requirements were two of the themes found by thematic analysis of the data on enhancing readiness to avoid interruption in key health services. Developing a robust public healthcare infrastructure is connected to these themes.

Das *et al.* (2021) Compare this COVID-19 period's surgery volume and outcomes to those from the non-COVID-19 period last year. A reflective observational study was carried out in one of the surgical units of a specialised cancer centre in a remote area of India. People who had major cancer surgery between April 1st and June 30th, 2020, during the COVID-19 pandemic, when there was a nationwide lockdown, were contrasted with those who had similar surgery during the same time frame the year before. SPSS program 20.0 was used for statistical analysis. During this time, major cancer surgery was performed on 72 individuals, with the most common sub-site being breast cancer (n=26). Compared to the 209 major cancer procedures that were done during the same period last year (2019), this was a substantial drop (p<0.05). The difficulties of travel and lodging during the lockdown period was one of numerous factors contributing to the decline in surgery numbers. The patient's home was 45.7 kilometers away from the treatment hospital on average (range: 4 to 165 km). With obligatory quarantine regulations in place, interstate travel was restricted and public transportation was in a condition of uncertainty. Associated to the pre-COVID-19 period, morbidity related to major procedures was significantly lower during the COVID-19 period (8.3% vs. 17.2% with a p-value of <0.05). It is most likely because less intricate surgical operations are being carried out. The overall mortality

percentages did not change much (2.8% vs. 3.8%). In this study, 156 PPE kits were used to treat the surgical patients in-hospital; three to four kits were used for each patient. Surgical cancer care delivery is a lifeline during a pandemic; despite substantial volume reductions for a variety of reasons, results are mostly unchanged. In this study, (Bisht et al., 2021) They aim to demonstrate how the new coronavirus illness (COVID-19) has caused disturbances to regular health care in India and exacerbated social inequality. The pandemic has affected maternal health care, TB, vaccination, and non-communicable diseases by using a few instances of non-COVID illnesses and conditions. The report contends that these disruptions are not just the consequence of the present crisis, but also of the country's healthcare delivery paradigm shifting towards privatization, which has disproportionately disadvantaged some segments of the population. The report ends by warning that there might be disastrous outcomes down the road, particularly for the underprivileged, if sufficient steps are not done today to progress the public healthcare system and change health system.

Sharma *et al.* (2021) There have been reports on the influence of the 2019 coronavirus pandemic on healthcare workers' psychological health. In June 2020, a cross-sectional survey was carried out among 93 conveniently picked participants, members of the medical staff at a tertiary care hospital in Delhi, India, who were participating in clinical activities at sites designated by COVID-19. To collect symptoms of anxiety, depression, insomnia, and distress, a self-administered Google Forms questionnaire was utilized. These comprised eight-item Generalized Anxiety Disorder Scale, the seven-item Insomnia Severity Index, the nine-item Patient Health Questionnaire, and the 22-item Influence of Event Scale-Revised. The participants' mean age was 30.2 years, and the majority (53.8%) were male. The majority (72%) were nurses, with remaining individuals being physicians. A significant percentage of the individuals experienced anxiety (20.0%), sleeplessness

(32.3%), sadness (47.4% of the sample), and distress (22.6%). Individuals with a history of chronic illness, female and solo nurses, and those residing in the institute's provided temporary housing those who worked regularly, and those who felt that there was insufficient personal protective equipment all had disproportionately greater symptoms. Lower symptom frequencies were linked to preventive hydroxychloroquine use. The survey found that mental health outcomes were common among HCWs and were associated with factors such as age, gender, marital status, access to PPE, employment status, duration of stay at the institute that providing temporary housing, and prophylactic use of hydroxychloroquine.

Shukla, Pradhan and Malik (2020) The world was hit by the new coronavirus of 2019, which spread quickly and caused a terrible health disaster. The degree to which different nations suffered economic and other losses varied depending on their pre-existing financial arrangements as well as some other variables. The healthcare industry suffered greatly as a result of this pandemic. Managing this catastrophe also required the greatest amount of resources and a prompt and efficient response. India, a financial hub with extensive global connections, was one of the nation's immediate hit, which predicted an impending collapse of the economy's markets. To mitigate the influence of COVID-19 epidemic in India, this research attempts to comprehend various facets of the financial difficulties that the Indian healthcare system faces and determine potential solutions. In terms of efficiency and equality, it examines the pandemic's immediate and potential long-term effects on India's healthcare system. The allocation of cash, resources, and labor was done quickly by the Indian government. In addition to covering expenses, it offered aid packages for underprivileged areas. Some research facilities in the nation must act promptly to prevent more harm.

2.4   Growth and Sustainability Initiatives During and After the Pandemic

Priyan *et al.* (2024) the healthcare industry is still reeling from the social and environmental pressures that have impacted patient care. Hospitals are facing a critical shortage of medical supplies, and companies are struggling to meet increased demand as a outcome of pandemic's effects on the supply chain. To keep consumers happy and reach a zero-energy economy, they must devise a strategy for long-term management of "healthcare supply chain" (HSC) inventories. This study investigates viable inventory practices during a pandemic, taking into account the fact that transportation costs are directly associated to the intensity of COVID-19. Research presupposes that medications have a predictable shelf life and that the demand rate is proportional to "return on investment" (ROI) of the related service facility investments. Incorporating the carbon emissions from transportation, manufacturing, and storage—which green investment aims to reduce—into the model. Quantity of green and service investments, order lot size, delivery time, and other sustainable inventory strategies and total cost—this situation has been modelled as an optimisation problem and a solution strategy has been developed. Exploring numerical and sensitivity data allows managers to glean crucial information about the impact of pandemics. The proposed concept has been tested and proven in the medical field. The unique aspect of this study is that it investigates how the COVID-19 pandemic and green investment have affected HSC. This research also shows that in post-COVID-19 world, green technology is going to be crucial for handling the HSC problems that the pandemic has generated.

Vysochyna *et al.* (2023) influence of COVID-19 pandemic on healthcare systems and associated infrastructure was a major source of rising healthcare costs. Not to mention the far-reaching effects on society and economy. This study goals to examine the influence of healthcare spending on sustainable economic development during and before pandemic

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and to find trends in the empirical data. To complete the research task, two different sets of data will be used: The first step is to create an economic growth index that takes into account economic, environmental, social, and public health indicators. The second step is to model how various forms of healthcare spending affect this index. Finally, panel data regression modeling—more especially, random-effects GLS regression—is used to gauge the impact of these spending types. Before the outbreak, regression studies showed that public and private healthcare spending increased economic growth over time. The influence of healthcare spending on long-term GDP growth in 2020 and 2021 was not statistically significant. Therefore, healthcare capital expenditures contributed to economic growth in more stable conditions, but economic instability was exacerbated during COVID-19 pandemic because of an overburden of healthcare expenses. Public and private healthcare spending enabled long-term economic development before the pandemic; during the pandemic, spending on healthcare out of pocket was the main factor.

Heydari and Lai (2023) Studying healthcare's structure, provision, and funding is the goal of health services research, which seeks to enhance public health. Researchers have come a long way in establishing the scope and purpose of subject, but their analysis of studies shows that "healthcare system" (SC) management, costs, and policies have received very little focus. It was also seldom brought up that system was prepared to deal with supply policy and device shortages, which were particularly problematic during the epidemic. Inequitable access to urban amenities, healthcare services, and infrastructure has resulted from unplanned urbanization, which has diminished open areas, weakened infrastructure, and altered biological morphology. Based on factors such as dependability, infeasibility tolerance, and uncertainty levels, this study suggests two dependable models for site choice in a big Hong Kong hospital. The researchers consider symmetric and limited forms of uncertainty and find a solution with an objective function value of 121.37

for the nominal situation. To guarantee the viability of uncertain jobs, they lengthen the processing time by taking into account 23 factors that are uncertain and have certain tolerance limits. Nevertheless, as a result of falling production and missing intermediate due dates, the objective function value drops. An evaluation of the solution and an approach to scheduling problems under uncertainty concerning a certain probability distribution function are addressed in a comparative study. To wrap up, the research presents health and justice issues, lays out four common approaches, and stresses the significance of well-managed systems, components, and processes in manufacturing, distributing, and administering of pharmaceuticals and medical supplies. Health inequalities are addressed and public discussions about the topic are opened up by this research, which helps to promote health equality and justice in health systems and population health on a local, national, and worldwide scale.

Nassi, Riza and Bouziani (2023) COVID-19 pandemic, software-driven technology significantly altered conventional healthcare procedures to keep patients and doctors in close contact while reducing the likelihood of direct contact and the spread of the virus. Patient satisfaction with telemedicine is low, especially for those dealing with rare diseases, cancer, or long-term health conditions; this is even though meeting healthcare needs remotely is an urgent issue for healthcare service streamlining and is encompassed by sustainable development aimed at good health and well-being. Even though virtual consultations can't replace face-to-face doctor-patient visits, they can help bring about some climate and health initiatives that will improve sustainability. The overarching aim of this analysis is to provide a comprehensive framework for sustainable "telemedicine" in context of chronic and rare illness patient satisfaction before, during, and after the pandemic. Newly diagnosed chronic disease patients will face today's limitations and unfulfilled healthcare demands. Goal 3 of SDGs for health is to promote the sustainable

management of patients through telemedicine and the efficient use of digital tools in healthcare delivery.

Khalaf *et al.* (2023) The "World Health Organisation" (WHO) announced the epidemic on January 9, 2020, the entire world has been engrossed in researching the impacts of SARS-CoV-2 pandemic on ecosystems and humanity. As a result of the pandemic, air travel was grounded and industries were shuttered as a result of economic closures, lockdowns, and the cessation of all forms of transportation. Air pollution and carbon dioxide emissions were both alleviated by the reduction in coal use in power plants, oil refining, and steelmaking. Also, everyone is starting to realize that they have a role to play, which is why sustainability as a concept has grown in popularity. What gives future generations hope is a world that can support them without compromising the quality or amount of change that satisfies our demands. To arrive at unbiased results, make suggestions, and develop thoughts regarding significance of sustainability, they reviewed and summarized the studies and research that reported these impacts on the health and environment throughout the world. This study is significant because it intends to summarize the good and bad effects that SARS-CoV-2 pandemic had on people's health and environment from April 2020 to October 2022 and then talk about the difficulties and opportunities that came with trying to promote environmental sustainability. There were numerous positive impacts of COVID-19 on Earth's recovery, but the illness also had serious consequences for human health. To ensure that the environmental healing process is permanent, the government and lawmakers must act.

Goniewicz *et al.* (2023)To help prevent further spread of the coronavirus-19 pandemic and speed up the healing process, "European Union" has put some measures into place. This research takes a look at the reaction and management decisions made by EU, the steps the Union took to help recover and maintain its economy, and public health

measures that were employed to control virus. These programs include the "European Support" instrument to reduce the "Unemployment Risks in an Emergency" (SURE) program, the "Next Generation EU" recovery fund, and the Multiannual Financial Framework, which acknowledges the EU's efforts to promote social welfare and participation during pandemics. They look at the challenges and solutions the EU has faced during its crisis management efforts, drawing attention to the significance of unity, collaboration, and resiliency. Based on the findings of the pandemic, this study delves into following topics: importance of developing healthcare systems that can withstand future outbreaks, necessity of promoting environmentally sustainable initiatives, the importance of promoting health and equity on a global scale, the necessity of strengthening social protection and inclusion, and the necessity of improving crisis readiness and response.

Elavarasan *et al.* (2022) COVID-19 pandemic came and impacted the progress made towards the seventeen SDGs, which aim to create a sustainable future for all. So, it's critical to assess how the pandemic affected each SDG and then figure out how to use the aftermath to speed up progress on all of them. Furthermore, data about SDGs and their interplay, including synergistic and trade-off impacts, is scarce. By combining a qualitative and quantitative approach, this study goals to examine effects of pandemic and offer guidance for moving forward in the post-epidemic world in a way that achieves SGD. Each goal's pandemic consequences are investigated in depth, and using ranking methods, a quantifiable impact analysis is conducted about the SDGs goals. Based on the findings, SDG 1 and SDG 8 have been the most affected. Critically examining targets and indicators allows us to characterize SDGs from their elemental point of view, shedding light on aspects like goals' nature, determining factors, locus of the goal, and interactions between SDGs, among others. This allows us to offer deeper perspectives on the SDGs. Beyond that, a new metric called the degree of unpredictability is suggested, which has tremendous

potential in environmental studies. Moreover, the dynamics of interactions between SDGs are elucidated by mapping the influence on each objective as well as the impact interaction among all SDGs. The post-pandemic scenario is used to propose ideas for achieving the SDGs with an environmental focus. These plans include a prioritization aspect that helps with a speedy recovery. The new prioritization factor is the product of a multi-criteria study. Furthermore, in the post-pandemic world, an optimized and successful strategy to achieve the SDGs is framed by building upon each of the SDGs' crucial features. There are plans, but there is also a conceptual framework to bring corporate activities in line with the SDGs. Policymakers and academics would benefit from this study's fresh viewpoint, and the remedies proposed would help shed light on the topic of sustainability.

Fathollahi-Fard, Ahmadi and Karimi (2022) Healthcare logistics research is a pressing issue in both wealthy and developing nations today, particularly in wake of a pandemic like COVID-19. Appropriate planning for resilient and long-term healthcare logistics would facilitate the necessary reactions in the event of a pandemic. Transportation and preparation of healthcare professionals to visit patients in their homes are the primary topics of this research. Providing social isolation during COVID-19 pandemic has made these services very useful in slowing the spread of the virus. Beyond this obstacle, reworking home healthcare logistics and services to adhere sustainable development targets' triple bottom-line requirements is essential. An approach to sustainability known as "triple bottom line" considers not only financial but also ecological and social factors when making a call. Up until now, research on home healthcare logistics and services has focused on green emissions and total cost, but no studies have attempted to formulate a triple bottom-line approach. This is despite recent studies that have examined the idea of green home healthcare. Striking a fair balance between unemployed time and overtime is an important step towards social fairness for careers. For home healthcare planning, this

study also helps by developing a scenario-based robust optimisation method to deal with the unpredictability of logistics and services. Last but not least, this study contributes to literature by developing a more sophisticated multi-objective optimisation model for long-term, reliable home healthcare logistics and services. The model is based on Lagrangian relaxation theory and uses heuristics to maximize efficiency. By outlining three heuristic algorithms, they arrive at a first answer. Allocating patients to pharmacies and organizing routing of careers are both symmetrically handled by their heuristic algorithms. After that, a method for generating effective, superior Pareto-based results is proposed, which combines the epsilon constraint approach with Lagrangian relaxation theory. In summary, a inclusive analysis is carried out to show usefulness and effectiveness of the suggested heuristic algorithm and multi-objective optimisation model. Additionally, certain sensitivities are examined to offer managerial insights into the practical implementation of robust and sustainable home healthcare services.

Ben-Zvi and Luftman (2022) An analysis of worldwide trends in "information technology" (IT) spanning decades shows that IT is becoming an increasingly important factor in organisational competitiveness. Everything is being drastically altered by digital revolution. This is more evident than anywhere else due to the modifications that the COVID-19 epidemic has forced. Still, the pandemic's effects on businesses started early and won't end anytime soon. The truth that the pandemic's impact was so widespread necessitated swift adjustments to plans and methods, setting it apart from other problems. This study uses data from global surveys and IT trend research to analyses IT challenges and trends before and after the pandemic in order to predict post-pandemic forms of IT sustainability. Finding an answer to the crucial issue of whether IT will recover to its pre-pandemic state, the research analyses the most pressing management worries and technological factors to foretell the pandemic's long-term effects on the field. They

conclude that digital transformation and other changes in IT are the product of a widespread understanding that IT will continue to play a crucial role in fueling and enabling substantial economic value for all businesses rather than merely an emergency-induced shift. The research indicates that information technology will play a crucial role in fostering digital transformation, which will lead to sustainability and gaining a competitive edge in the post-pandemic world.

David *et al.* (2022) Looking at healthcare workers' mental health through the lens of current occupational mental health standards, this narrative study aims to give a summary of initiatives developed during COVID-19 epidemic. Occupational mental health as a paradigm integrates ideas from other disciplines to improve the management and prevention of mental health problems among employees. During the COVID-19 pandemic, it was important to identify studies that addressed healthcare personnel' mental health and how they planned or executed treatments within medical institutions, they searched Medline/PubMed, the Cochrane Library, and Embase online. The purpose of the purposefully wide inclusion criteria was to include as many different kinds of therapies at different phases of development or assessment. The study encompassed 31 articles that addressed recently created psychological support interventions for "healthcare workers" (HCW) amidst COVID-19 pandemic. They found that the majority of programs offered some kind of mental health support to healthcare workers. This included increasing access to basic needs resources and services, implementing more workplace training programs that improved professional readiness and indirectly improved emotional well-being, and/or increasing psychological support programs like counselling, psychoeducation, or peer support. The majority of schemes, however, did not take sustainability or lifespan into account. Long-term mental health pressures among healthcare workers are anticipated to result from COVID-19 pandemic, which has highlighted severity of mental health

difficulties among these workers. The moment is right for this epidemic to spur much-needed advancements in stigma reduction and increasing access to mental health care for healthcare workers.

Eskafi, Taneja and Ulfarsson (2022)The maritime industry has always had to cope with ambiguities and interruptions. While interfering with regular operations, the COVID epidemic presented the cruise industry with significant, far-reaching, and long-lasting issues. Even if the cruise business helps to achieve SDGs of the UN, the sector must adjust to the problems of sustainable and presumptive cruising. To this aim, the report proposes pandemic-related adaptation measures for the cruise industry and ties them to the UN SDGs to emphasise their long-term benefits. To find appropriate adaptive measures, a review of the literature is done and a system thinking approach is used. For sustainable cruising, this study highlights the significance of UN SDGs 3, 4, and especially 17. Informed decision-making to improve the sustainability of the cruise sector is supported by the study's findings. According to this research, stakeholders should do three things: 1. figure out what makes sustainable cruising possible and what doesn't; 2. adapt to new circumstances and accept the SDGs as a roadmap to sustainability; and 3. Employ educational initiatives to raise awareness of sustainable cruising among scholars and decision-makers.

Rana *et al.* (2021) global COVID-19 pandemic has undermined trust in contemporary medicine and its effectiveness. In this study, an institutional experience is described along with how it affected cytology-related services. Analysis and comparison were done between the cytology samples that were collected during India's lockdown period (24 March to 17 May 2020) and those that were obtained during the same period in 2019. According to the statistics, the total number of cytology samples received decreased by 92.6%. A statistically significant decrease in thyroid cytology samples was seen in all sample categories (P-value:.023). Breast and lymph node samples increased compared to

one another, however this difference was not statistically significant. Among the samples obtained during the COVID-19 shutdown period, malignancy rate sharply rose by 34.1% but the neoplastic category decreased. Both before and after COVID-19, breast samples continued to be the most common type of sample. The majority of these instances' fine-needle aspirations during the shutdown were either for original diagnosis or recurrence. The safe execution of this technique was aided by sample prioritization, appropriate safeguards, and patient triage before procedure.

Green *et al.* (2021)Health is impacted by policy in every area through a variety of mechanisms and factors. The goal of the "health in all policies" (HiAP) strategy is to minimize harm and maximize health gains by addressing how policy decisions impact equality and health. Usually, a health lens analysis or health impact assessment is needed for this. Examining the policies that have the biggest potential to affect health is a top goal for cross-sectoral governance frameworks in some countries, and these approaches are becoming more popular globally. Inter-sectoral collaboration, policy influence, and a comprehensive assessment of the variety of health determinants impacted by a policy area or proposal are the cornerstones of HiAP. In order to comply with HiAP, public health professionals must devote time to establishing connections and interacting with the socioeconomic determinants of health and the areas that affect health equity. When coupled with dedication, political will, and instruments like the health impact assessment, it offers a potent strategy for integrated policymaking that advances equity, well-being, and health. The COVID-19 pandemic has drawn more attention to public health, and the connections between health and other policy areas have been emphasized. The concepts and justification for HiAP mechanisms, such as HIA, as well as the experiences, difficulties, and prospects for the future are all covered in this study.

Yin *et al.* (2021) COVID-19 has paused and reversed the progress of SDGs. "Ecosystem services" (ESs), or benefits that ecosystems provide to human well-being, are the foundation for achieving the 2030 Sustainable Development Goals. In their analysis of COVID-19's effects, they discovered the links between ESs and SDGs to help achieve SDGs in the post-pandemic context. Although ESs helped achieve all of the SDGs, they discovered that human demands caused ecosystems and the services they provided to deteriorate. The general view is that the virus is present in ecosystems that have been weakened and that human involvement causes spillover. The SDGs were put in jeopardy because of the virus and the global lockdown/restriction, which altered the need for human ESs and impeded their flow. 1) to eventually promote harmony between humans and nature to accomplish the SDGs; 2) to give priority to pressing concerns such as health care, livelihood, and resource security; 3) to investigate the connection and traceability of ESs-SDGs throughout pandemic; and 4) to improve ESs and advance SDGs through local community initiatives, ecosystem restoration, and ESs accounting. This study sheds light on how important ESs are to SDGs and how to incorporate them into socioeconomic development to help accomplish the SDGs after the pandemic.

Rodríguez, Svensson and Ferro (2021) to assess how public hospitals will proceed with sustainable development in the future, with a focus on short-term versus long-term time horizons, top-down versus bottom-up approaches, and intra-versus inter-organizational activities. Judgmental sampling was used to choose important healthcare organizations. An inductive technique was used in this investigation. The respondents were selected based on their understanding of the sustainable development trajectory of their organizations. The results of the public hospitals under study sustainable development are to coordinate their efforts with those of other hospitals within a public health system. The public hospitals under investigation have distinct paths (top-down versus bottom-up),

distinct activities (intra-organizational versus inter-organizational), and different perspectives on time (short- versus long-time). Implications for gives information on how to assess public hospitals' sustainable growth trajectory. They highlight how important it is to take action, time, and journey together. This research also provides a three-dimensional framework for evaluating future trajectory of sustainable development in industries and businesses. Time, path, and action all influence the former and latter traits. offers a three-dimensional framework of standards for evaluating how organizations are moving towards sustainable development. The assessment criteria can be used by organizations to gauge the progress of other organizations in their sector. Authorities or organizations within the industry may examine the present and future paths of sustainable development in a given industry or sector. These evaluation criteria provide a foundation and an opportunity to learn about managing pandemics like COVID-19 and to compare oneself to others in the same field.

Leach *et al.* (2021) COVID-19 is turning out to be the highly anticipated "big one"—a pandemic that might cause economies and societies to completely collapse. Analysis of the evolution of COVID-19 as a health and growth crisis is essential, as is consideration of possible post-pandemic adjustments and a more comprehensive rethinking of development. They contend that to comprehend the causes, progression, and effects of the COVID-19 pandemic, it is necessary to take into account both structural political-economic factors and far less structured, "unruly" processes—which stand for complexity, contingency, uncertainty, and context-specificity. More than ten years of pandemic research served as the foundation for this. The structural-unruly duality provides a lens through which to evaluate three primary issue areas in the circumstances and processes of genesis, pandemic progression, and influence. The first is the application of scientific data and recommendations to policymaking in a setting that is tightly "locked in" to preexisting

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power dynamics and extremely unpredictable. The COVID-19 pandemic exposed the shortcomings of a conservative notion of economic expansion, which leads us to the second point: the functioning of economies. In the face of a pandemic, the third focuses on how new political ideologies, such as those centred on compassion and solidarity, might serve as the foundation for altered citizen-state interactions. As evidenced by COVID-19, they must anticipate and be resilient to significant shocks in an uncertain future, which should be the central issue of development research and practice. The fundamental knowledge and politics of post-COVID-19 development must be fundamentally transformational, egalitarian, and inclusive, in contrast to current methods of development, which have been centralized, rigid, and centred on certain economic objectives.

Kolakowski *et al.* (2021) The COVID-19 pandemic has impacted many aspects of our lives, such as our way of working, interacting with others, providing healthcare, and caring for the most vulnerable members of society. The perspectives study offers an inclusive summary of the present body of research in these areas. A group of experts from the field who are affiliated with Cornell Institute for Healthy Futures also provide news reports and commentary for this review of studies. They give an overview of the available data, focussing on how the pandemic has affected our lives since March 2020. Then, considering the potential and challenges of today, they provide hopeful outlooks on what healthy living may entail in the future for each of domains examined in this study. They specifically address the need for transformation in the healthcare sector, workplaces, good food, senior life, and personal well-being.

Corvalan *et al.* (2020) The construction of climate-resilient and environmentally sustainable healthcare facilities is intended to: (a) improve their capacity to protect and improve the health of their target populations in the face of a changing and unstable climate; and (b) provide them with the tools necessary to fully utilize the resources at their

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disposal and reduce waste and pollution emissions into the environment. By helping lower facility expenses, these healthcare facilities guarantee more affordability while promoting high-quality treatment and service accessibility. They play a significant role in ensuring universal access to healthcare. At least four essential areas must be addressed to provide safe and high-quality care: having enough trained HR with respectable working situations who are empowered and knowledgeable to address these environmental issues; managing water, sanitation, and medical waste sustainably and safely; providing sustainable energy services; and having the right substructure and technologies, including all operations that enable a health care facility to run efficiently. Significantly, our work supports initiatives to guarantee that healthcare facilities are continuously and progressively reinforced and remain effective and responsive to enhance health and help lessen vulnerability and disparities in their local communities. They therefore offer a framework to address these issues.

Eissa (2020)explains why different countries react differently to crises like COVID-19 by looking at alternative measures of the effectiveness of public health spending on pandemic preparation. This study aims to discover the limitations of the association between pandemic preparedness and global public health spending. Indicators of global health security, case studies of specific countries before and following the crisis, empirical and theoretical research on global health spending, and a macro-analysis of trends in global health spending comprise the research method. Given the findings, which show that pre-COVID-19 pandemic preparation was inadequate, a reassessment of public health budget priorities is necessary. As measures of healthcare sustainability, new awareness indicators should replace outdated ones such as healthcare sector revenue, public health expenditure rates, economic growth rates, and rankings in the global health security index. The UN SDGs' implementation of sustainable health, public health

spending that promotes pandemic preparedness, healthcare system resilience, a national healthcare capital investment to ensure effective resource allocation and the urgency of a prompt response to a pandemic through preparedness initiatives are all considerations that could be considered. Reforming public spending is recommended as a means to improve healthcare institutions' absorption capabilities, attain sustainability, and provide universal health insurance.

2.5 Role of Partnerships and Alliances in Healthcare Resilience

Krczal and Behrens (2024) Healthcare, social services, and other service providers must work together on public health programs. According to organisational theory, trust is a key component of productive collaboration. In light of an unexpected public health crisis, this research delves at the factors that could launch and maintain confidence in a short-term public health partnership. The steps taken to establish a cross-sector alliance to provide a COVID-19 contact tracing service were the focus of this qualitative research. One online survey, a feedback workshop, two focus groups, and twelve in-person interviews were used to gather data from the seven partner businesses' workforces. The workforce members from all seven partner businesses had their comments and experiences recorded using purposeful maximum variance sampling. The drivers for establishing and maintaining trust in inter-organizational collaboration were identified using a deductive coding system. Partnership arrangements, similar norms and values, and a dedication to a common goal all played a role in the establishment of trust. It seems that partners' conduct when interacting was channeled by shared values and dedication to the common purpose, leading to being seen as a trustworthy, helpful, and fair partner. The partnership's governance structure and communication channels, which reflected fat hierarchies and shared decision-making authority, were in keeping with the partners' common ideals. Infringement on common principles led to tensions between partner organisations. Partners should think about

organisational hierarchy, communication routes, and governance structures when managing trust in a partnership. This will help keep power in the right places. To create and strengthen ties with partner organisations, it is vital to stimulate inter-organizational networking among workers through job rotation, recruiting people with appropriate personality characteristics, attitudes, training and development. Fostering mutual support and equality across partner organisations is another important aspect of relationship dynamic management. Partners should also be mindful of how to channel behaviours via common values, aims, and priorities.

(Suarez-Herrera et al., 2024)The research delves into the present issues plaguing world health and the methods employed by WHO to tackle them. Measurement of the health implications of globalisation and recession is crucial, as is the necessity for sustainable development methods that priorities human needs. On a global, national, and local scale, there is an emphasis on health equality commitment and the utilisation of health strategic alliances. Promoting public health equality and increasing the health and well-being of populations are core parts of the 2030 Agenda for SDGs. The third SDG articulates these thoughts by calling for universal health coverage and recognition of global health as a basic human right. Strategic partnerships are crucial in fight against the increasing number of health emergencies, improvement of public health indicators, and mitigation of the effects of chronic diseases. Various forms of partnership, including public-private partnerships, social engagement, network governance, and cross-sector collaboration, are envisaged in SDG 17. Latin America and Caribbean are among the many regions where diverse partnerships have helped expand and improve universal healthcare systems. Lastly, the study outlines the key features of these partnerships in global health that involve several organisations and institutions.

Onyedinma, Okeke and Onwujekwe (2023) Many nations, Nigeria included, had their healthcare systems and economic bases ravaged by the COVID-19 epidemic. Since this won't be the last pandemic, the study's overarching goal was to identify, analyses, record, and report on the actions taken at national and subnational levels in response to COVID-19 and to fortify the healthcare system to withstand future crises. This research looks at how collaborations impacted the reactions of several sectors in Nigeria to COVID-19 pandemic. Qualitative research was this one. At the national level in Abuja, and the subnational level in the states of Lagos and Enugu, 36 key informant interviews and a scoping research review were used to gather data about the COVID-19 response in Nigeria. They recorded and transcribed the interviews word for word. They used theme analysis to go through the qualitative data. Responding to the COVID-19 outbreak in Nigeria resulted in formation of several collaborations. The health system's orientation was a horizontal component of cooperation with non-health governmental sectors, nonprofits, and other countries. There was some degree of cooperation between each of the health system's constituent parts, which allowed it to achieve its goals. Collaborations took several forms, including but not limited to: lobbying, financing, providing citizens with palliatives during lockdowns, providing technical assistance, supporting research, developing guidelines, and health teaching materials. As a result, the government's reaction to COVID-19 required a multi-sectoral effort, and health sector's cooperation with other sectors improved the health system's foundations. It is important to establish formal structures with defined roles and duties for swiftly launching cross-sectoral and whole-of-government collaborations. This has to be put into action so that health systems can withstand shocks like COVID-19 epidemic and respond appropriately.

Spieske *et al.* (2022) Medical supplies were severely limited due to COVID-19 epidemic, making procurement a challenge at HCSC. It is critically important to ensure the

availability of essential items even in the face of interruptions, which is why there has been a recent surge in discussion about healthcare supply chain resilience. A multi-level case study covering nine different European hospital and medical supply groupings provides evidence for their assertions. In light of resource dependence concept, they investigated procurement-related strategies to enhance the accessibility of pharmaceuticals. Seven suggestions for making supply chains more resilient during a pandemic were developed from semi-structured interviews with 39 experts in procurement and SCM. These suggestions centre on implementing buffering and bridging solutions to deal with changing resource requirements. Generally speaking, they bolster the case that resource dependence theory could account for how companies adjust during a pandemic. Medical supply acquisition benefits more from healthcare supply-base bridging techniques than from buffering tactics, such as helping suppliers with procurement or using established buyer-supplier connections. Combining bridging and buffering techniques, such as resource sharing among hospitals or greater upstream procurement, can help lower risk when the capabilities of the current supplier base are inadequate. In addition, they further the resource dependency hypothesis by demonstrating that novel kinds of buffering beyond the HCSC are triggered by the intensity of pandemic disruptions. Improved supply security during a pandemic can be achieved through the use of both old and new buffering strategies, which create new flows of medical goods in the HCSC.

Furstenau *et al.* (2022) enhanced by "digital technologies" (DT), which aid decision-makers in coping with disruptive occurrences. Nonetheless, prior research on HSC has either ignored the proactive and reactive aspects of resilience or has failed to provide an inclusive view of the resilience characteristics provided by each DT. Based on document analysis and semi-structured interviews with fifteen HSC managers, they studied eight healthcare organizations to fill this need. Consequently, fourteen DTs were

recognised, including analytics of large data, analysis of predictive health data, and remote inventory monitoring. Strategic partnerships built on trust and common objectives, as well as long-term collaborative planning, are two examples of the organizational strengths that these DTs helped resilient HSC develop. A framework outlining what and how technology usage enhances HSC resilience was developed based on these findings. The connection between DT and four main properties of resilient systems—the ability to anticipate, respond, monitor, and learn—is moderated by organizational resilience capabilities. They also offer four research proposals for future studies to verify this hypothesis. Those in charge of policymaking and design and operation of resilient HSC can look to the framework for direction and advice.

Rosa *et al.* (2020)As the number of verified instances of COVID-19 and deaths caused by it continues to rise at an exponential rate, the healthcare crisis is wreaking havoc on societal fabric worldwide. At the front of this catastrophe are nurses, who make up over half of the world's healthcare workers and spend more time directly caring for patients than any other healthcare provider. Among other vital abilities, palliative nurses will be called upon to manage symptoms, communicate effectively, and assist with end-of-life care as the COVID-19 epidemic progresses. Research on palliative care in reaction to COVID-19 pandemic has increased dramatically, but there is a severe lack of information about the special role that palliative nurses play in easing the aftereffects of the pandemic. So, this article's major goal is to provide palliative nurses and other healthcare stakeholders some pointers on how to be as healthy and resilient as possible throughout the COVID-19 pandemic and, by extension, the future.

2.6 Strategies for Enhancing Healthcare Sustainability and Resilience

Macneill *et al.* (2020) The idea of a round economy is to keep manufactured goods in circulation as much as possible, spreading out the costs of resources and the environment

over time through repeated usage. Manufactured goods in a linear supply chain have a single usage before being discarded. The healthcare systems of high-income countries are becoming more and more dependent on linear supply chains that include throwaway medical gadgets with a single use. As a result, public health has taken a hit due to rising healthcare costs, as well as pollution and waste produced by the healthcare industry. The supply chain is now more susceptible to interruptions and changes in demand as a result of this. The aim of delivering increasingly sophisticated care in a low-emissions future might be advanced by transforming the health device business to a more circular economy. Perceptions about infection prevention, consumer and producer behaviours, and regulatory frameworks that promote the use of disposable medical equipment are all factors that hinder the adoption of circularity. For systemic change to occur, solutions driven by the market and by policy must work in tandem.

Lennox, Maher and Reed (2018) A great way to introduce and evaluate innovations in healthcare settings is through improvement projects. Improving patient care and outcomes is a primary goal of many of these programs. Nevertheless, a lot of improvement projects don't last long enough to reap all the benefits they promised. As a result, a plethora of frameworks, models, and instruments for sustainability support and monitoring have been created by various scholars and healthcare practitioners. The purpose of this study was to catalogue current methods for evaluating and shaping healthcare sustainability, and to provide a description of the many viewpoints, uses, and building blocks that make up these methods. Methods to promote or affect healthcare sustainability were sought after by conducting a systematic review of PRISMA standards. As part of an iterative process to establish eligibility criteria, two reviewers independently evaluated 20% of the studies to ensure that the selection criteria were objective. The sustainability components within each reported strategy were identified and assessed using data retrieved from the identified study

and a template analysis. A total of 227 articles were located in full text for comprehensive documentary examination out of 1,748 publications that were found using the search method. This research encompassed 62 articles that identified a sustainable approach. The included frameworks and models included 32, tools included 8, strategies included 4, and there was also one process and one checklist. After comparing components across different methodologies, forty distinct sustainability constructs were identified. With 6 components covered in 75% of the methods, comparison across approaches showed comparable constructs independent of suggested interventions, context, or level of application. While there were some shared features, no two methods used the same set of criteria, and none of them managed to capture every single one of the discovered structures. A unified framework for healthcare sustainability components was derived from these findings. Due to the variety of ways shown in the study, selecting a sustainable strategy might be difficult. By summarising the features of existing sustainability initiatives, this study serves as a useful resource for researchers, healthcare providers, and improvement practitioners.

Hanefeld *et al.* (2018) The resilience of healthcare systems and their capacity to react to shock have been brought into sharp focus by current "Ebola virus disease" (EVD) pandemic in West Africa. As a result, the need for health systems to be more "resilient" and robust became abundantly clear. This research compares and contrasts the responses of health systems to four contemporary shocks: European financial crisis of 2008, natural catastrophes caused by climate change, the Ebola virus epidemic in West Africa from 2013 to 2016, and current migration and refugee crisis in Europe. Responding to shocks is a crucial part of being resilient, according to the authors. Their research led them to identify "3 plus 2" crucial dimensions that are especially important for health systems' adaptability and responsiveness to shocks; the effectiveness of a response is dependent on taking action in all of them. Health information systems (knowledge and data to make decisions about

what to do), funding/financing mechanisms (the means to invest or mobilize resources to pay for a response), and health workforce are the three fundamental dimensions that correspond to the three functions of health systems. These intertwine with two overarching features: first, "governance," as an essential role impacting every other facet of the system; and second, the predominate 'values,' which determine the reaction and its impact on individuals and communities. Community responses to Ebola and social movements' reactions to financial crisis are two examples of how interacting with local communities and health system integration fostered resilience in both crises. Inequalities worsened throughout every crisis, but our data also shows that governments may mitigate the effects of shocks. Situational circumstances influence all of them. They contend that practical strategies aiming to strengthen health systems may be informed by the '3 plus 2' dimensions.

Curtis *et al.* (2017) study comprehensive overview of the research that has been requested by Research Council UK's "Living with Environmental Change" (LWEC) program about influences of environmental change on the health and social care systems in UK. Waves of extreme heat or cold, as well as flooding, are all part of the extreme weather category. They take a look at the data on the effects of extreme weather on health and social care systems, both past and present, as well as the possibilities for resilience-boosting adaptation and readiness strategies, using a structured review approach. Although this assessment primarily looked at the UK scenario, it does draw some broad findings that might have an impact elsewhere. The institutional, social, and physical frameworks that support health and healthcare influence administrative parts of health services. In addition, service demand varies due to influence of severe weather on human health. Preparedness strategies for natural disasters and their effects on healthcare systems should take national diversity into account. It will be necessary to make adjustments to the physical

infrastructure (such as transport and utilities) and the social and institutional frameworks that underpin the health care system to accommodate adaptation. Better health and health care resilience in the face of dangerous weather requires practice adaptations from organisations, communities, and individuals in the care sector. To be fully prepared for emergencies, health and social care providers, in general, must take action, and not only the emergency response services.

Finstad *et al.* (2021)There has been a dramatic shift in working circumstances due to the COVID-19 epidemic, which has hurt the health of employees, especially those in the healthcare industry who are directly dealing with the crisis. Despite this, prior studies have shown that traumatic events can also trigger good emotions, such as increased resilience and a sense of personal progress. Through an analysis of the existing scientific data, this narrative review seeks to evaluate potential benefits of COVID-19 pandemic and health promotion and defensive actions. Specifically, they zero in on the ideas of "posttraumatic growth" (PTG), coping mechanisms, and resilience. A total of eight databases were combed through: EMBASE, PubMed, PsycINFO, Web of Science, Google Scholar, and Scopus. There were forty-six papers in study synthesis. Psychological resilience, which is linked to lower rates of anxiety, depression, and burnout, is a key component in mitigating or preventing the detrimental psychological effects of the pandemic. Resilience on both a personal and organizational level significantly influences the enhancement of health and wellness for both healthcare and non-healthcare workers. The ability to adapt to stressful situations and maintain mental and physical health during emergencies is essential for success in the workplace and in life in general. The development of PTG has brought attention to some good aspects that impact resilience. Also, being able to bounce back from adversity and use constructive coping mechanisms might help one develop personally. Adaptive coping skills, resilience, and PTG should be the goals of organizational initiatives

to increase well-being among workers in light of potential long-term cohabitation and effects of COVID-19.

Barasa, Mbau and Gilson (2018)The idea of resilience has recently attracted attention in field of global health in wake of health system shocks like 2008 financial crisis and the 2014–2016 Ebola outbreak. The idea has, however, been around for a while and has found use in various fields. They synthesized data on organisational resilience by reviewing empirical studies from a variety of fields, including health. They diligently perused the reference lists of chosen studies in addition to searching Google, PubMed, Econlit, Google Scholar, and EBSCOhost databases. They were able to include 34 of the papers that they found. They used a thematic review to examine the data from the chosen studies. It was previously believed that a system was resilient if it could keep on working to achieve its goals even when faced with obstacles. Adaptability and transformation were also highlighted as resilience ideas in the chosen studies, in addition to a system's ability to endure shocks. Several factors influenced an organization's resilience. These included its material resources, preparation and readiness, management of information, redundancy and collateral routes, leadership styles, social networks, human capital, organizational culture, and collaboration. Understanding resilience as a feature of complex adaptive systems is a common thread running through the chosen articles. Adapting to both long-term pressures and short-term shocks is an essential part of being resilient, but so is anticipating and preparing for potential crises in the future. In addition to being able to withstand sudden, extreme events, health systems must also be able to withstand constant, everyday stress. Building a resilient health system relies just as much on the software as it does on hardware.

Marchese *et al.* (2018) The words sustainability and resilience have been used in many ways in recent years. Some people think of them as the same thing, while others say

they're distinct. A study review was conducted to examine the integrated usage of sustainability and resilience in an environmental management setting. The aim was to identify similarities and contrasts as well as existing management frameworks for boosting resilience and sustainability. By balancing ecological, social, and economic factors, the term "triple bottom line" came to describe sustainability. A system was considered resilient if it could anticipate danger, take hits, bounce back, and adjust to new circumstances after experiencing chronic stress or a traumatic incident. The study primarily identified three broad management frameworks for organizing resilience and sustainability: 1) Resilience and sustainability as distinct goals, 2) Resilience as a component of sustainability, and 3) Sustainability as a component of resilience. Both in regular and emergency operations, these framework implementations aim to help people and the environment by capitalizing on shared features and reducing friction between resilience and sustainability.

Kumar *et al.* (2020) Finding effective regulations and tactics to redesign production patterns and fulfil customer demand is a top priority for most industrial managers and lawmakers. China and other growing Asian nations provide the bulk of the raw resources, according to global supply chain viewpoints. The majority of distribution methods and transportation linkages between suppliers, industrial sites, and customers have been disrupted by the COVID-19 epidemic. In light of this, the post-COVID-19 age must include a discussion on sustainable consumption and production patterns. After a global lockdown was imposed by most major countries, attention turned to the dramatic increase in demand for necessities. Some non-essential goods and services have seen their demand fall as a result of this. It provides sufficient policy recommendations for enhancing the system's resilience and sustainability while also discussing the production and operations management difficulties of pandemic scenarios. Potential future approaches to dealing with

such interruptions are also covered in the viewpoints of operations and supply chain management.

Massuda *et al.* (2018) Brazil has made significant progress towards "Universal Health Coverage" (UHC) thanks to "Sistema Unico de Saudi" (SUS), a unified health system. The sustainability and consequences of public expenditure growth are being jeopardized by structural weaknesses, economic, political crises, and austerity policies. In light of the converging political and economic crises and the austerity measures that followed, the development of Brazil's healthcare system from the year 2000 and the present and future consequences of these events. They look at how the political and economic climate, healthcare funding, healthcare resources, and healthcare service coverage in SUS changed from 2000 to 2017 using research reviews, policy analyses, and secondary data from government sources. They discovered that SUS still has structural issues such as poor public funding, ineffective resource allocation, and deficiencies in structure and governance, even though a favourable setting allowed for the development of UHC from 2003 to 2014. Poorer areas and lower socioeconomic groups suffer the most as a result of the huge regional variations in healthcare access and health outcomes. The present government's austerity measures are likely to exacerbate these systemic challenges and inequalities, and thus pose a threat to the progress SUS has made in refining population health outcomes. Enhancing the system's resilience to withstand external shocks, like economic and political disruptions, as well as internal shocks, like sector-specific austerity policies and the rising disease burden brought on by rapid ageing, is crucial given how quickly Brazil's health system is suffering from the current and political crises. Only then can the hard-won progress towards UHC be preserved.

Robertson *et al.* (2016)Resilience is becoming more important to keep a strong, flexible, and long-term staff in the healthcare industry, which is facing some very

demanding and difficult times. On the other hand, research in the primary care setting has not looked at resilience or its definitions or correlations. The goals of this study are (1) to literature review on resilience in primary care providers, (2) to determine what resilience is, (3) to identify its components, and (4) to synthesize the existing data. To find papers that dealt with primary care, a systematic review was done. It was in December 2014 when the databases Ovid®, PsycINFO, CINAHL, Embase®, and Scopus were searched. Independently, paired reviewers selected texts and extracted data. Factors related to health professionals' resilience and its definitions were retrieved. Twelve research were considered for inclusion; eight of them were four were qualitative, quantitative, and one was an intervention study. Despite its complexity, resilience was traditionally thought to include the ability to bounce back from setbacks. In resilient physicians, there were observed interactions between personal growth and accomplishment. There was a considerable correlation between resilience, high perseverance, self-direction, and low avoidance of obstacles. Traits that enable high function levels in demanding health professional occupations were significantly connected with resilience. In the primary care setting, these many components are not yet accommodated by resilience strategies. Personal, societal, and occupational factors all come together to form health professionals' resilience. It would be helpful for future quantitative studies to have a well-validated measure of health professionals' resilience so that they can see how an intervention to boost it is doing.

Dictor (2023) Examination of several resilience training programs to ascertain the extent to which they influence the psychological resilience of healthcare workers. Utilising the One Search database search engine at San Jose State University, an electronic systematic review was conducted. Review articles were published in the academic journals during 2011 to 2022. For the purpose of this systematic review, nine previously published

studies were considered. A lack of information about resilience training and resources in recognised nursing programs is a major problem. Building psychological resilience among multidisciplinary health care providers is a viable and appropriate goal of resilience training programs. Interprofessional health care workers can benefit from resilience training programs grounded in mindfulness at any point in their careers. The nursing program curriculum is the best place to start incorporating these programs, and staff meetings and other ongoing initiatives may help keep them from becoming a thing of the past. Providers, patients, and communities stand to gain greatly from these programs' successful implementation, which might lead to increased psychological resilience and better overall well-being.

Stengel *et al.* (2022)The management of medical emergencies in both individuals and society relies on primary care. Primary care must act swiftly to intervene in the healthcare system in reply to COVID-19 epidemic. The purpose of this research was to examine "primary care physicians" (PCPs) reactions to the early COVID-19 epidemic and to draw conclusions about the primary healthcare system's resilience based on those reactions. Shortly after the initial wave of COVID-19, PCPs in practices and at "Corona contact points" (CCPs) in Baden-Wuerttemberg, Germany, participated in semi-structured telephone interviews (July—October 2020, n=39). A framework for resilience was used to link the evolving categories, which were obtained through qualitative content analysis. Although reactions varied greatly in terms of speed and scope, primary care as a whole showed resilience and a remarkable capacity to adapt. In response to uncertainties, PCPs cited intrinsic drive and self-initiative as reasons to create a CCP; arguments against included concerns about organisational load, insufficient space, and a lack of individual protective equipment. There was a high correlation between using resources (such as preexisting networks, PPE, and performing a professional political function) and

establishing a CCP. Their research mainly uncovered revolutionary features for outpatient infection centres and adaptable features for actions done at medical offices. PCPs achieved a high degree of legitimacy and knowledge in coordinating process by actively passing knowledge, being integrated into crisis management teams, and being included in regional strategic initiatives. Interdependence was a recurring theme, emerging in contexts such as collaborating with stakeholders to launch CCP, facilitating communication across various primary care facility types, and defining intersectoral interfaces. It was clear from the interviews that regional capacity planning was necessary. Practical and research-based capacity and institutional planning, strengthening primary care's resilience, and incorporating other stakeholders' viewpoints into the system can all benefit from the findings.

Sheikhrabori, Peyrovi and Khankeh (2022) Resilience is the capacity to deal with adversity healthily, allowing one to accomplish their goals while minimizing negative effects on one's mental and physical well-being. The goal of this analysis is to draw attention to the features of healthcare professionals' resilience development in connection to their surroundings and to the workers themselves. They combined MESH and EMTREE entry terms with free keywords to search PubMed, Web of Science, Scopus, Embase, and Google Scholar from 2014 to 2020. Their scoping reviews adhered to the PRISMA-ScR guidelines. All forms of written English, including articles, books, and grey literature, were considered for this analysis. A custom-made Excel extraction form was used to record the data. Due to the scoping review, the studies' quality assessments were not conducted. All of the data was summed together using thematic analysis. Through the use of database searches, 5434 articles were located. The United States was the location of thirty-two studies or forty-six percent, and half of the 63 publications evaluated were qualitative and conducted research. According to research, the three main dimensions of resilience that

were taken into consideration were personal resilience, ED resilience, and healthcare provider resilience. Healthcare workers' ability to cope was the most prominent indicator of resilience. Instead of only focusing on delivering a set idea for everyone without addressing the system implications, studies should more accurately examine healthcare professionals' resilience in challenging healthcare situations.

Aldarmasi (2022)A rising amount of research indicates that "health care professionals" (HCPs) are better able to adapt and grow when faced with challenges, pandemics, or other extremely stressful situations if they are resilient. Their goal was to analyses the resilience of HCPs in Jeddah, Saudi Arabia, who were involved in COVID-19 pandemic and to determine what variables contributed to their resilience. The research took place in Jeddah and was cross-sectional, taking place from 2021-01-02. A computerized survey comprising Connor-Davidson Resilience Scale, Perceived Stress Scale, and sociodemographic questions was filled out by participating public hospitals. The questionnaire was self-administered. Only 352 of the 413 people who were originally considered were eligible to take part in the research. Healthcare providers had an average resilience score of 26±6.4. There were found to be statistically significant variances in some parameters, including perceived stress score, age, years of experience, nation, and shift type. In the study population, the general linear regression model discovered a significant connection (p-value = <0.001) between the resilience score, the sort of shift, and the felt stress score. To manage limited resources to assist HCPs and keep them employed, it is important to focus on important resilience-related characteristics.

2.7 Strategic and Crisis Management for Healthcare

Eriksson (2024) This study offers a systematic analysis of crisis management practices in healthcare organisations, with a focus on resilience, surge capacity, and dynamic capabilities frameworks. After that, they study two instances of crisis

management in hospitals during COVID-19 epidemic using a new deductive technique that is built on the framework of dynamic capacities. The worldwide spread, unpredictability, and length of the COVID-19 pandemic set it apart from several past catastrophes. The surge capacity model has been used to describe healthcare crisis management on many occasions, however, the dynamic capabilities model is more applicable when dealing with the requirement to react to a new environment and diverse information flow. This study uses a multiple case study including two public hospitals in Sweden to infer crisis management during the COVID-19 epidemic. It accomplishes this by using the micro-foundations of the dynamic capability's framework as categories. They create and test a new approach that uses dynamic and static capabilities at different levels of the organisation. All dynamic skills were used, although more so at lower organisational levels, according to the case study, whereas static capabilities were more common at the regional level. In Case A, the hospital manager was seen by lower-level managers as courageous because she encouraged departmental sensing, seizing, and transforming. However, regional crisis management was not able to use sensing to its full potential because of information shortages. Without any backup plans in place, the hospital in Case B ran into management problems and eventually established a group of department heads to oversee patient care. At the department level, seizing was strong, but at the regional level, deciding between crisis and regular administration was a problem. The innovative approach clearly shows how different levels and situations of the organisation differ, which helps to reveal how much collaboration (or lack thereof) exists there. The researchers behind the study conclude the conclusion that dispersed management, which is based on stronger dynamic skills at lower organisational levels, is beneficial for pandemic crisis management. Pandemic contingency plans should be different from accident plans in that they should encourage the establishment of new routines appropriate to the new circumstances and the

pursuit of constant improvement. For this kind of investigation, the Dynamic Capabilities paradigm worked well.

Donelli *et al.* (2022) The global healthcare industry took a major hit from "surprise" of epidemic. In particular, healthcare facilities are working hard to address the issues it brought about, refocus their efforts, and find ways to safeguard the public's health. During the coping phase, it is crucial to deploy resilience solutions and be able to respond quickly and rethink actions. This study integrates the knowledge on resilience and crisis management to examine how health organisations overcame challenges throughout the crisis. The Gemelli Polyclinic Foundation, a major hospital in Italy and a frontrunner in the country's pandemic response, serves as a case study for the research. The case details the measures utilised to keep going and keep up with essential tasks even when faced with overwhelming odds. The Gemelli's whole reaction was the product of three sorts of responses: behavioural (strong leadership), cognitive (quick reallocation of resources), and contextual reinforcement (response from a multiagency network). While healthcare organisations cope with the epidemic, the authors suggest an integrated framework for crisis management and resilience. So, other hospitals and organisations may learn from Gemelli's mistakes and strengthen their crisis management and resilience protocols. Amid a crisis, there is a chance to make innovations that were implemented during the crisis systemic and permanent. Learning how organisations learn from crises and adjust to the "new normal" is essential to constructing long-term resilience, however, this study only delves into the coping phase of pandemic response. In light of need for more research into the integration of theories of resilience and crisis management in complex organisations like healthcare, this study provides empirical support for that request.

Anderson (2022) Research on the choices taken by macro-level policymakers is lacking, even though "Resilient Healthcare" (RHC) emphasises the value of adaptive

capacity to manage unanticipated crises like the worldwide coronavirus disease 2019 (COVID-19) pandemic. Utilizing a resilience framework, the research examines the public statements made by the governments of Australia and Canada. To comprehend the various government actions and their relationship to resilience, the research eloquently states the necessity of conceptual clarity in system resilience analysis and incorporates three theoretical viewpoints. The study adds to the increasing body of indication on RHC, but there are still many unanswered questions about how to understand resilience at various scales (temporal and spatial), how to analyses relations between meso, macro, and microsystem levels, and how to find reliable data sources for studying macro level resilience.

Phalguni (2024) evaluates the potential for "machine learning" (ML) approaches to transform the healthcare sector. In particular, the project will look at how improvements in 5G-enabled networks might enhance predictive analytics, make precise disease detection easier, and allow for customized treatment recommendations. The use of machine learning to the healthcare sector is also a significant advancement, particularly in India, where it has the potential to drastically alter way that medical care is provided. By integrating 5G infrastructure with machine learning, the Indian healthcare sector could improve accessibility, efficiency, and precision for healthcare interventions. Consequently, the population as a whole may experience better health outcomes.

Basterrechea and Jan C Frich (2024) Current and future healthcare executives must be prepared to adapt to changing healthcare delivery patterns, which are being driven by major global trends. Both individual leaders and programs aimed at integrating and developing leaders into larger systems can benefit from a well-designed leadership competence model. Specifically, to detail the steps taken to revise "Global Healthcare Management Competency Directory" as published by "International Hospital

Federation" (IHF). Current research on key developments in healthcare delivery and an evidence-based model of leadership abilities served as inspiration for the updates. Using online surveys and interviews, 45 subject-matter experts from 30 countries and regions examined the initial framework competencies and offered input. Their framework design, framework competencies, and behavioural descriptions were all improved using this iterative input. From 30 different nations and regions, 45 subject-matter experts took part in the poll in some way. The finished model of leadership competencies has 32 skills and knowledge areas structured into six categories: values, self-improvement, execution, relationships, context management, and transformation. To evaluate and cultivate healthcare leaders prepared for the future, the IHF has revised its Leadership Model, making it a strong, evidence-based tool.

2.8   Research Gap

The review of literature has presented an evaluation of the strategies for growth and sustainability adopted by sized and large healthcare organizations, in India both during and after the COVID 19 outbreak.

By delving into existing studies and real-life examples we have uncovered a number of tactics that're vital, for the strength and growth of these entities.

Key Takeaways

- **Embracing Digital Advancements;** The integration of electronic health records (EHRs) and AI powered diagnostics has improved healthcare services. Apollo Hospitals for instance has effectively utilized these technologies to offer consultations enhance patient care and maintain efficiency amidst the pandemic.

- **Broadening Service Offerings;** By diversifying services to include wellness programs and home healthcare options organizations like Fortis Healthcare have been able to adapt to changing demands while creating sources of revenue. This

approach has led to increased involvement better health outcomes and organizational resilience.

- **Forging Strategic Alliances;** Collaborating with technology firms, pharmaceutical companies and other partners has provided healthcare organizations with resources and specialized knowledge. The partnerships established by Dr. Lal Path Labs for tools and testing kits demonstrate the advantages of collaborations in addressing challenges arising from the pandemic.

- **Upholding Practices:** Financial stability well as environmental and social sustainability measures play a critical role, in ensuring enduring success of healthcare institutions.

It is reiterated that the growth and sustainability strategies emphasized in this analysis are vital for healthcare institutions to overcome the challenges brought about by the COVID 19 future crises. The implementation of transformation, diversification of services and forming partnerships have proven effective in strengthening organizational resilience and improving patient care. Moreover, integrating practices into healthcare operations is essential for ensuring success and making a positive impact on society.

CHAPTER III:

RESEARCH METHODOLOGY

3.1 Overview of the Research Problem

The COVID-19 pandemic has once again reminded everyone that all healthcare systems are fragile around the globe, and India also experienced this wretched fact. Because most of the medium and large healthcare organisations are complex, they have many issues which have a larger impact on the sustainability of the organisations and their operations in India. These institutions are the building blocks that make up a nation's delivery of health care services and were characterised by several serious issues requiring expeditious and innovative solutions.

It emerged that the large number of patients was one of the issues of concern. It is completely safe to argue that a large number of COVID-19 patients arrived simultaneously and in large amounts, overwhelming the healthcare systems. This led to many patients seeking care in hospitals and clinics due to overloading and demands for more hospital beds as well as medical supplies and personnel since the onset of COVID-19(P. Chatterjee, 2020). It revealed current gaps in the responsiveness and preparedness as well as flexibility of the healthcare system.

The disturbance in the supply networks only made things worse. Our basic needs that were a challenge to be found included Personal protection equipment (PPE), ventilators, and prescription drugs. Overall, it is established that the existing shortages negatively affected healthcare workers' ability to provide timely and adequate care (Kapoor et al., 2023). One of the big hindrances turned out to be a microeconomic issue – the effects of COVID on the company's financial position. The sustainability of many of these institutions was threatened as operating costs from purchasing PPEs and other

essentials increased and revenue from elective surgeries and simple consultations reduced (Kaye et al., 2021).

Essential issues arose in the process of the fast transition towards technological digital health solutions." Although telemedicine and EHR lower the infection threats and enable a continuity of care, the mass implementation of these solutions requires a major investment and shift in capital (Tsai et al., 2020). Within a short period, a huge transformation had to occur through the sudden implementation of new technology, ensuring staff training and also ensuring patient data protection and security in the broad speciality of the healthcare industry.

For this reason, it is crucial to analyze, systematically, the strategies that mediums as well as big health care organizations of India adopted before, during, and even post-COVID. Determining how effectively and sustainably these strategies operate will provide valuable information for the next crisis and healthcare organization. How construct a sound model that can withstand further epidemics or other significant changes is possible only when the principles of what has been efficient and what has not been efficient are clear.

Moreover, even when some strategies have shown immediate benefits, the question arises of how they will change things as time goes on. Discussed are issues on the implementation of novel supply chain management strategies, the econometrics of expanding the quantity and variety of the services to be offered, and the adaptation and growth of digital health solutions (Jalili et al., 2021). Therefore, this research aims to fill these gaps by providing a comprehensive analysis of the development and sustainability approaches applied by medium-sized and big healthcare institutions in India in course of the COVID and afterwards.

3.2 Operationalization of Theoretical Constructs

Measurement involves the process of turning the theoretical concepts into operational variables to allow research analysis based on the study purpose and objectives. This research focuses on three key constructs: issues of interest during the COVID-19 pandemic, sustainable and growth strategies used and how these affected operations and expansion.

The first construct is "primary concerns during COVID-19" it involves the issues in medium and large healthcare organisations. These are patient flow disturbances, financial losses, lack of resources, and inefficiencies in functioning. To capture these concerns, survey questions will seek to find out the income loss, human resources issues and supply chain issues in a Likert scale of no impact, moderate impact and severe impact. The second construct, namely "sustainable and growth strategies" involve the measures carried out to manage risks and ensure sustainability. Such measures may consist of integrating telemedicine, improving organizational performance, increasing resource utilisation, and executing policy changes. Both quantitative and qualitative data will be collected from structured questionnaires extent of use, and success of those strategies. The third construct is "operations and expansion impact" which is an assessment of how these strategies supported organizational operations during the pandemic and how they supported expansion. This will be measured using some of the factors such as, operational disruption, service delivery growth, and organizational solvency, using questionnaires and secondary data.

In combination, these constructs are measured and used to offer a detailed picture of how healthcare organizations in India responded to the post-pandemic environment.

3.3   Research Purpose and Questions

Therefore, the goal of this research is to create a growth and sustainability framework for medium and large healthcare organizations in post-Pandemic India. The research aims at establishing the main issues that the above institutions encountered during the COVID-19 crisis, as well as the measures that the institutions used to overcome difficulties, and the efficiency of the measures in maintaining the continuity of operations and future development.

Thus, the research is interested in the core concerns that emerged during the pandemic, including financial vulnerability, resources scarcity, and operational challenges, to offer insights into how these concerns were managed. Moreover, the study examines sustainable activities and new sources of growth and explores how digital health and operations can support resiliency to disruptions.

In conclusion, the research seeks to provide practical solutions to the problem that may help healthcare organizations to improve its ability to respond to future disasters and maintain sustainability in the long run as well as make a positive influence on the development of Indian healthcare system within the context of the increasing globalization. This purpose corresponds with the general objective of developing the capability of healthcare institutions to continuously innovate and overcome obstacles and evolving circumstances.

These crucial concerns will be addressed by the study to achieve its objectives:

- What were the primary concerns with the COVID, facing medium-sized and large healthcare institutions?

- What sustainable and growing strategies were employed to address these issues?

- In what degree did these strategies sustain operations and expansion? In what ways will these strategies affect Indian healthcare in the long run?

3.4   Research Design

This research work adopts descriptive research method Sahin and Mete (2021) with a view to investigating and comparing the development and shareholders' management innovations of the medium and large health facilities in India in the post COVID-19 world. Descriptive research is suitable for this study as it hopes to describe the experience of the pandemic and how it was managed.

In that regard, the research employs both qualitative and quantitative data to gather data from the participants and subjects of the study to get the best findings (Mitra et al., 2018). The quantitative data was then gathered by using closed-ended questionnaires that sought to determine the level of challenge or intervention, the level of strategy implementation and their effectiveness. The questionnaire used a Likert scale to measure responses so that responses could be analyzed statistically. A pilot study using regular convenience sampling was conducted with medium and large healthcare institutions across India to obtain a diverse sample. The 'Quality data' was collected by way of Secondary research data in the form of the industry reports, organizational policies, annual report data and journal articles. This data gave social densification on the occurrence that might not have been noticeable through simple quantitative numbers alone. Further, qualitative factors were integrated to assess the sustainability of these strategies on operations and growth.

Through such integration, the research design makes it possible to achieve a contextual analysis of the identified strategies that fostered operational resilience and growth in the Indian healthcare sector during and after the COVID-19 outbreak.

3.5   Population and Sample

Study participants for this research are medium and large healthcare organizations in India that faced operational disruptions in the COVID-19 outbreak. These are extension

of primary care which includes hospitals, multi-specialty clinics and health care service delivers with human resources and supportive infrastructure for a large number of patients.

The number of respondents for this study is estimated to be 300 respondents Lakens (2022) from senior management, healthcare administrators, and the key decision makers in these healthcare organizations. These individuals were chosen because they are directly involved with the planning and execution of growth and sustenance during and after the pandemic. The study used convenience sampling method Novielli, Kane and Ashbaugh (2023) because it was easier to access a wide range of respondents within the available time and with the available resources. Although there might be a lack of generalization of the findings of this study, it guarantees a sufficiently large and diverse sample to investigate the formulated research questions.

The study will endeavour to harness the specific information from this defined population of healthcare organisations to identify the specific challenges faced, strategies used and the results of such efforts so as to support a sound growth and sustainability model for organisations in India.

3.6   Participant Selection

In the sample selection process, the criteria for selecting the participant were clearly outlined in a manner that would make the participant chosen correctly depict the intended population. The criteria are outlined in the table below:

Criteria	Inclusion	Exclusion
Organization Type	Medium and large healthcare organizations (hospitals, clinics, healthcare service providers)	Small healthcare organizations or standalone private practices

Role	Senior management, administrators, and decision-makers involved in strategy development	Operational staff without strategic decision-making roles
Geographical Scope	Healthcare organizations based in India	Healthcare organizations located outside India
Pandemic Experience	Organizations that operated during the COVID-19 pandemic and implemented strategies to address challenges	Organizations that were established after the pandemic or did not face pandemic-related challenges
Data Availability	Organizations willing to provide information on challenges, strategies, and outcomes	Organizations unwilling or unable to share relevant data

3.7 Instrumentation

The main source of data collection in this research is a quantitative survey questionnaire Kuphanga (2024) that aims at capturing data from the senior management and decision makers in medium and large-scale healthcare organizations. This questionnaire consists of a series of closed-ended questions using Likert scale Joshi *et al.* (2015) in relation to the severity of COVID-19 challenges encountered; sustainability practices adopted; and the repercussions on business functioning and growth. The instrument was designed in a way that it is clear, reliable and relevant to the objectives of the research for facts and figures on operational disruption, service delivery growth and organizational solvency. Some modifications were made to the questionnaire through pre-testing so as to ensure that the questions posed capture the required information. It also makes it easier to be consistent and makes it possible to use statistical analysis tools such as SPSS to evaluate data.

3.8   Data Collection Procedures

According to the research objectives and questions of the study, the data collection for this study was systematic to include both primary and secondary data sources that would help in analyzing the growth and sustainability strategies of medium and large healthcare organizations in post-pandemic India.

Primary Data Collection: Qualitative primary data was obtained from a survey with a structured questionnaire developed to generate quantitative data from the respondents. The questionnaire had Likert scale questions about COVID-19 challenges, sustainable practices, and their consequences for business operations and evolution. The target respondents in the study were from the middle, senior management, and key health facility administrators or those in the decision-making realm of healthcare organizations of moderate and large proportions. The method used to select participants was Convenience sampling because it allowed easy access to the respondents and a variety of the 300 respondents. (Sylvia, 2023).

Secondary Data Collection: Secondary data was obtained from annual/quarterly/half-yearly reports, manuals, financial statements, journals, newspapers, magazines, periodicals and books. This data given contextuality and improved the validity of the study by means of data triangulation of the data collected. They also gave information on many of the other trends and patterns concerning the total healthcare sector during the pandemic (Johnson & Sylvia, 2023).

The mix of structured primary data along with secondary data offer a strong and elaborate data collection mechanism beneficial for the study and its target to set-up a growth and sustainability model for healthcare organizational structures in India.

3.9   Data Analysis

In the current study, data analysis was only done on data that was collected through structured questionnaires only. All the quantifiable data was analyzed with a statistical computer programme "SPSS" which is a suitable tool for testing the statistics(Čaplová & Švábová, 2020).

The following tests were performed to address the research objectives:

- **Descriptive Analysis**: In analysing the data, the mean and standard deviations was computed to obtain the best estimate of the sample descriptive measures. To determine the extent of the challenges encountered during this pandemic and measures taken by the healthcare organizations, descriptive statistics that is mean, median standard deviation and frequency distribution were used. (Kemp et al., 2017).

- **Correlation Analysis**: Correlational tests were used to establish the relation between two variables, for instance, the relation between the particular strategies, for instance, telemedicine adoption and operation resilience. This was useful to determine if and how variables are associated, more specifically how positively or negatively they are associated (Senthilnathan, 2019).

- **Regression Analysis**: Multiple regression analysis was used to analyse the relationship between independent variables such as sustainability and growth strategies and dependent variables such as operational continuity and expansion results. This test was useful in determining the efficacy of the techniques used during this pandemic (Hirsch, 2024).

Thus, including such statistical methods, the research offers a quantitative approach towards explaining how healthcare organisations managed the crisis that erupted from COVID-19 and validates the research study.

3.10   Research Design Limitations

While the research design provides valuable insights into the growth and sustainability strategies of medium and large healthcare organizations in post-pandemic India, certain limitations should be acknowledged:

- **Convenience Sampling**: One method of data collection, convenience sampling technique, might reduce the validity of the results. The cross-sectional study is also limited by the fact that the sample was selected based on convenience meaning that the authors might not have had access to all medium and large healthcare organizations in India (Etikan, 2016).

- **Self-Reported Data**: The reliance on self-reported data from senior management and decision-makers introduces the possibility of response bias. Participants may overstate the effectiveness of their strategies or underreport challenges to present their organization in a positive light (Rosenman et al., 2011).

- **Limited Scope of Secondary Data**: Although secondary data was collected for context, it was not directly analysed alongside primary data. This separation may limit the ability to draw more nuanced conclusions by integrating both data sources (Rosenman et al., 2011).

Acknowledging these limitations is essential to contextualize the findings and provide a balanced interpretation of the study's outcomes. These constraints might be overcome in future studies by using random sampling, including qualitative techniques, or broadening the focus to encompass international comparisons.

3.11   Conclusion

In conclusion, this study adopts both quantitative and qualitative analysis, with a primary data collection method that employ structured questionnaires to measure the growth and sustainability strategies of the medium and large healthcare organisations in

post pandemic India. With descriptive, correlation, as well as regression analysis, the study assesses the level of challenges encountered, effectiveness of implemented strategies, and its implication to business functioning and growth. By using a survey research method on a sample of 300 healthcare organizations focusing on senior managers and decision-makers, the research adopts an empirical approach to establish how these organisations responded to the pandemic and how they were planning for future development. This approach does give a whole concept and useful information and agrees to the fact that this research has some limitation like a convenience sampling technique and the research only used the primary data.

CHAPTER IV:

RESULTS

4.1 Reliability Analysis

Table 4.1: Reliability Statistics

Cronbach's Alpha	N of Items
.832	31

The reliability statistics indicate that the 31 items on the scale have a high degree of internal consistency, with a Cronbach's Alpha score of 0.832. A Cronbach's Alpha value greater than 0.8 is usually regarded as excellent, indicating that the items assess the same underlying construct and are highly associated. This level of reliability suggests that the scale is dependable for assessing the intended variable or concept.

4.2 Frequency Analysis

Table 4.2: Demographic Details of Respondents

		Frequency	Percent
What is your age group?	18–24 Years	29	9.7
	25–34 Years	52	17.3
	35–44 Years	150	50
	45–54 Years	64	21.3
	55 and above Years	5	1.7
Gender	Male	151	50.3
	Female	136	45.3
	Non-binary/Other	10	3.3
	Prefer not to say	3	1
Highest level of education	High Secondary School	25	8.3
	Diploma/Certificate	42	14

	Bachelor's Degree	127	42.3
	Master's Degree	90	30
	Doctorate/Ph.D.	16	5.3
Current role in the healthcare sector	Medical Practitioner (Doctor/Nurse)	36	12
	Healthcare Administrator	113	37.7
	Support Staff (Technician, etc.)	99	33
	Researcher	43	14.3
	Other	9	3
Healthcare organization do you work for	Public hospital	25	8.3
	Private hospital	84	28
	Specialty clinic	133	44.3
	Multi-specialty hospital	51	17
	Other	7	2.3
What is the size of your organization?	Medium-sized (100–500 employees)	127	42.3
	Large-sized (500+ employees)	173	57.7
How many years of experience do you have in the healthcare sector?	Less than 5 years	24	8
	5–10 years	104	34.7
	11–20 years	145	48.3
	More than 20 years	27	9
In which region of India is your organization located?	North	21	7
	South	65	21.7
	East	93	31
	West	89	29.7
	Central	32	10.7

What type of area does your organization serve	Urban	77	25.7
	Semi-urban	146	48.7
	Rural	77	25.7
What sustainable and growth strategies were employed by medium-sized and large healthcare institutions to address the issues faced during the COVID-19 pandemic? (Select all that apply)	Digital transformation, including telemedicine and electronic health records (EHRs)	20	6.7
	Expansion of service offerings, including wellness and preventive care programs	31	10.3
	Strategic partnerships with pharmaceutical and technology companies	44	14.7
	Implementation of new supply chain models to ensure essential medical supplies	49	16.3
	Diversification into non-traditional healthcare services (e.g., remote diagnostics, home care)	68	22.7
	Public-private partnerships (PPPs) to enhance healthcare infrastructure	47	15.7
	Increased focus on healthcare workforce training and development	23	7.7
	Adoption of sustainable and eco-friendly operational practices	12	4
	Improved patient care models focused on continuity and safety	6	2
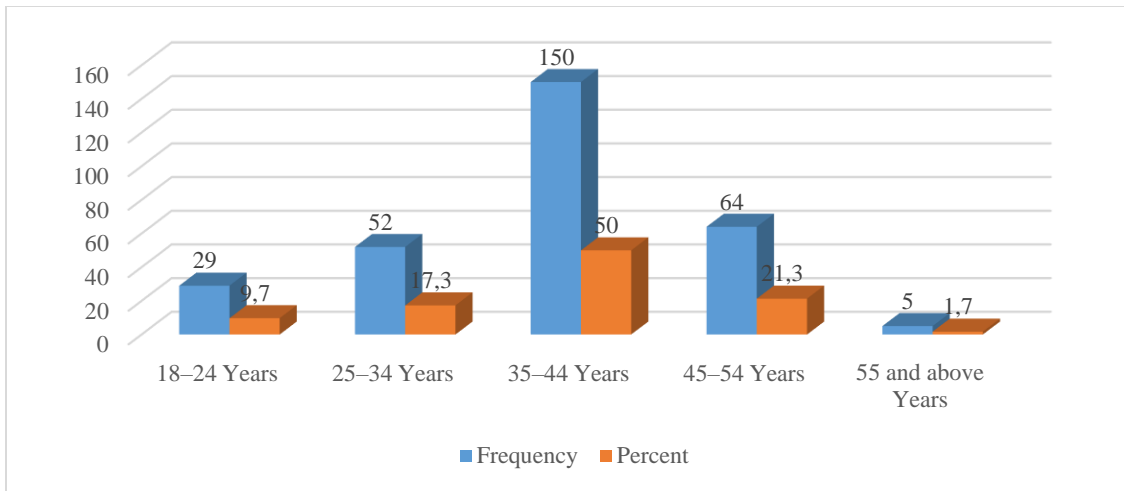
Figure 4.1: Age Group

Figure 4.1 shows that 50.0% of respondents are 35–44 years old, 17.3% are 25–34, and 21.3% are 45–54. 9.7% of responders are 18–24 years old, while 1.7% are 55 and older. This shows a primarily middle-aged population, with the highest percentage in the 35–44 age range. Younger and older age groups are underrepresented.
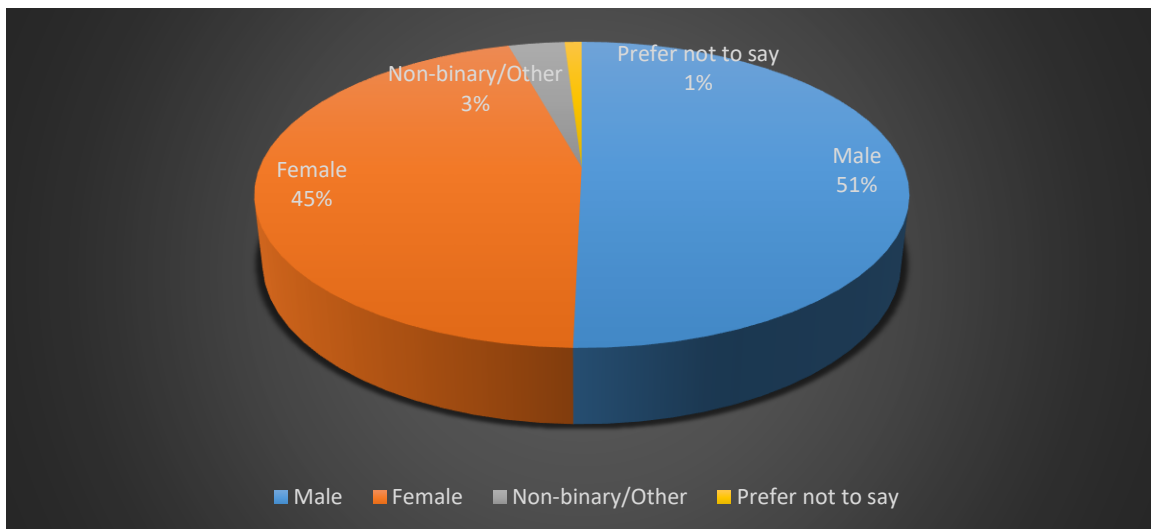
Figure 4.2: Gender

As seen in figure 4.2, 50.3% of the sample is male, followed by 45.3% female. 1% prefer not to disclose their gender, and 3.3% are non-binary or other. The number of non-binary/other and unreported respondents is small yet significant.
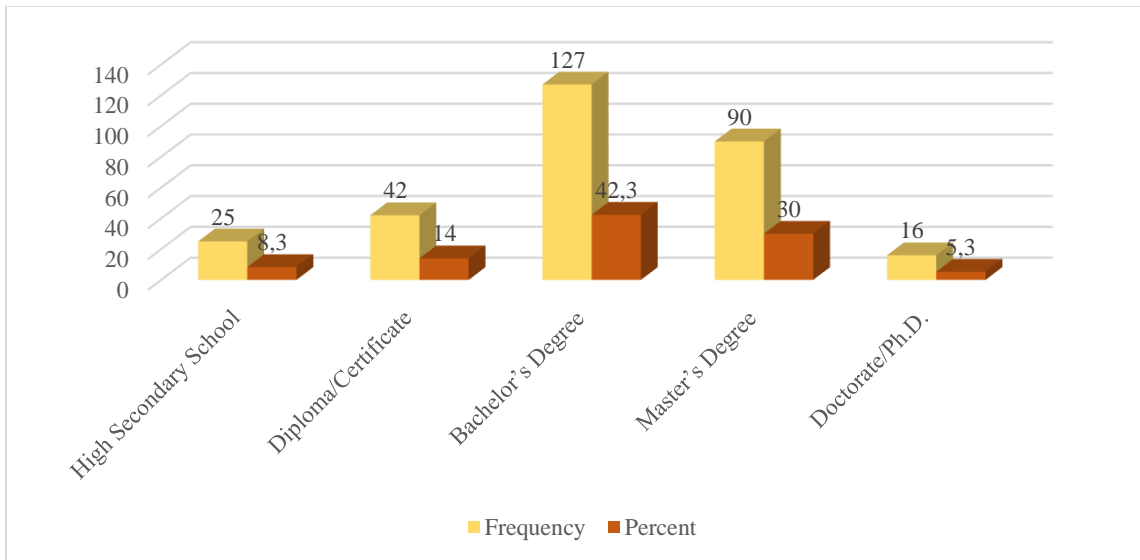
Figure 4.3: Highest level of education

Figure 4.3 reveals that among the respondents, 30.0% held a Master's degree, while 42.3% held a Bachelor's. Diploma or Certificate holders make up 14%, while High Secondary School graduates make up 8.3%. Only 5.3% have a Ph.D. This sample is well-educated, with most having Bachelor's degrees and a significant percentage having advanced degrees.
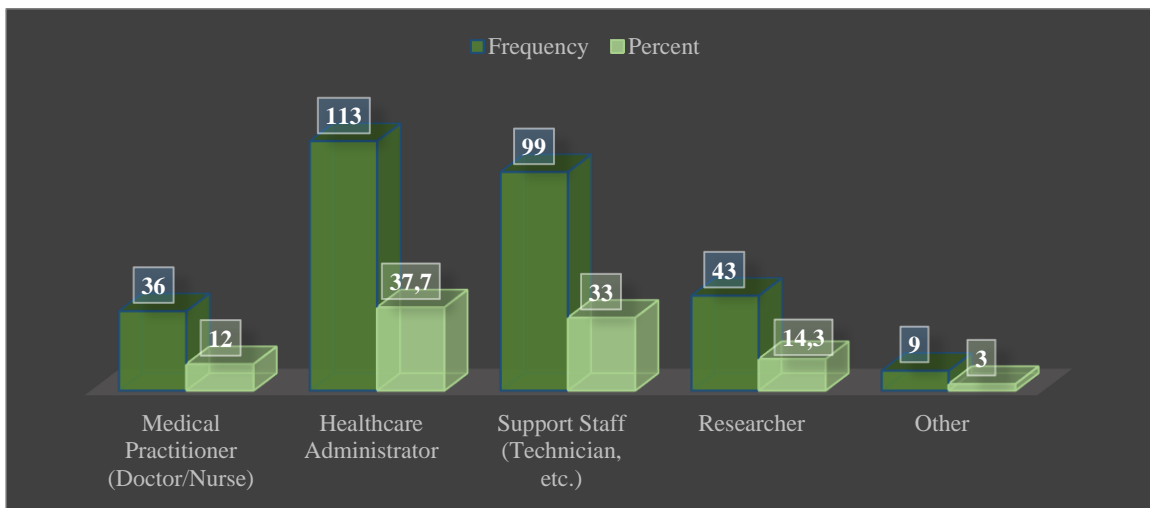
Figure 4.4: Current role in the healthcare sector

The above figure 4.4 distribution of roles in the healthcare sector shows that the largest group of respondents are Healthcare Administrators, representing 37.7% of the sample,

followed by Support Staff such as technicians, who make up 33%. Researchers account for 14.3% of the respondents, while Medical Practitioners, including doctors and nurses, represent 12%. A smaller portion, 3%, fall into the "Other" category.
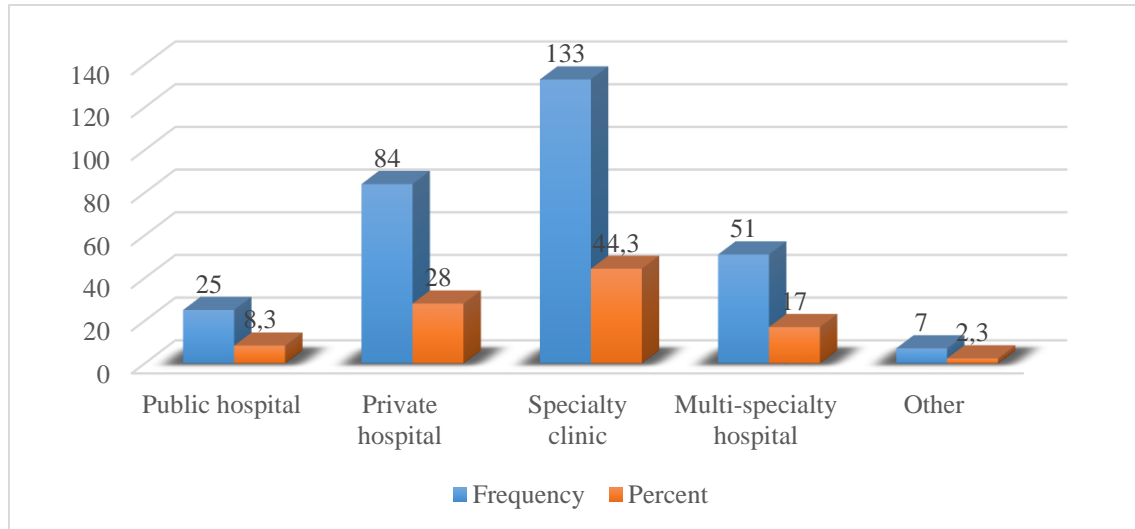
Figure 4.5: Which type of healthcare organization do you work for

Figure 4.5 reveals that 44.3% of respondents work in specialty clinics, 28% in private hospitals, and 17% in multi-specialty hospitals. 8.3% of respondents work in public hospitals and 2.3% in other healthcare settings. More responders were linked with specialized clinics and private hospitals than public hospitals or other facilities.
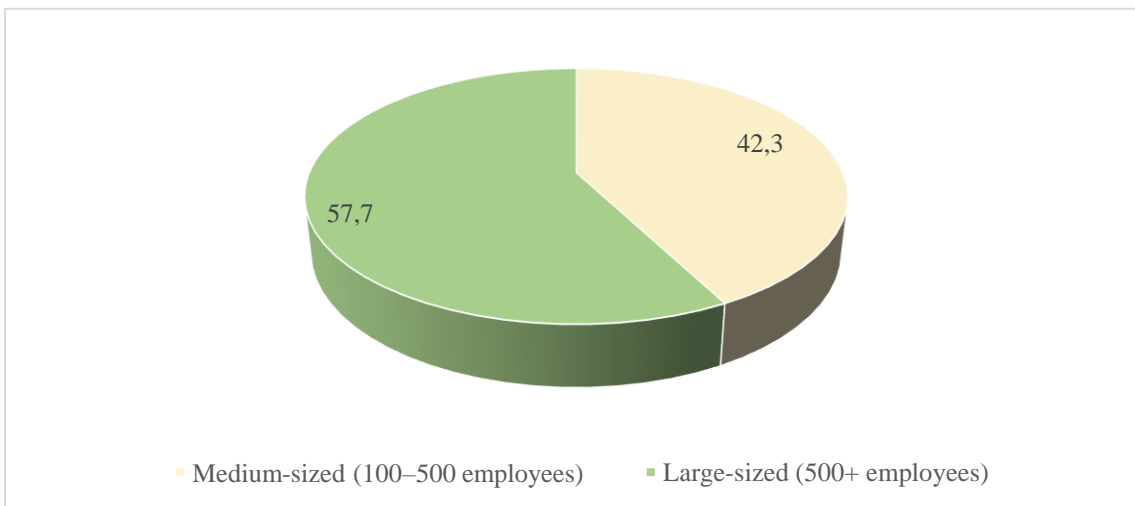
Figure 4.6 What is the size of your organization?

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See Figure 4.6 for organizational size. 57.7% of respondents work in large organizations with over 500 workers, while 42.3% work in medium-sized organizations with 100–500 employees. A large share of the sample is connected with larger firms, indicating a staff focused on greater operations.
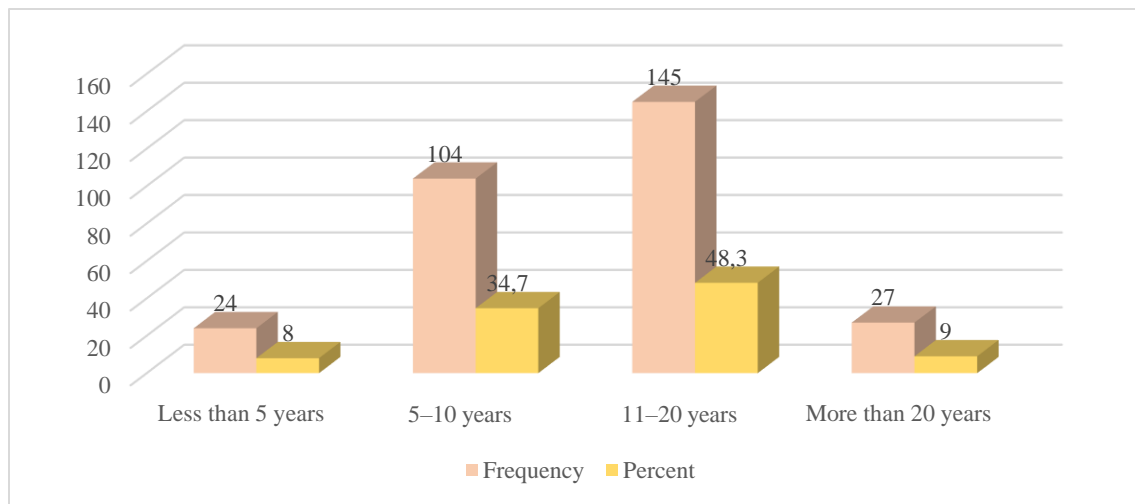
Figure 4.7: How many years of experience do you have in the healthcare sector

The Figure 4.7 reveals that 48.3% of respondents have 11–20 years of healthcare experience, the most represented category. 34.7% have 5–10 years of experience. Only 8% of respondents have fewer than 5 years of experience, while 9% have more than 20 years. Most had over a decade of healthcare experience, indicating a highly experienced group.
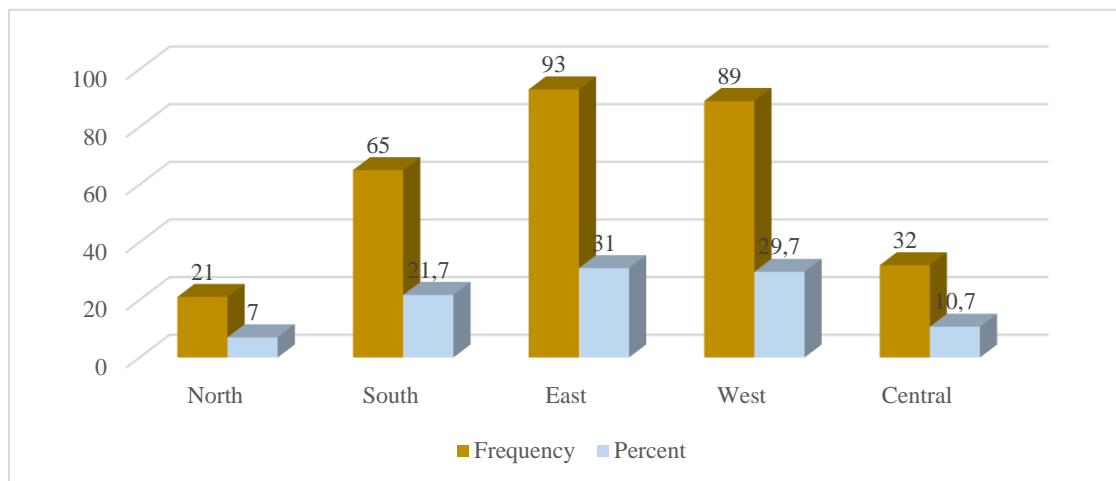
Figure 4.8: In which region of India is your organization located

Figure 4.8 demonstrates that 31% of Indian organizations are in the East, followed by 29.7% in the West. The South has 21.7% of responses and the Central 10.7%. North has the smallest representation (7%). This shows a balanced geographic dispersion, with East and West emerging slightly.
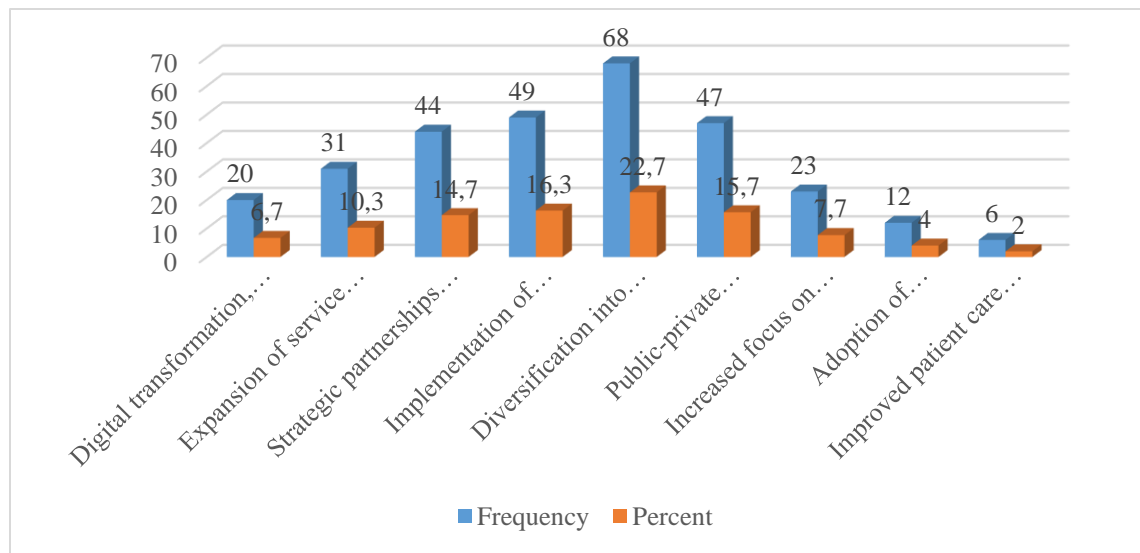
Figure 4.9: What sustainable and growth strategies were employed by medium-sized and large healthcare institutions to address the issues faced during the COVID-19 pandemic? (Select all that apply)

The data reveals that healthcare institutions employed various strategies during the COVID-19 pandemic, with diversification into non-traditional services (22.7%), new supply chain models (16.3%), and public-private partnerships (15.7%) being the most adopted. Strategic partnerships (14.7%), expanded service offerings (10.3%), and workforce training (7.7%) also played key roles. Digital transformation (6.7%), sustainable practices (4%), and improved patient care models (2%) were less prioritized. These strategies, totaling 100%, reflect a balanced approach to addressing immediate challenges and fostering long-term growth.

Table 4.3: Technological Factors

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The organization has effectively implemented digital health solutions (e.g., telemedicine, EHR).	Frequency	33	196	31	33	7
	Percent	11	65.3	10.3	11	2.3
Technology has streamlined our operations and improved service delivery.	Frequency	7	54	88	138	13
	Percent	2.3	18	29.3	46	4.3
Our organization regularly upgrades its technology to stay ahead of industry trends.	Frequency	14	181	53	47	5
	Percent	4.7	60.3	17.7	15.7	1.7
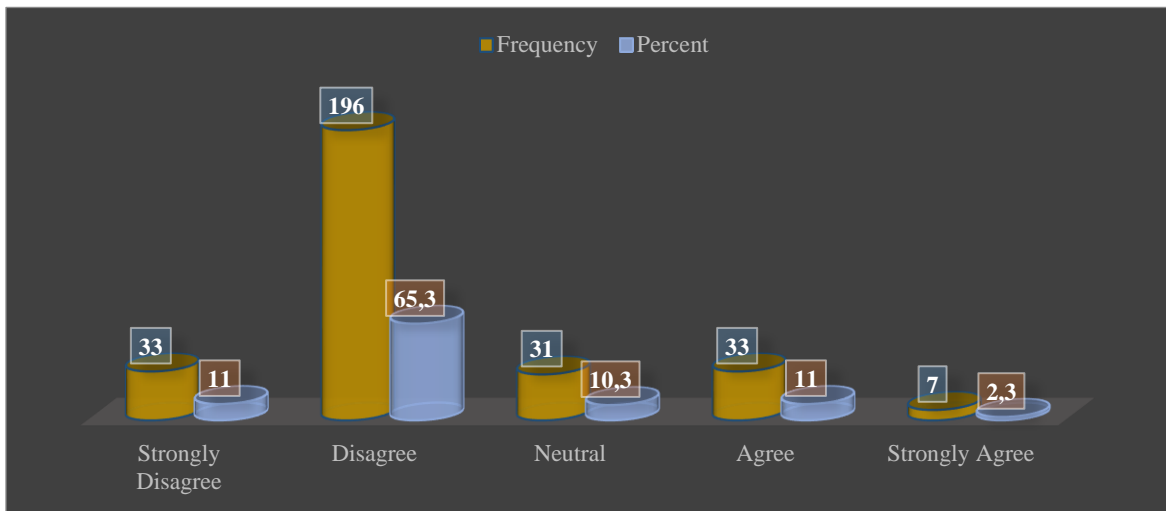
Figure 4.10: The organization has effectively implemented digital health solutions (e.g., telemedicine, EHR).

Figure 4.10 shows that 76.3% of respondents think the organization has not successfully incorporated digital health solutions, whereas 65.3% reject and 11% completely disapprove. Only 13.3% think the implementation was successful, whereas 11% and 2.3%

fully concur. 10.3% are unfavourable, having no strong opinion. These results indicate that most view the organization's digital health solutions as weak or ineffective.
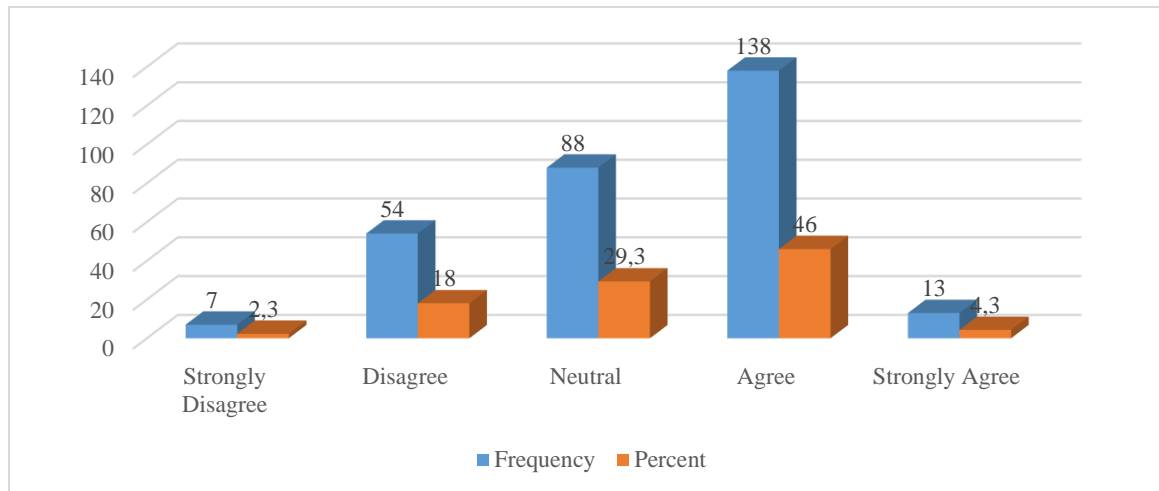
Figure 4.11: Technology has streamlined our operations and improved service delivery.

Figure 4.11 reveals that 50.3% of respondents affirm the assertion, with 46% agreeing and 4.3% strongly agreeing. Neutral is 29.3%, showing uncertainty or no strong opinion. While 20.3% disagree, 18% disagree and 2.3% strongly disagree. These findings reveal that while most agree, a significant percentage are unsure or believe the statement misrepresents the situation.
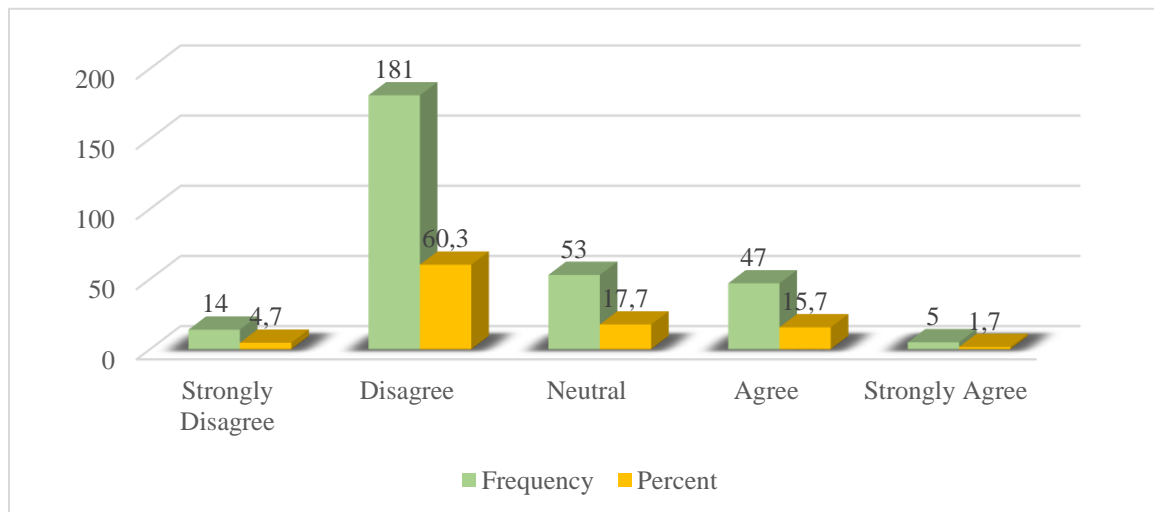
Figure 4.12: Our organization regularly upgrades its technology to stay ahead of industry trends.

The above figure 4.12 shows that 64.9% of respondents believe the company does not constantly improve its technology to remain ahead of industry trends, while 60.3% disapprove and 4.7% completely disagree. Only 17.4% perceive the organization's work positively, with 15.7% agreeing and 1.7% strongly agreeing. 17.7% are neutral. These results imply that most respondents view the organization as missing aggressive technological improvements, with a small minority believing it can stay up with industry developments.

Table 4.4: Operational Factors

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We regularly review and improve our workflows to reduce waste and optimize resources.	Frequency	29	190	34	38	9
	Percent	9.7	63.3	11.3	12.7	3
Operational challenges are quickly identified and addressed within the organization.	Frequency	11	61	68	145	15
	Percent	3.7	20.3	22.7	48.3	5
Our organization has an effective system in place for managing supply chains and inventories.	Frequency	16	174	56	42	12
	Percent	5.3	58	18.7	14	4
The organization ensures that operational performance is aligned with long-term strategic goals.	Frequency	33	57	60	135	15
	Percent	11	19	20	45	5
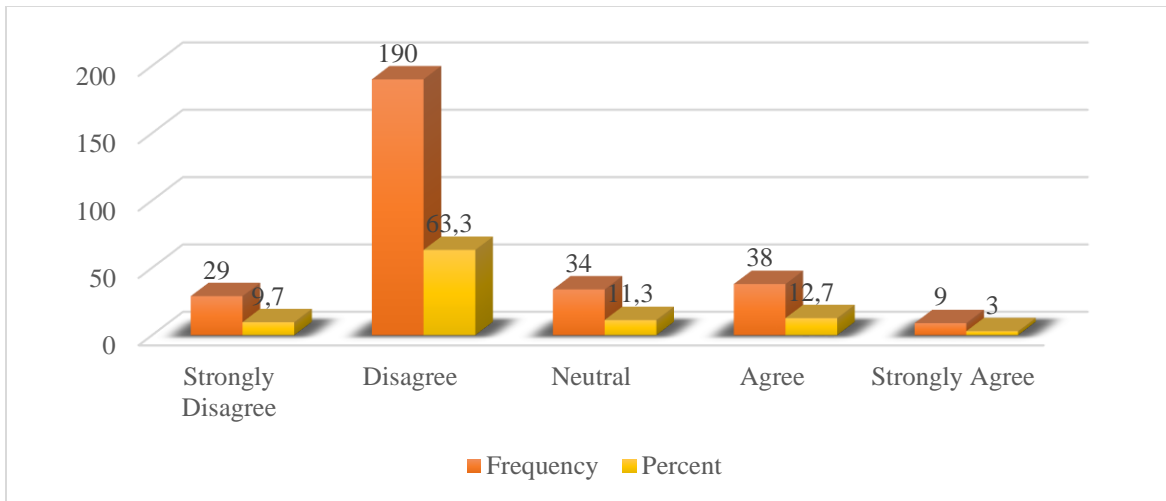
Figure 4.13: We regularly review and improve our workflows to reduce waste and optimize resources.

According to Figure 4.13, 72.9% of respondents believe the company does not routinely examine and improve its procedures to minimize waste and optimize resources, whereas 63.3% reject and 9.7% do not agree. There are 16.7% favorable, 12.7% approving, and 3% extremely agreeing. Additionally, 11.3% of respondents are uncertain. Most respondents believe the organization is not doing enough to optimize workflows and reduce waste, with only a few recognizing major advances.
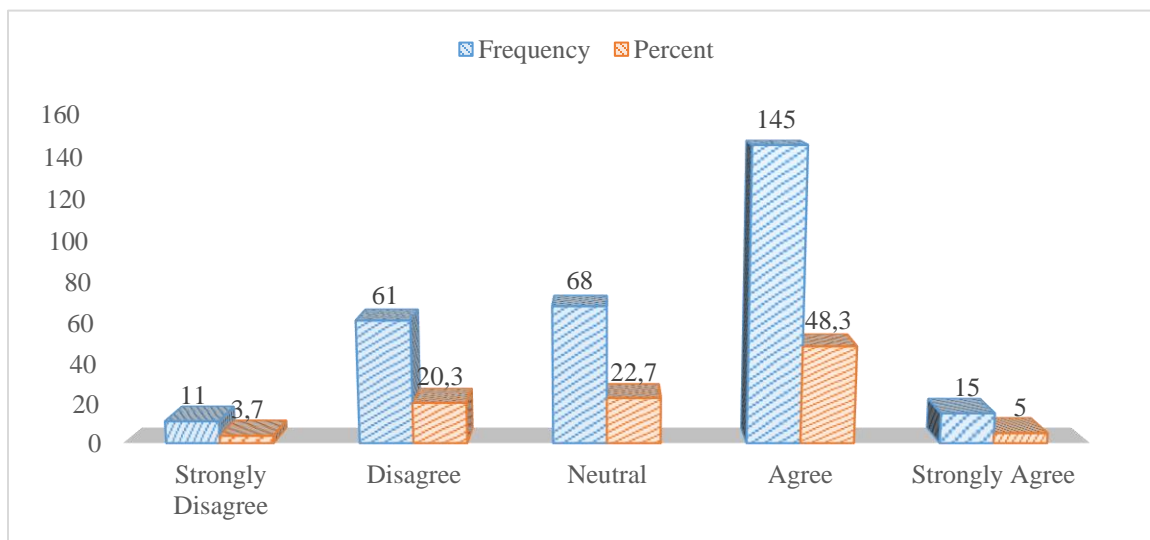
Figure 4.14: Operational challenges are quickly identified and addressed within the organization.

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The above figure 4.14 reveals that 53.3% of respondents, 48.3% agree and 5% strongly concur that the organization effectively identifies and addresses operational difficulties. 23.9% don't agree, 20.3% oppose, and 3.7% disagree firmly, while 22.7% are impartial. While most respondents regard the organization's approach to operational difficulties positively, a significant portion are either uncertain or feel the procedure is insufficient.
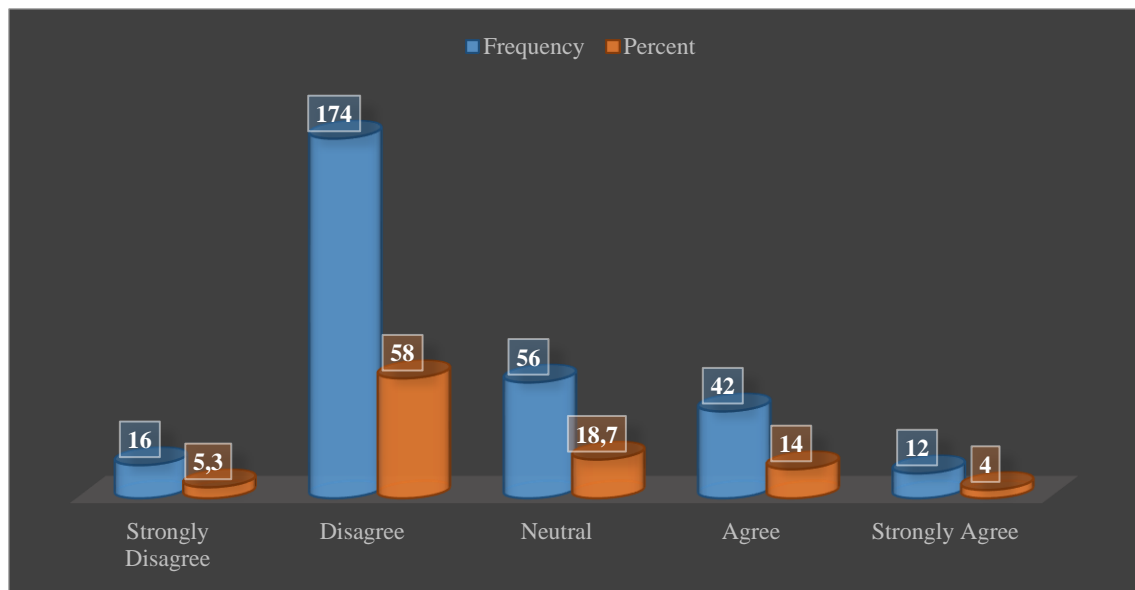
Figure 4.15: Our organization has an effective system in place for managing supply chains and inventories.

Figure 4.15 shows that 63.3 percent of respondents think the company's supply chain and inventory management system is ineffective, while 58% disagree and 5.3% strongly disagree. A smaller portion, 18.7%, is neutral. However, 18% of responses are positive, 14% agree, and 4% strongly agree. These results indicate that most see the system as flawed, while a minority see it as working well.
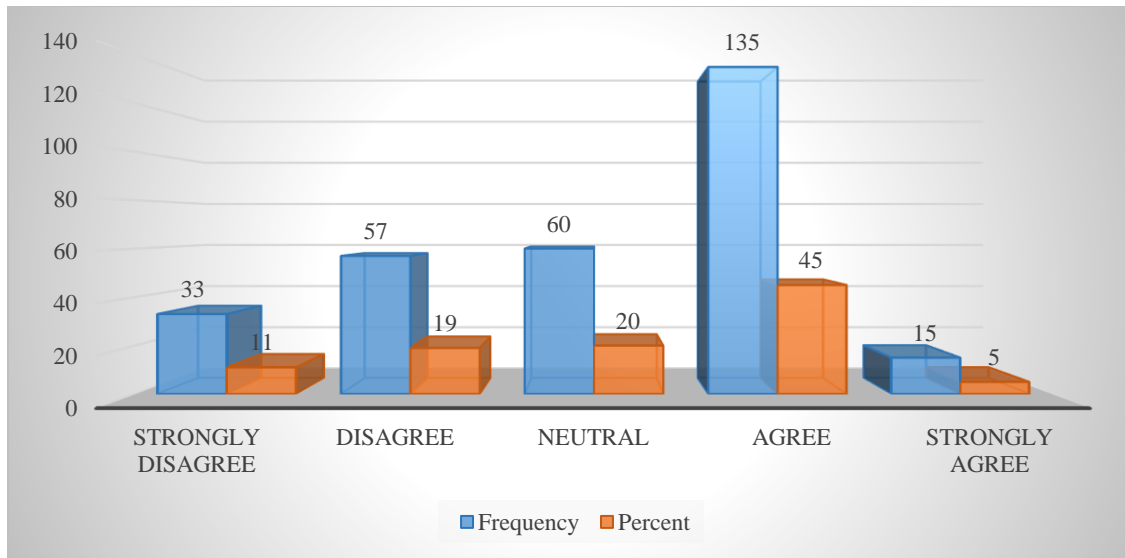
Figure 4.16: The organization ensures that operational performance is aligned with long-term strategic goals.

In Figure 4.16, 50% of respondents agree the organization matches operational success with long-term strategic goals, with 45% agreeing and 5% strongly agreeing. 20% are unfavourable providing no view. 30%, 19%, and 11% firmly disagree. These results show that while many respondents regard the alignment positively, a significant fraction sees a gap between operational success and strategic goals.

Table 4.5: Financial Factor

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our healthcare organization regularly evaluates its financial performance and makes necessary adjustments.	Frequency	30	187	36	35	12
	Percent	10	62.3	12	11.7	4
The organization has diversified its revenue streams	Frequency	13	49	80	147	11
	Percent	4.3	16.3	26.7	49	3.7

to reduce dependence on a single source.					
Investments in technology and infrastructure are made with a clear focus on long-term financial returns.	Frequency	17	170	54	52	7
	Percent	5.7	56.7	18	17.3	2.3
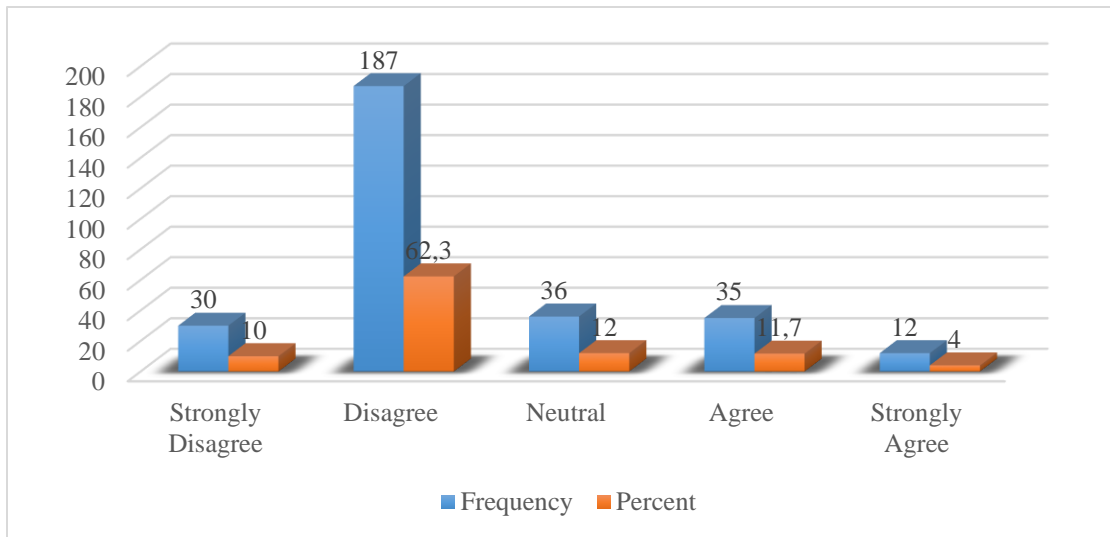
Figure 4.17: Our healthcare organization regularly evaluates its financial performance and makes necessary adjustments.

Figure 4.17 shows that 72.3% of respondents believe the organization does not regularly examine and change its financial performance, whereas 62.3% disagree and 10% strongly disagree. Only 15.7%, 11.7%, and 4% strongly believe that the organization is effectively evaluating and changing its financial performance. Another 12% are neutral, unsure or undecided. These findings imply most respondents believe the organization lacks a regular and effective financial performance evaluation process.
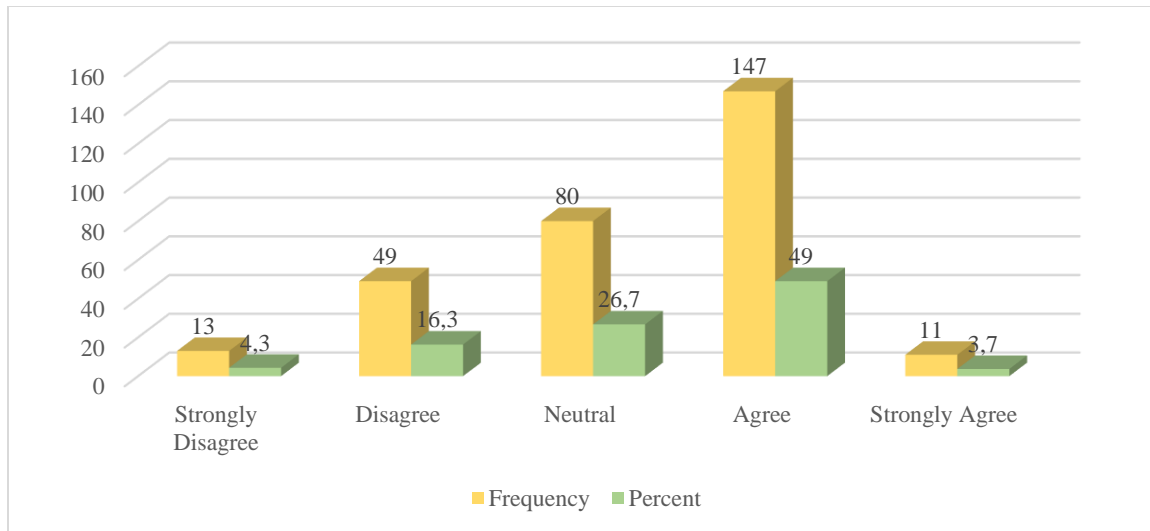
Figure 4.18: The organization has diversified its revenue streams to reduce dependence on a single source.

In Figure 4.18, 52.7% of respondents agree that the company has diversified its revenue streams to reduce dependence on a single source, with 49% agreeing and 3.7% strongly agreeing. However, 20.6% of respondents disagree (16.3%) or strongly disagree (4.3%), expressing skepticism about organization efforts in this area. Neutral 26.7% of respondents are unsure or have no strong view. Despite some skepticism, the statistics indicate a good perspective of the company's revenue diversification.
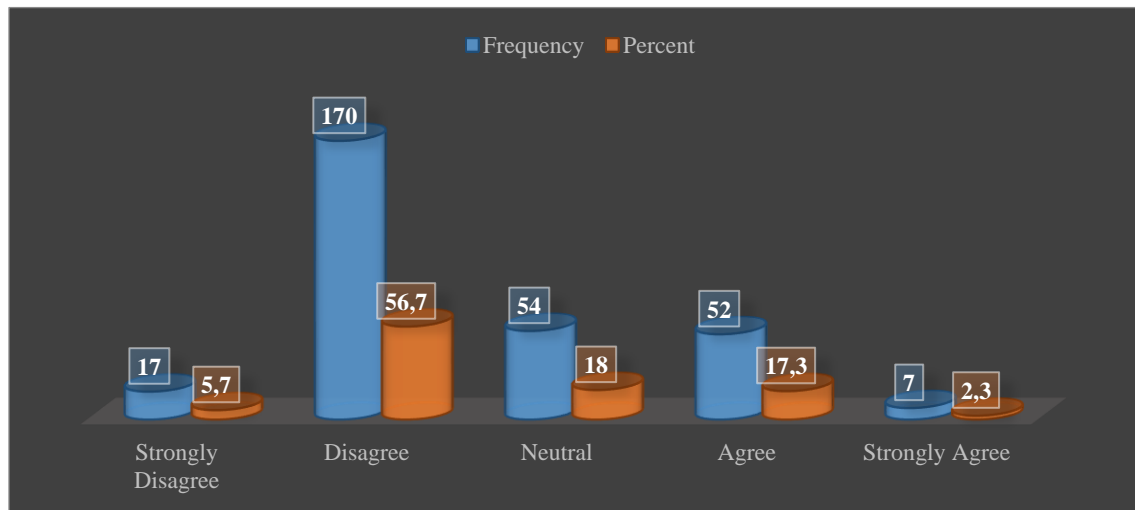
Figure 4.19: Investments in technology and infrastructure are made with a clear focus on long-term financial returns.

Figure 4.19 illustrates that most people disagree that technology and infrastructure expenditures focus on long-term financial gains. The statement disagreed or strongly disagreed with 62.4% (17% strongly disagree and 56.7% disagree), showing that these investments are not primarily for long-term financial rewards. Only 19.6% (17.3% agree and 2.3% strongly agree) are positive, while 18% are neutral. These findings suggest that most respondents do not prioritize long-term financial gains from such investments.

Table 4.6: Policy and Governance

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The organization has clear governance structures that guide decision-making and policy implementation.	Frequency	29	188	38	36	9
	Percent	9.7	62.7	12.7	12	3
Healthcare policies are regularly reviewed and updated to reflect the latest healthcare standards and regulations.	Frequency	10	48	73	153	16
	Percent	3.3	16	24.3	51	5.3
The organization complies with all relevant healthcare regulations and industry standards.	Frequency	15	187	47	47	4
	Percent	5	62.3	15.7	15.7	1.3
Policy decisions in the organization are aligned with long-term goals of sustainability and growth.	Frequency	23	55	83	127	12
	Percent	7.7	18.3	27.7	42.3	4
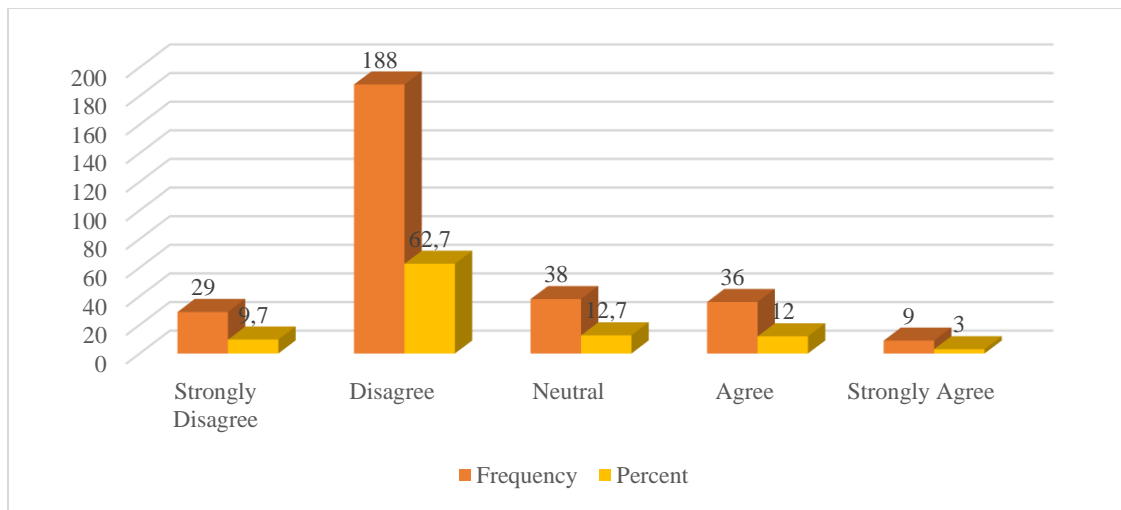
Figure 4.20: The organization has clear governance structures that guide decision-making and policy implementation.

According to Figure 4.20, a majority of respondents say the organization lacks clear governance frameworks for decision-making and policy implementation. About 72.4% (9.7% strongly disagree and 62.7% disagree) disagree with the statement, suggesting unhappiness with organisational governance clarity. Few people (12% agree and 3% strongly agree) think the governing systems are clear and effective. The remaining 12.7% are neutral, suggesting ambiguity or lack of a strong view. The research indicates that most respondents want greater or more transparent governance.
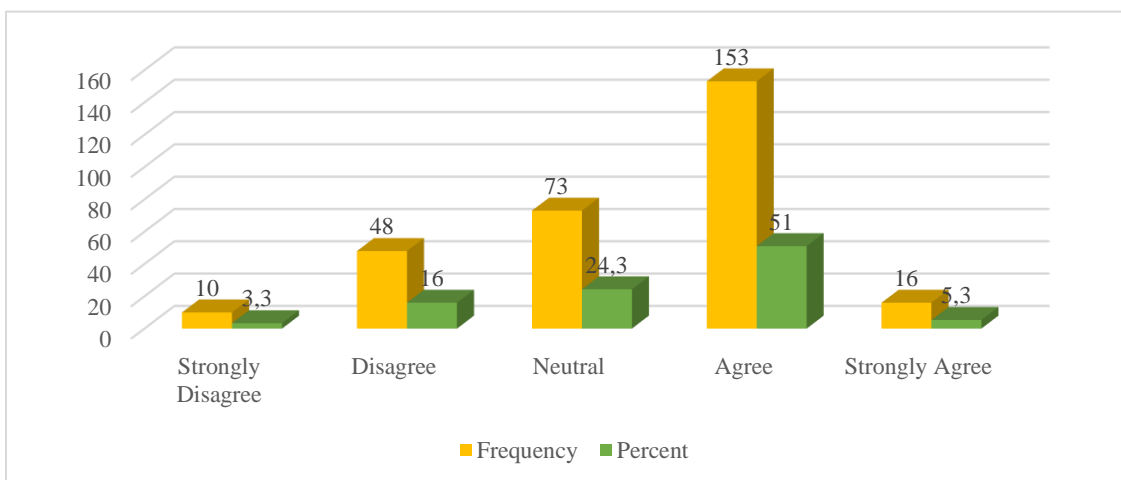
Figure 4.21: Healthcare policies are regularly reviewed and updated to reflect the latest healthcare standards and regulations.

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As shown in Figure 4.21, most respondents believe healthcare policies are constantly reviewed and revised to meet current standards and laws. The statement is supported by 56.3% (51% agree and 5.3% strongly agree), indicating trust in the organization's policy revisions. Some 24.3% are neutral, showing ambiguity or a lack of a strong view. However, 19.3% (16% disagree and 3.3% strongly disagree) disagree, indicating that a minority believes the policies are not reviewed or updated. The data shows that most respondents are satisfied with the healthcare policy review process, but clarity and alignment may be improved.
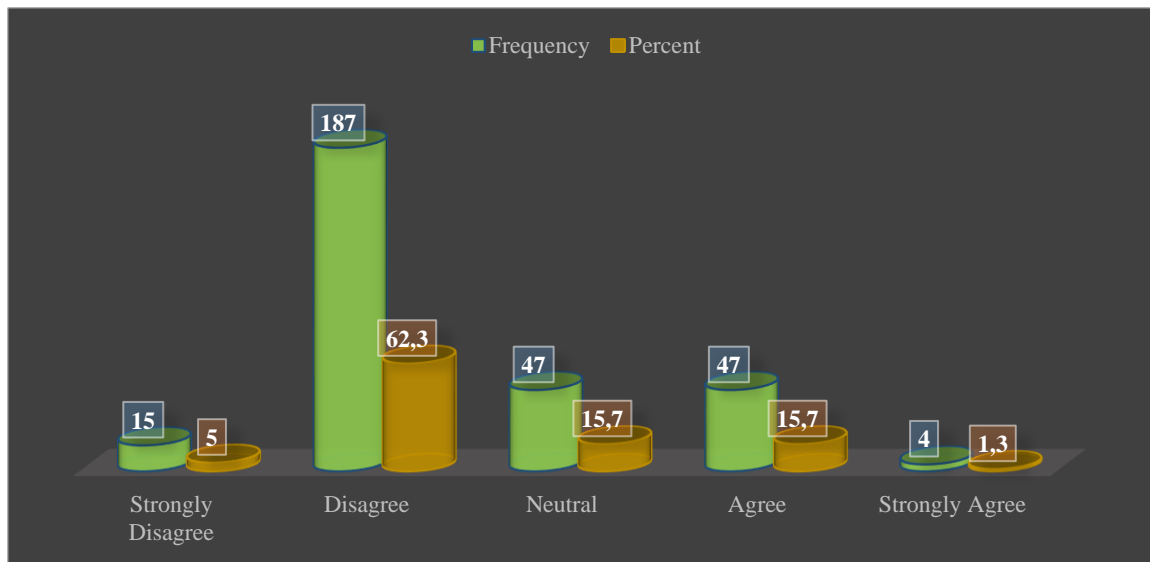
Figure 4.22: The organization complies with all relevant healthcare regulations and industry standards.

As shown in Figure 4.22, most respondents believe the organization does not fully comply with healthcare rules and industry norms. The statement was disagreed by 67.3% (62.3% and 5% strongly disagree), showing compliance issues. Only 17% (15.7% agree and 1.3% strongly agree) believe the organization satisfies these standards, indicating low confidence. 15.7% are neutral, indicating ambiguity or indecision. The organization should address concerns of non-compliance and improve regulatory compliance.
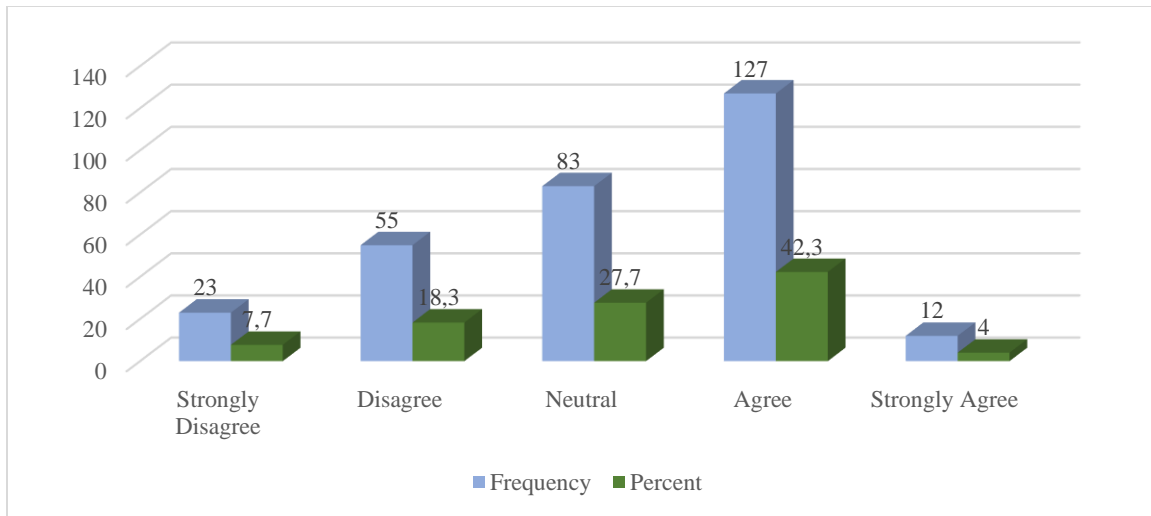
Figure 4.23: Policy decisions in the organization are aligned with long-term goals of sustainability and growth.

Figure 4.23 shows that most respondents think organization policy actions support long-term sustainability and growth. A total of 46.3% (42.3% agree and 4% strongly agree) think that the organization's policies support these long-term goals. However, 27.7% are neutral, showing ambiguity or lack of a strong view. However, 26% (18.3% disagree and 7.7% strongly disagree) disagree, demonstrating that some respondents believe the organization's practices may not support its sustainability and growth goals. The data is generally good but suggests improving policy alignment with long-term strategic goals.

Table 4.7: Social and Environmental Factors

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Environmental sustainability practices are integrated into the organization's operations and policies.	Frequency	41	178	28	39	14
	Percent	13.7	59.3	9.3	13	4.7
	Frequency	12	52	73	151	12

The organization takes steps to reduce its carbon footprint and minimize waste production.	Percent	4	17.3	24.3	50.3	4
Social responsibility, such as providing equitable access to healthcare, is prioritized in decision-making.	Frequency	14	178	55	41	12
	Percent	4.7	59.3	18.3	13.7	4
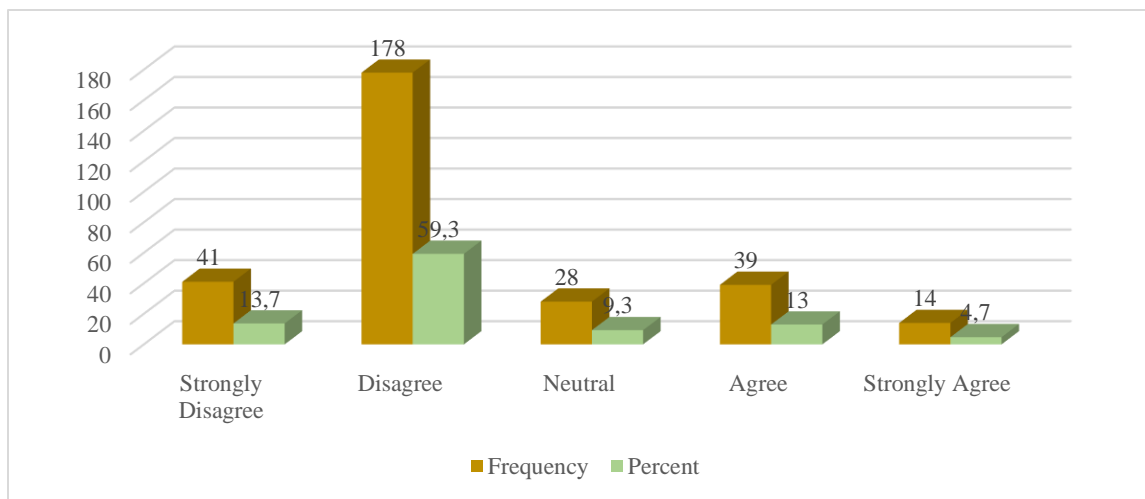
Figure 4.24: Environmental sustainability practices are integrated into the organization's operations and policies.

Figure 4.24 demonstrates that most respondents believe the organization's operations and policies do not integrate environmental sustainability measures. 73% (59.3% disagree and 13.7% strongly disagree) disapprove, raising concerns about the organization's sustainability efforts. Only 17.7% (13% agree and 4.7% strongly agree) approve of the organization's sustainability activities, suggesting low confidence. Neutral responders (9.3%) are uncertain or indifferent. Overall, the research implies the organisation should prioritise environmental sustainability.
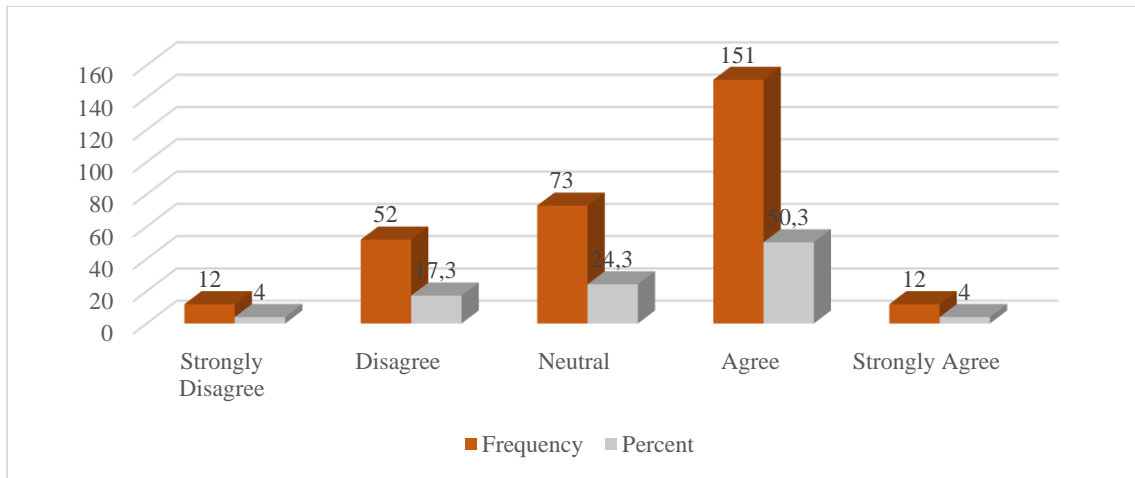
Figure 4.25: The organization takes steps to reduce its carbon footprint and minimize waste production.

Figure 4.25 shows the organization's attempts to reduce its carbon footprint and waste, which most respondents supported. 50.3% accepted, and 4% strongly concurred, showing that majority believe the organisation is taking positive steps. Some ambiguity or lack of opinion was shown by 24.3% who were neutral. However, 17.3% disapproved and 4% completely disapproved, demonstrating that some respondents do not think the organisation is tackling these environmental issues. Data reflects a mostly good impression of the organization's sustainability efforts.
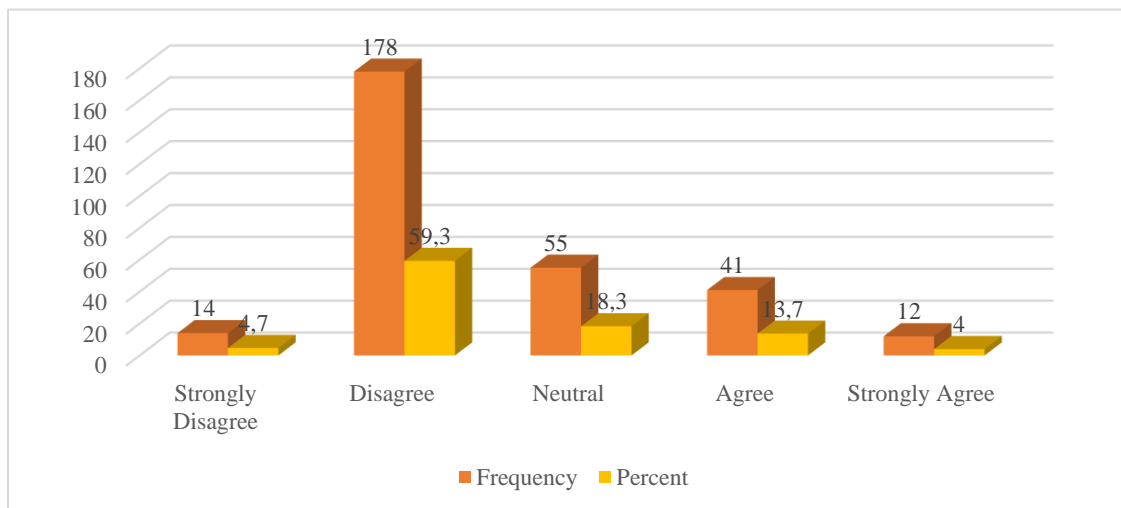
Figure 4.26: Social responsibility, such as providing equitable access to healthcare, is prioritized in decision-making.

Figure 4.26 implies that the organization does not prioritize social responsibility, notably healthcare equity. 59.3% disapproved, and 4.7% were strongly opposed, showing that most respondents believe the organization does not prioritize its social obligation. Limited support for prioritizing healthcare access in decision-making was shown by 13.7%, and 4% strongly agreed. In addition, 18.3% of respondents were neutral, which may reflect confusion about the organization's position on this topic.

Table 4.8: Impact of COVID-19 on Healthcare

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The COVID-19 pandemic significantly disrupted our organization's operations and services.	Frequency	30	182	33	44	11
	Percent	10	60.7	11	14.7	3.7
The healthcare infrastructure was strained and unable to meet the demand during the COVID-19 crisis.	Frequency	13	53	85	140	9
	Percent	4.3	17.7	28.3	46.7	3
The shift to digital health solutions (e.g., telemedicine, electronic health records) was crucial for maintaining service continuity during COVID-19.	Frequency	22	170	59	42	7
	Percent	7.3	56.7	19.7	14	2.3
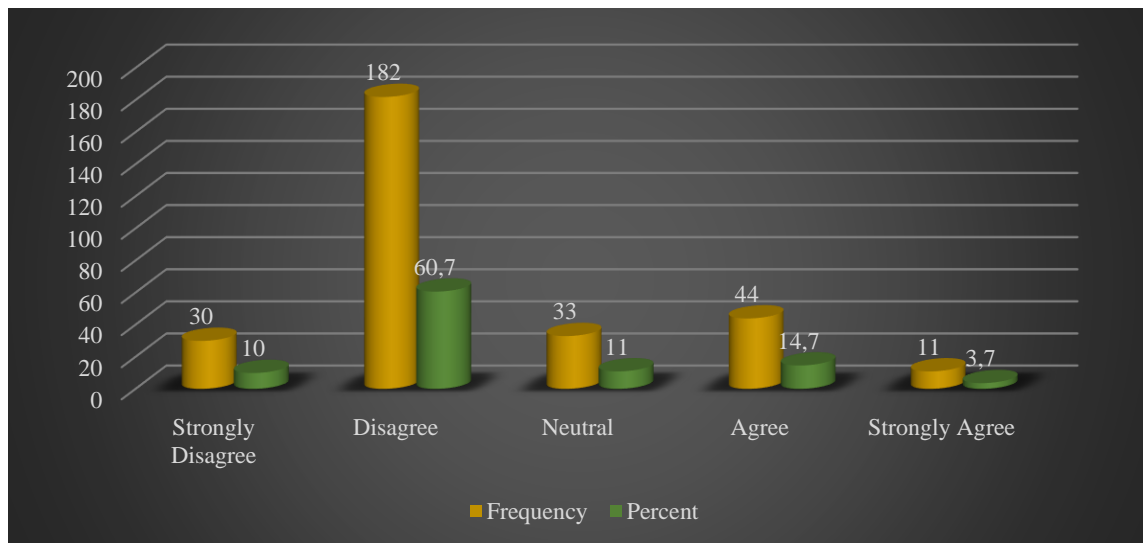
Figure 4.27: The COVID-19 pandemic significantly disrupted our organization's operations and services.

Figure 4.27 illustrates that most responders did not think the COVID-19 epidemic disrupted operations and services. 60.7% did not agree, with 10% strongly opining showing the epidemic had little impact. Only 14.7% concurred and 3.7% strongly concurred, suggesting several people experienced disturbances. 11% were neutral, maybe due to confusion or direct participation in the impacted areas. The data show that most respondents did not see major pandemic disruptions.
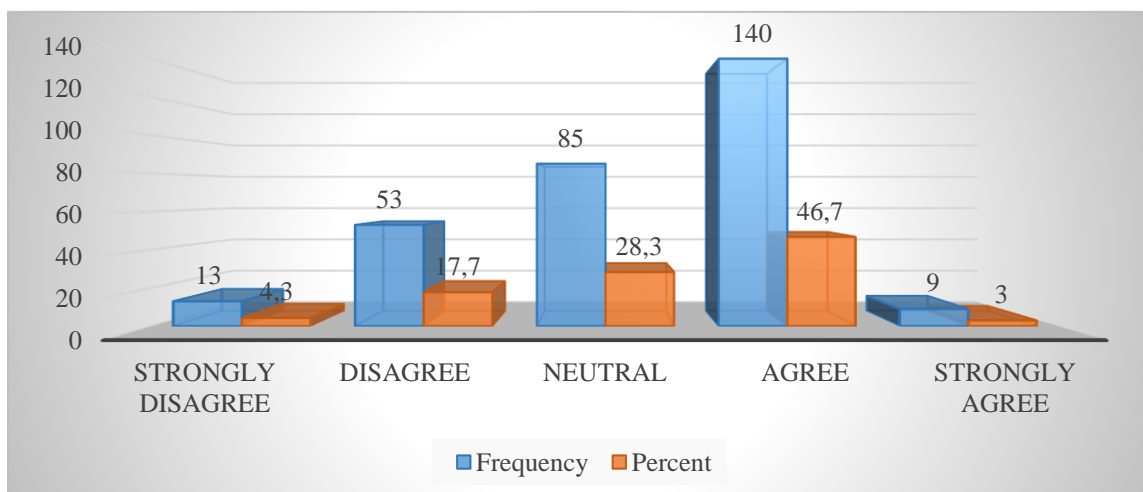
Figure 4.28: The healthcare infrastructure was strained and unable to meet the demand during the COVID-19 crisis.

Figure 4.28 shows that many respondents thought the COVID-19 pandemic impacted healthcare infrastructure. 46.7% agreed and 3% strongly agreed, showing that nearly half of respondents thought the healthcare system struggled to fulfil demand. Although 28.3% were neutral, they may have lacked direct experience or information. However, 17.7% and 4.3% strongly disagreed, demonstrating that fewer people did not see a healthcare resource burden. Most respondents recognised pandemic healthcare infrastructure issues, although perceptions varied.
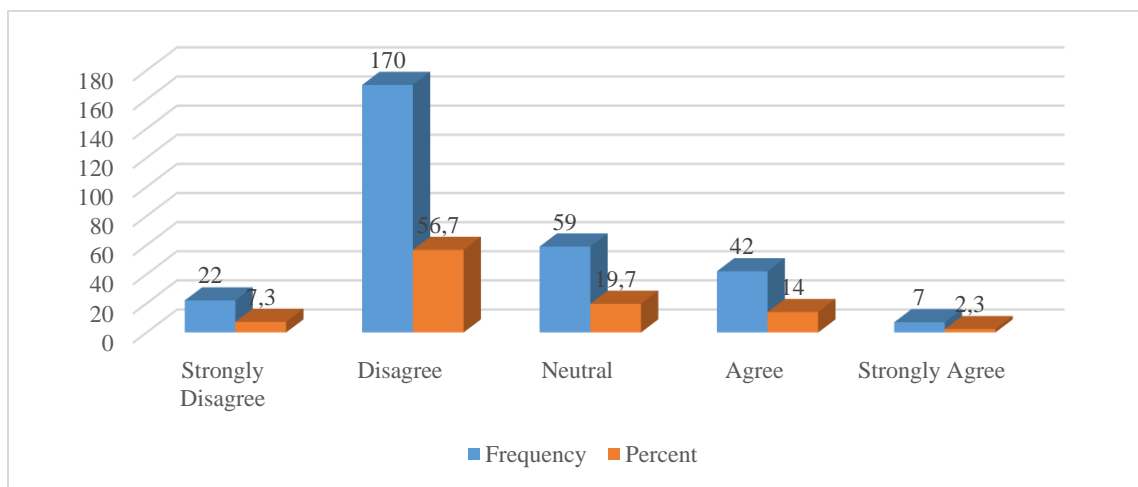
Figure 4.29: The shift to digital health solutions (e.g., telemedicine, electronic health records) was crucial for maintaining service continuity during COVID-19.

According to Figure 4.29, most respondents did not think the switch to digital health solutions was necessary for COVID-19 service continuity. 56.7% denied and 7.3% strongly denied that digital health solutions were necessary at this time. In contrast, 19.7% were neutral, suggesting confusion or lack of familiarity with these solutions. Notably, just 14% and 2.3% strongly agreed that digital health solutions were essential for service continuity. During the pandemic, some respondents saw digital health solutions as vital, but most did not.

Table 4.9: Organizational Growth

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our organization has effectively expanded its range of healthcare services post-pandemic.	Frequency	35	171	40	44	10
	Percent	11.7	57	13.3	14.7	3.3
The organization has experienced significant financial growth in the last three years.	Frequency	16	59	70	149	6
	Percent	5.3	19.7	23.3	49.7	2
The adoption of new technologies has positively impacted the growth of the organization.	Frequency	33	157	59	45	6
	Percent	11	52.3	19.7	15	2
We have successfully implemented strategies to attract more patients and improve revenue.	Frequency	27	45	62	155	11
	Percent	9	15	20.7	51.7	3.7
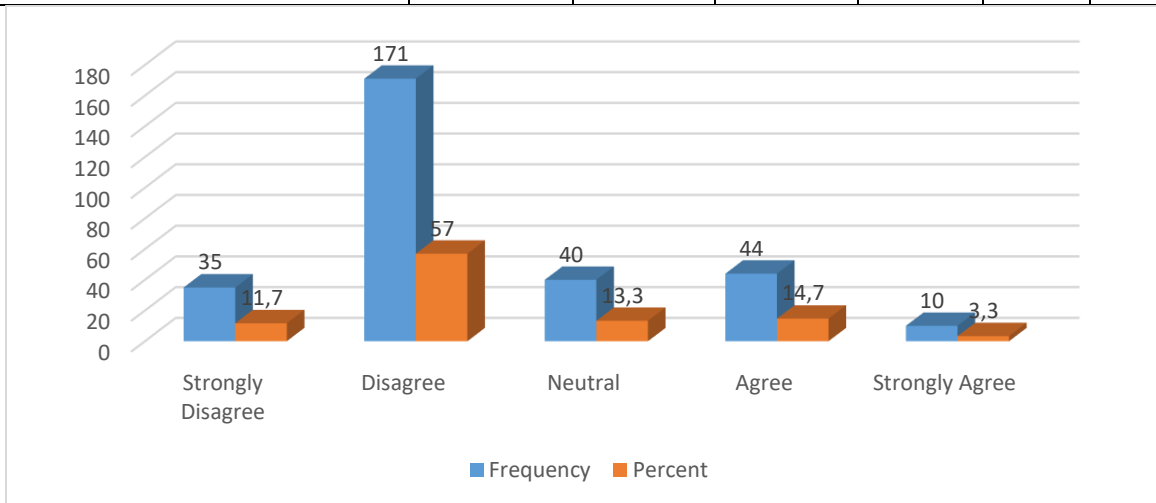
Figure 4.30: Our organization has effectively expanded its range of healthcare services post-pandemic.

Figure 4.30 shows that 68.7% of respondents disagree or strongly disagree that their organization has effectively increased its healthcare services post-pandemic, with 57% disagreeing and 11.7% significantly disapproving. Only 18% agree or strongly agree, with 14.7% and 3.3% agreeing. Neutral respondents are 13.3%. It appears that the organization has not effectively expanded its healthcare services, with little agreement on post-pandemic changes.
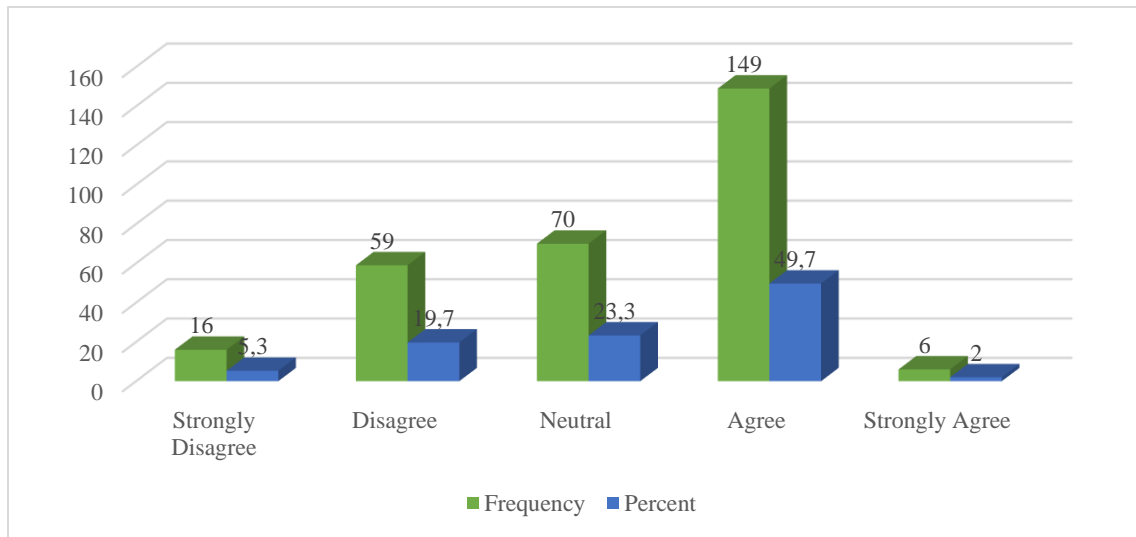
Figure 4.31: The organization has experienced significant financial growth in the last three years.

The Figure 4.31 shows that 49.7% of respondents approve that the organisation has achieved significant financial growth in the last three years, whereas 2% strongly concur. Neutral responders make up 23.3%. 19.7% disapprove and 5.3% highly disapprove. The majority view financial growth positively, although a significant minority is sceptical or impartial.
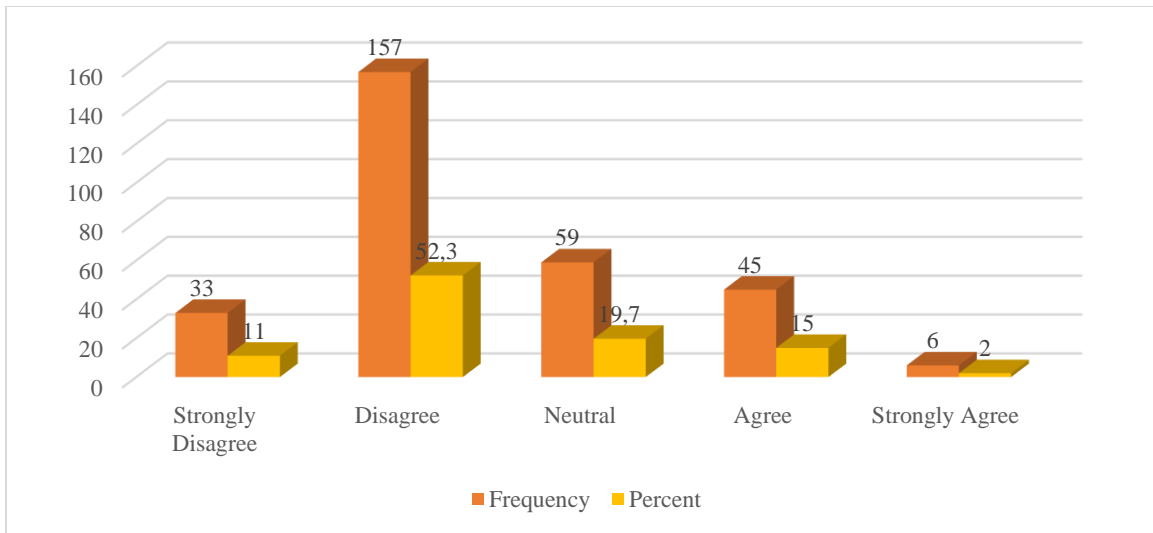
Figure 4.32: The adoption of new technologies has positively impacted the growth of the organization.

Figure 4.32 demonstrates that 63.3 percent of respondents disagree (52.3%) or strongly disagree (11%) that new technologies have helped the organisation grow. Only 17% of respondents agree, with 15% agreeing and 2% strongly agreeing. Neutral 19.7% have no strong opinion. According to these data, just a small percentage of respondents believe that adopting new technology will benefit them.
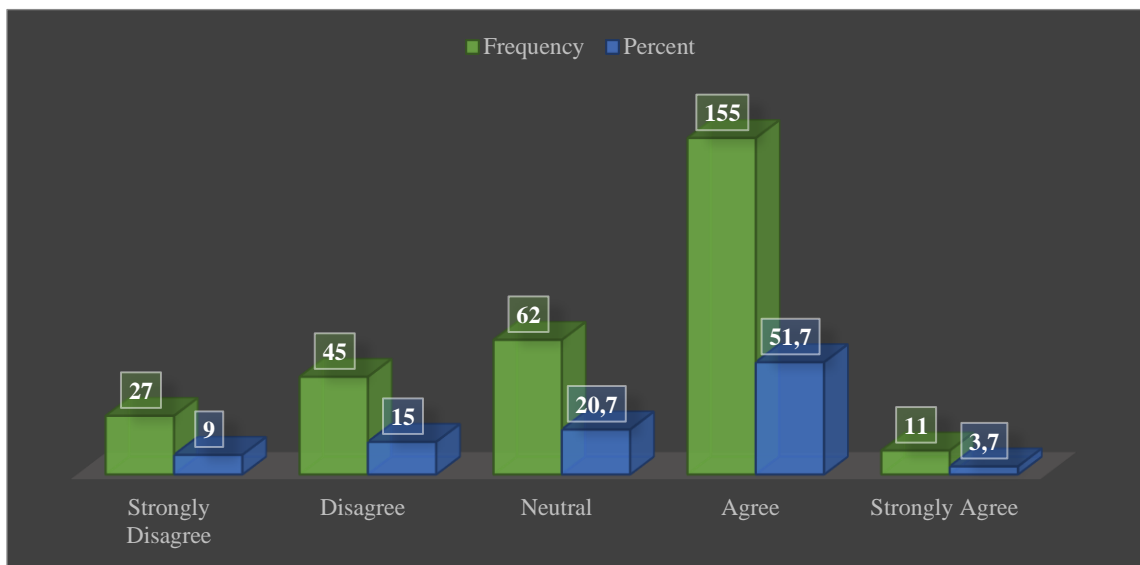
Figure 4.33: We have successfully implemented strategies to attract more patients and improve revenue.

In Figure 4.33, 55.4% of respondents agree that the organization has successfully implemented measures to attract more patients and increase revenue, with 51.7% agreeing and 3.7% strongly agreeing. Meanwhile, 20.7% are neutral, meaning they have no strong opinion. 15% disagree, and 9% firmly disapprove, and 24% are unfavorable. The results show a good outlook on these techniques, but a significant portion is unsure.

Table 4.10: Organizational Sustainability

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The organization has implemented effective measures to reduce operational costs sustainably.	Frequency	32	192	29	34	13
	Percent	10.7	64	9.7	11.3	4.3
Our healthcare practices prioritize environmental sustainability, such as waste management.	Frequency	14	42	74	161	9
	Percent	4.7	14	24.7	53.7	3
The organization has invested in staff training to ensure the continuity of sustainable practices.	Frequency	17	181	49	45	8
	Percent	5.7	60.3	16.3	15	2.7
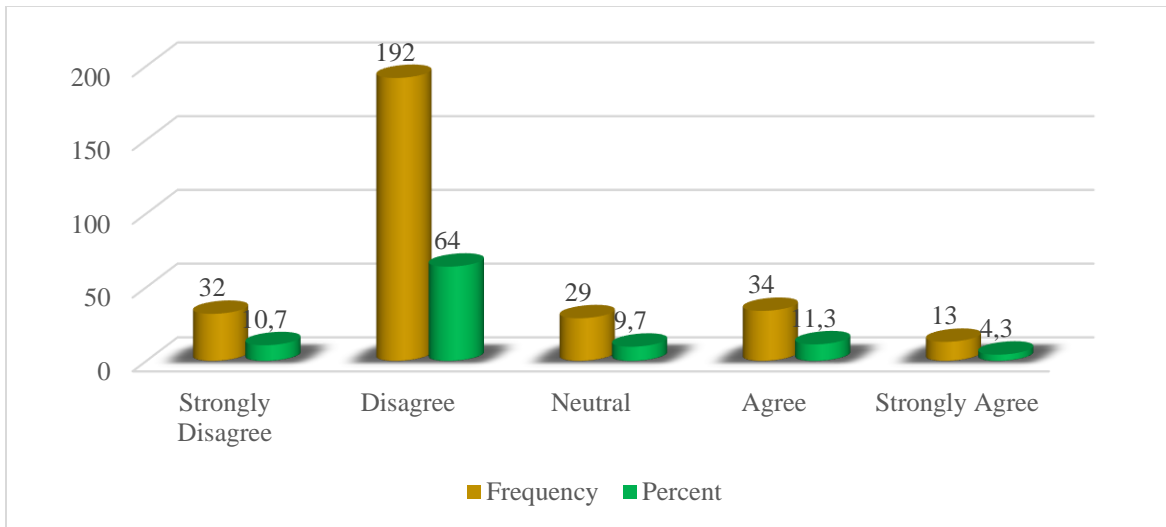
Figure 4.34: The organization has implemented effective measures to reduce operational costs sustainably.

Figure 4.34 shows that 74.7% of respondents disapprove (64%) or completely disagree (10.7%) that the organisation has reduced operational costs sustainably. With 11.3% agreeing and 4.3% strongly agreeing, 15.6% are positive. Undecided 9.7% of respondents stay neutral. These data imply that most respondents saw the organization's sustainable cost-cutting efforts as ineffective, with only a minority seeing them as successful.
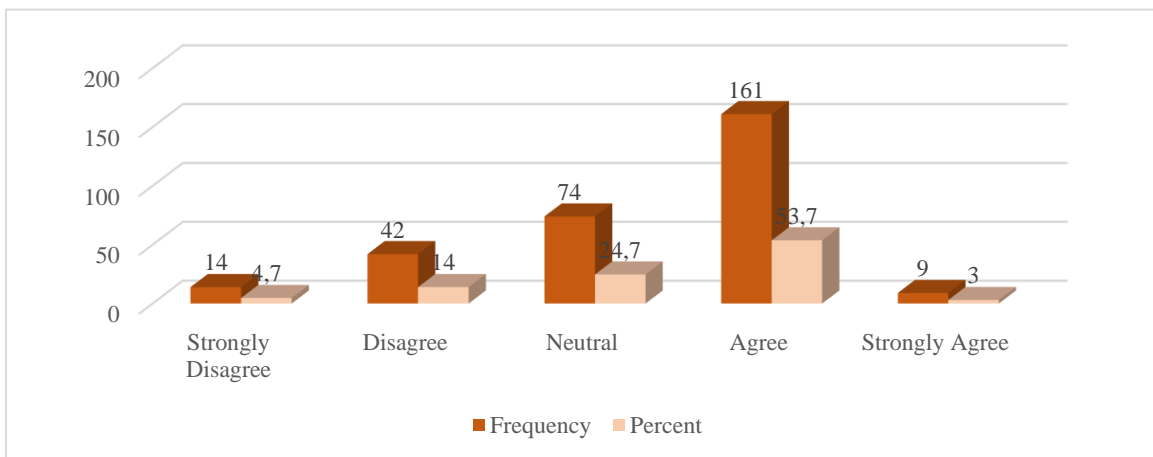
Figure 4.35: Our healthcare practices prioritize environmental sustainability, such as waste management.

According to figure 4.35, most respondents (56.7%) concur (53.7%) or strongly concur (3%) that the organisation prioritises environmental sustainability, such as waste

management. Neutral responders make up 24.7%. At 18.7%, 14% disapprove and 4.7% highly disapprove. Although some respondents are sceptical, the results indicate a positive view of the organization's environmental sustainability efforts.
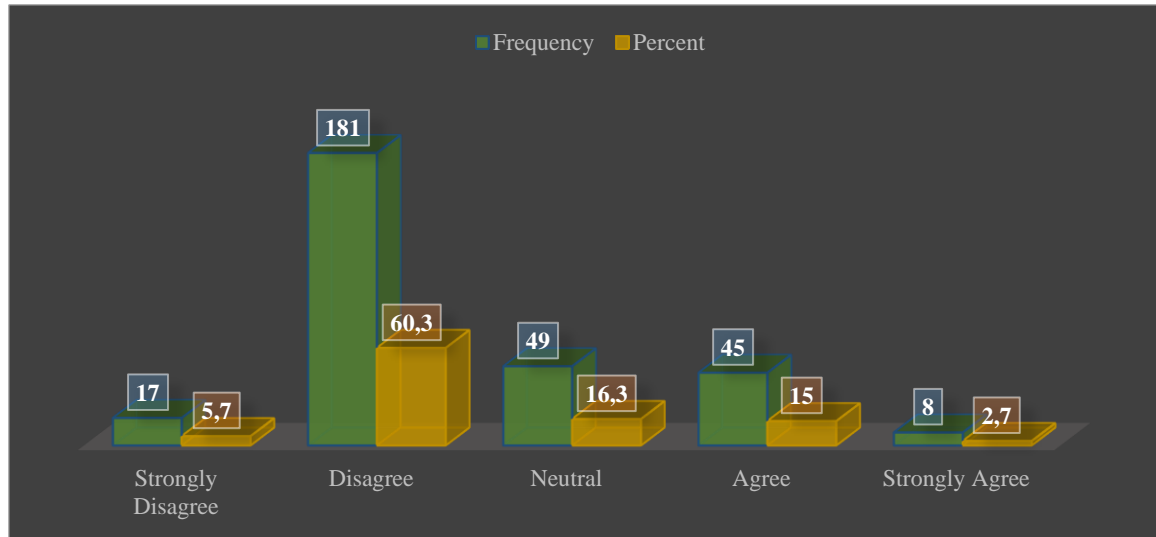
Figure 4.36: The organization has invested in staff training to ensure the continuity of sustainable practices.

The above figure 4.36 shows that 66% of respondents believe the organisation has not effectively invested in staff training to preserve sustainable practices, with 60.3% disagreeing and 5.7% strongly disagreeing. Although 15% and 2.7% strongly agree, 17.7% regard these initiatives positively. 16.3% are undecided. Most respondents said the organization's sustainability staff training was poor, with only a tiny group admitting growth.

Table 4.11: Organisation Resilience

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our organization has a robust crisis management plan that	Frequency	39	176	38	38	9
	Percent	13	58.7	12.7	12.7	3

effectively addresses emergencies.						
The organization has diversified its services to reduce vulnerability to future disruptions.	Frequency	12	54	81	142	11
	Percent	4	18	27	47.3	3.7
Investments in technology have strengthened the organization's ability to respond to crises.	Frequency	21	182	51	39	7
	Percent	7	60.7	17	13	2.3
Collaboration with external partners has enhanced our resilience during challenging times.	Frequency	22	58	70	140	10
	Percent	7.3	19.3	23.3	46.7	3.3
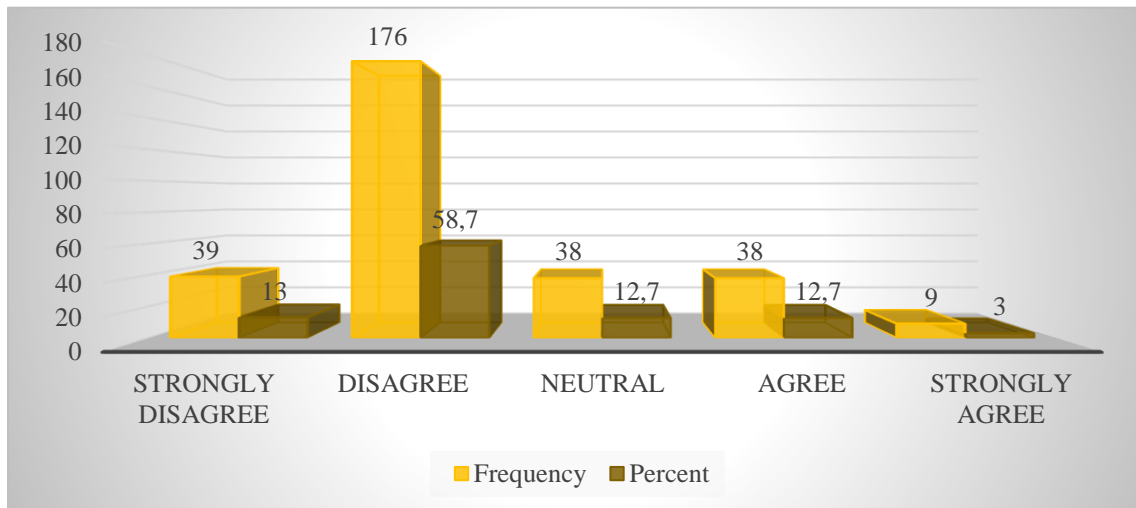
Figure 4.37: Our organization has a robust crisis management plan that effectively addresses emergencies.

Figure 4.37 shows that 71.7% of respondents think the company lacks a proactive crisis management plan, whereas 58.7% reject and 13% do not agree. 12.7% and 3% strongly

agree that the approach is effective, making 15.7%. 12.7% are impartial. These findings indicate that most respondents were concerned about the organization's crisis management, with few declaring confidences.
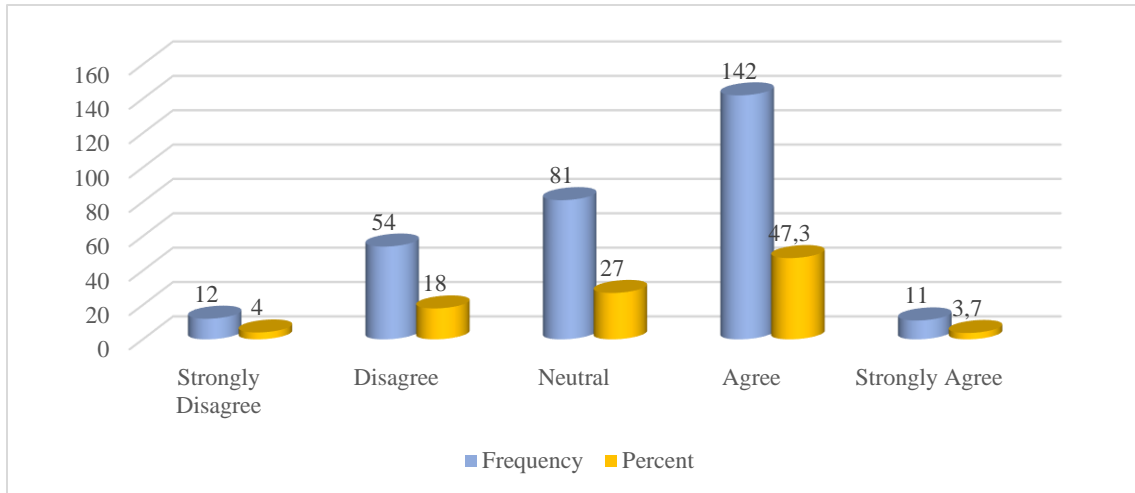
Figure 4.38: The organization has diversified its services to reduce vulnerability to future disruptions.

Figure 4.38 reveals that 50.7% of respondents accept (47.3%) or completely concur (3.7%) with the statement, showing a favourable view. Neutral 27% have no strong opinion. Only 22% reject (18%) or highly disagree (4%) with the statement. These statistics indicate that most respondents agree, while a significant portion are uncertain or differ.
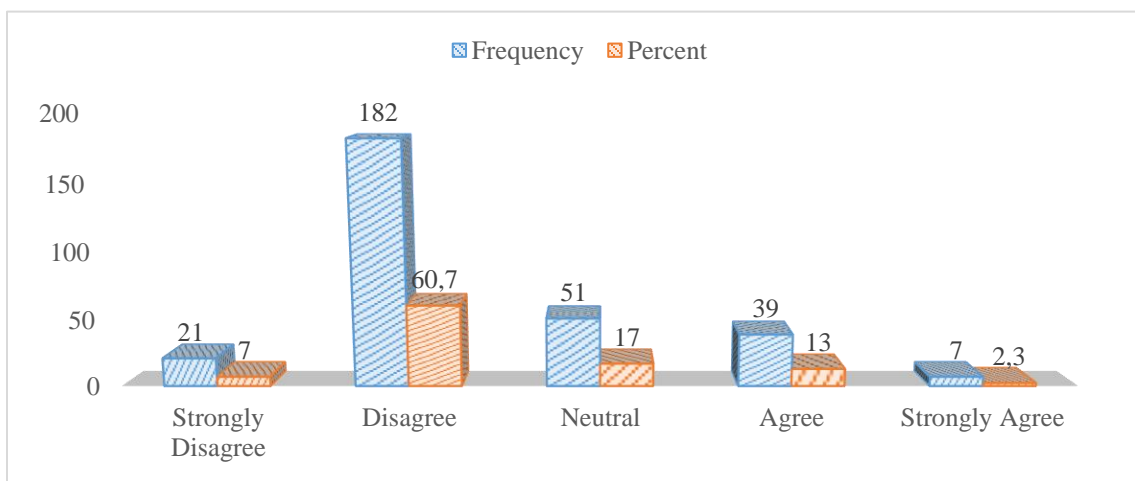
Figure 4.39: Investments in technology have strengthened the organization's ability to respond to crises.

According to Figure 4.39 above, 60.7% of respondents disapprove, and 7% disagree strongly that the organization has implemented the statement in issue effectively, whereas the majority of respondents (67.7%) approve. Only 15.3% of respondents have a positive opinion, with 13% agreeing and 2.3% strongly agreeing. 17% of respondents also express no distinct opinion, remaining neutral. According to these results, the majority believe that the organization's efforts are insufficient, while a small minority disagree.
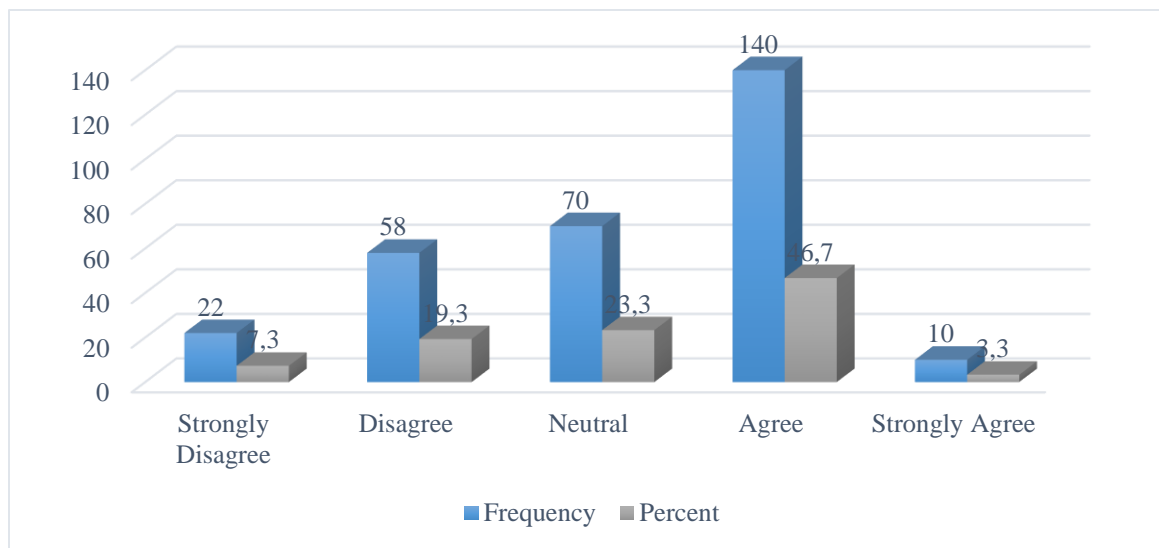
Figure 4.40: Collaboration with external partners has enhanced our resilience during challenging times.

The Figure 4.40 above, the majority of respondents (50%) accept (46.7%) and firmly concur (3.3%) that working with outside partners has improved the organization's ability to withstand setbacks. Nonetheless, 19.3% dispute and 7.3% disagree firmly, making up 26.6% of those who express disagreement. Another 23.3% have no strong opinion and are impartial. According to these findings, a sizable percentage of respondents either disagree or are unclear about the impact of external relationships, despite the fact that many believe they are good for resilience.

4.3 Descriptive Analysis

Table 4.12: Descriptive Statistics

	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
What is your age group?	300	2.88	.053	.910	.828
What is your gender?	300	1.55	.035	.613	.375
What is your highest level of education?	300	3.10	.057	.990	.980
What is your current role in the healthcare sector?	300	2.59	.056	.976	.952
Which type of healthcare organization do you work for?	300	2.77	.052	.909	.827
What is the size of your organization?	300	1.58	.029	.495	.245
How many years of experience do you have in the healthcare sector?	300	2.58	.044	.765	.585
In which region of India is your organization located?	300	3.15	.063	1.096	1.200
What type of area does your organization serve?	300	2.00	.041	.718	.515
What were the primary concerns faced by medium-sized and large healthcare institutions during the COVID-19 pandemic? (Select all that apply)	300	4.75	.113	1.956	3.825

What sustainable and growth strategies were employed by medium-sized and large healthcare institutions to address the issues faced during the COVID-19 pandemic? (Select all that apply)	300	4.48	.110	1.905	3.628
Organizational Growth	300	3.0933	.03362	.58231	.339
Organizational Sustainability	300	3.0833	.03321	.57517	.331
Resilience	300	3.0633	.02907	.50349	.254
Technological Factors	300	3.0500	.03207	.55545	.309
Operational	300	3.0700	.03331	.57695	.333
Financial	300	3.0933	.03261	.56482	.319
Policy and Governance	300	3.1033	.03056	.52939	.280
Social and Environmental	300	3.1000	.03642	.63087	.398
Impact of COVID-19	300	3.0733	.03694	.63978	.409
Valid N (listwise)	300				

Descriptive statistics are shown in Table 4.12 above for some variables of the healthcare industry during the COVID-19 pandemic. The various variables' mean values show a range of answer distributions, from 1.55 (for gender) to 4.75 (for the main issues faced by medium and large healthcare institutions). Organizational sustainability (3.08), policy and governance (3.10), and organizational growth (3.09) had the highest mean values, indicating that these dimensions were crucial for managing the pandemic. Additionally, the data reveals comparatively significant levels of variation in the worries and tactics used by healthcare facilities during the pandemic; the principal concerns had the largest variance (3.83), suggesting a range of reactions. Other elements that were relevant during the crisis, like financial, operational, and technological concerns, also had comparatively high means

(around 3.05–3.09). Across all categories, the standard deviations indicate a substantial degree of variety in replies; the principal problems encountered by institutions had the highest standard deviation (1.96), suggesting a range of viewpoints. All things considered, the data shows how crucial a number of elements—including resilience, growth strategies, and governance—were to the healthcare industry's pandemic response.

4.4   Hypotheses Testing

Hypothesis 1

H1: There is a significant relationship between technological factors (such as digital health solutions and telemedicine) and organizational growth in medium and large healthcare organizations in post-pandemic India.

Table 4.13: Correlations Between Technological Factors and Organizational Growth

			Organizational Growth	Technological Factors
Spearman's rho	Organizational Growth	Correlation Coefficient	1.000	.270[**]
		Sig. (2-tailed)	.	.000
		N	300	300
	Technological Factors	Correlation Coefficient	.270[**]	1.000
		Sig. (2-tailed)	.000	.
		N	300	300

Table 4.13 shows Spearman's rho correlation analysis for Hypothesis 1, which examines how technological factors like digital health solutions and telemedicine affect organisational growth in medium and large healthcare organisations in post-pandemic India. Technology and organisational growth have a moderate positive connection of

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0.270. This association is statistically significant at the 0.01 level (2-tailed) with a p-value of 0.000, rejecting the null hypothesis. The sample size for analysis is 300 respondents. These data corroborate (H1) that technology elements positively affect organisational growth in medium and big healthcare organisations post-pandemic.

Hypothesis 2

H2: The financial stability and effective financial management strategies of healthcare organizations significantly contribute to organizational growth in the post-pandemic period.

Table 4.14: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	97.331			
Final	53.938	43.394	1	.000

The data presented in Table 4.14 pertain to the logistic regression model. The final model including predictor variables has a log-likelihood value of 53.938, whereas the intercept-only model has a value of 97.331. If the final model's log-likelihood number is lower, that means the data is better fit. With 1 df and a p-value of 0.000, the chi-square value is 43.394, which is statistically significant at the 0.01 level.

Table 4.15: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	27.617	15	.024
Deviance	24.241	15	.061

Table 4.15 presents the logistic regression model's logit link function goodness-of-fit statistics. The Pearson chi-square score of 27.617 with 15 df and a p-value of 0.024 shows that the model is somewhat misfit. The deviation chi-square value of 24.241 is not statistically significant at the 0.05 level with 15 df and a p-value of 0.061.

Table 4.16: Pseudo R-Square

Cox and Snell	.135
Nagelkerke	.165
McFadden	.086

Table 4.16 shows logit link function logistic regression pseudo-R-square values. R-square values for Cox and Snell, Nagelkerke, and McFadden are 0.135, 0.165, and 0.086, respectively. These numbers show how much of the dependent variable's variance the model explains. Pseudo R-square values show that the model explains around 8.6% (McFadden) to 16.5% (Nagelkerke) of the outcome variation. Model predictors have poor explanatory power.

Table 4.17: Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OG = 1.00]	.215	.788	.075	1	.785	-1.330	1.760
	[OG = 2.00]	2.417	.678	12.712	1	.000	1.088	3.746
	[OG = 3.00]	6.643	.780	72.530	1	.000	5.114	8.172
	[OG = 4.00]	9.945	1.004	98.044	1	.000	7.976	11.913
Location	Financial Factors	1.600	.231	48.018	1	.000	1.148	2.053
Link function: Logit.								

In Table 4.17, logistic regression parameter estimates examine the association between financial stability, effective financial management practices, and healthcare organisation expansion post-pandemic. Financial stability and management techniques boost the probability of increased organisational growth (OG) significantly, according to threshold estimations. For [OG = 2.00], [OG = 3.00], and [OG = 4.00], the estimates are 2.417, 6.643, and 9.945, respectively, with p-values of 0.000, showing great statistical significance. The estimations show that good financial management practices boost organisational growth. The financial factor (F) location estimate is 1.600, with a Wald value of 48.018 and a p-value of 0.000, demonstrating financial management's importance in growth. These estimates have 95% confidence intervals without zero, ensuring robustness. Financial stability and good financial management methods greatly contribute to organisational growth in post-pandemic healthcare organisations, supporting Hypothesis 2 (H2).

Hypothesis 3

H3: Operational factors, such as efficient supply chain management and resource optimization, have a significant positive impact on the organizational growth of healthcare organizations in post-pandemic India.

Table 4.18: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	127.588			
Final	95.483	32.105	1	.000
Link function: Logit.				

Table 4.18 shows that the final model significantly improves the fit compared to the intercept-only model (log-likelihood 127.588), which has a -2 log-likelihood of 95.483, with a chi-square value of 32.105 and a p-value of 0.000. This suggests that management

tactics and financial stability have a major influence on the model's capacity to forecast organisational growth.

Table 4.19: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	1094.762	15	.000
Deviance	62.566	15	.000
Link function: Logit.			

Table 4.19 shows the logit link function logistic regression model's goodness-of-fit statistics. The model and the data appear to be significantly out of sync, as indicated by the Pearson chi-square value of 1094.762 with 15 df and a p-value of 0.000. A poor fit is indicated by the deviation chi-square value of 62.566 with 15 df and a 0.000 p-value. The model might not adequately fit the data, as indicated by the highly significant p-values in both tests. The outcomes deviate from the anticipated values.

Table 4.20: Pseudo R-Square

Pseudo R-Square	
Cox and Snell	.101
Nagelkerke	.125
McFadden	.064

Table 4.20 indicates that the model explains a significant amount of variance in the dependent variable and has weak explanatory power. The greatest Nagelkerke score is 0.125, which is followed by McFadden at 0.064 and Cox and Snell at 0.101.

Table 4.21: Parameter Estimates

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound

Threshold	[OG = 1.00]	-.299	.780	.147	1	.701	-1.828	1.229
	[OG = 2.00]	1.822	.656	7.705	1	.006	.535	3.108
	[OG = 3.00]	5.939	.737	64.902	1	.000	4.494	7.384
	[OG = 4.00]	9.242	.979	89.151	1	.000	7.323	11.160
Location	Operation al Factors	1.406	.222	40.089	1	.000	.971	1.841
Link function: Logit.								

Table 4.21 shows that operational factors, such as supply chain management and resource optimization, significantly positively impact organizational growth in post-pandemic healthcare organizations. The estimates for higher levels of organizational growth (OG = 2.00, 3.00, and 4.00) are statistically significant, with p-values of 0.006, 0.000, and 0.000. The significant result for the operational factor estimates (p = 0.000) confirms Hypothesis 3 (H3), demonstrating that operational efficiency contributes significantly to organizational growth.

Hypothesis 4

H4: Strong governance and policy frameworks significantly drive organizational growth in healthcare organizations in post-pandemic India

Table 4.22: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	101.574			
Final	55.002	46.572	1	.000

Table 4.22 shows the fitting data for the logistic regression model. The final model that includes operational factors as predictors has a 55.002 log-likelihood value, whereas the intercept-only model has a -2 log-likelihood value of 101.574. A chi-square score of 46.572 and a p-value of 0.000 along with one df indicate a significant improvement in model fit. This demonstrates that, because they enhance the model's ability to forecast growth, operational features are essential to healthcare organisations' post-pandemic expansion.

Table 4.23: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	33.636	15	.004
Deviance	22.584	15	.093

The goodness-of-fit statistics for the logit link function logistic regression model are displayed in Table 4.23. The Pearson chi-square value is 33.636 with 15 df and a p-value of 0.004, suggesting a significant model-data mismatch. With 15 df and a p-value of 0.093, the deviation chi-square value is 22.584, which is not statistically significant at 0.05, representing that the model fits the data well.

Table 4.24: Pseudo R-Square

Cox and Snell	.144
Nagelkerke	.177
McFadden	.092

The Table 4.24, the model explains a modest amount of variance in the outcome variable, with the Nagelkerke R-square at 0.177, the Cox and Snell at 0.144, and the McFadden at 0.092. The model's poor pseudo-R-square values show it only partially predicts healthcare organisation growth.

Table 4.25: Parameter Estimates

		Std. Error	Wald	df	Sig.	95% Confidence Interval

		Estimate					Lower Bound	Upper Bound
Threshold	[OG = 1.00]	.695	.827	.707	1	.400	-.926	2.317
	[OG = 2.00]	2.878	.726	15.725	1	.000	1.456	4.301
	[OG = 3.00]	7.099	.821	74.777	1	.000	5.490	8.708
	[OG = 4.00]	10.514	1.064	97.571	1	.000	8.428	12.600
Location	Governance and Policy Frameworks	1.750	.245	51.153	1	.000	1.271	2.230

In Table 4.25, the logistic regression model evaluates the effect of strong governance and policy frameworks on healthcare organization expansion post-pandemic. Strong governance positively affects higher-level organisational development (OG) according to threshold estimations. The estimates for [OG = 2.00], [OG = 3.00], and [OG = 4.00] are 2.878, 7.099, and 10.514, respectively, with p-values of 0.000, suggesting substantial statistical significance The location estimate for governance and policy frameworks (P_G) is 1.750, with a Wald value of 51.153 and a p-value of 0.000, emphasizing governance's importance. These findings support Hypothesis 4 (H4) that strong governance and policy frameworks drive healthcare organization growth post-pandemic.

Hypothesis 5

H5: Social and environmental factors, including community engagement and environmental sustainability practices, significantly contribute to organizational growth in medium and large healthcare organizations in post-pandemic India.

Table 4.26: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	115.053			

Final	77.564	37.490	1	.000

Table 4.26 shows that governance and policy frameworks significantly improve the model's ability to predict organisational growth related to the intercept-only model (log-likelihood 115.053), with a chi-square value of 37.490 and a p-value of 0.000.

Table 4.27: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	301.427	15	.000
Deviance	42.323	15	.000

The logistic regression model's goodness-of-fit statistics using the logit link function are shown in Table 4.27. The 301.427 Pearson chi-square value with 15 df and a 0.000 p-value demonstrate the tremendous model-data discrepancy. With 15 df and a p-value of 0.000, the chi-square deviation value of 42.323 indicates a substantial disparity. Both tests' extremely substantial p-values show that the model is incorrect.

Table 4.28: Pseudo R-Square

Cox and Snell	.117
Nagelkerke	.144
McFadden	.074

Table 4.28 demonstrates that the model accounts for a small portion of the observed variation in the result, with Nagelkerke R-square at 0.144, Cox and Snell at 0.117, and McFadden at 0.074, representing limited explanatory power.

Table 4.29: Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OG = 1.00]	-.400	.747	.287	1	.592	-1.863	1.063

	[OG = 2.00]	1.698	.617	7.582	1	.006	.489	2.907
	[OG = 3.00]	5.896	.717	67.610	1	.000	4.491	7.301
	[OG = 4.00]	9.192	.948	94.105	1	.000	7.335	11.049
Location	Social and Environmental Factors	1.369	.210	42.518	1	.000	.957	1.780
Link function: Logit.								

Table 4.29 shows logistic regression model parameter estimates for social and environmental aspects including community participation and sustainability practices on healthcare organisation expansion post-pandemic. Higher levels of organisational growth (OG = 2.00, 3.00, and 4.00) had significant estimates of 1.698, 5.896, and 9.192, with p-values of 0.006, 0.000, and 0.000, respectively. Social and environmental factors (S_E) had a high positive impact with an estimate of 1.369, a Wald value of 42.518, and a p-value of 0.000. These findings corroborate Hypothesis 5 (H5), showing that social and environmental factors greatly affect organisational growth in post-pandemic Indian medium and big healthcare organisations.

Hypothesis 6

H6: Technological advancements, including the adoption of telemedicine and electronic health records (EHRs), significantly enhance the organizational sustainability of healthcare organizations in post-pandemic India.

Table 4.30: Correlations

			Organizational Sustainability	Technological Factors
		Correlation Coefficient	1.000	.375[**]

Spearman's rho	Organizational Sustainability	Sig. (2-tailed)	.	.000
		N	300	300
	Technological Factors	Correlation Coefficient	.375**	1.000
		Sig. (2-tailed)	.000	.
		N	300	300

Technological factors and organisational sustainability are correlated in Table 4.30. Telemedicine and electronic health records are positively correlated with healthcare organisation sustainability (correlation coefficient = 0.375, p-value = 0.000). This validates Hypothesis 6 (H6), showing that technological developments improve organisational sustainability in Indian post-pandemic healthcare organisations.

Hypothesis 7

H7: The operational strategies implemented to optimised resource use and streamline supply chains significantly affect the sustainability of healthcare organisations in the post-pandemic period.

Table 4.31: Model Fitting Information

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	120.902			
Final	89.826	31.076	1	.000

The logistic regression model fitting data is displayed in Table 4.31. While the final model using technological factors as predictors has 89.826 log-likelihood, the intercept-only model has a -2 log-likelihood value of 120.902. The model fit improvement chi-square value is 31.076, with 1 df and a 0.000 p-value, suggesting a significant improvement.

Table 4.32: Goodness-of-Fit

	Chi-Square	df	Sig.

Pearson	174.263	15	.000
Deviance	55.957	15	.000

The logistic regression model goodness-of-fit statistics are in Table 4.32. A considerable misfit between the model and the actual data is indicated by the Pearson chi-square value of 174.263 with 15 df and a p-value of 0.000. The deviation chi-square value is 55.957 with 15 df and a 0.000 p-value, indicating a considerable mismatch. Given that both tests reveal significant differences between observed and expected values, the model might not adequately match the data.

Table 4.33: Pseudo R-Square

Cox and Snell	.098
Nagelkerke	.121
McFadden	.062

Table 4.33 shows that the model explains a modest amount of variance, with Nagelkerke R-square at 0.121, Cox and Snell at 0.098, and McFadden at 0.062, representing limited explanatory power.

Table 4.34: Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OS = 1.00]	-.535	.821	.424	1	.515	-2.145	1.075
	[OS = 2.00]	1.895	.654	8.385	1	.004	.612	3.177
	[OS = 3.00]	6.032	.738	66.820	1	.000	4.586	7.478
	[OS = 4.00]	8.975	.933	92.544	1	.000	7.146	10.803
Location	Operational Factors	1.417	.221	41.020	1	.000	.983	1.851
Link function: Logit.								

Table 4.34 shows logistic regression model parameter estimates for operational measures like resource optimisation and supply chain streamlining that affect healthcare organisation sustainability. Higher operational sustainability estimates (OS = 2.00, 3.00, and 4.00) are significant, with values of 1.895, 6.032, and 8.975 and p-values of 0.004, 0.000, and 0.000, respectively. Operational strategies (O) have a substantial positive influence on sustainability with an estimate of 1.417, a Wald value of 41.020, and a p-value of 0.000. These findings corroborate Hypothesis 7 (H7), demonstrating that operational techniques to optimised resources and simplify supply chains improve healthcare organisations' post-pandemic sustainability.

Hypothesis 8

H8: Financial factors, including the management of rising operating costs and the diversification of revenue streams, significantly influence the sustainability of healthcare organizations in the post-pandemic period.

Table 4.35: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	113.786			
Final	49.802	63.984	1	.000

Table 4.35 demonstrates that operational strategies improve the model's capacity to predict healthcare organisation sustainability, with a chi-square value of 63.984 (p = 0.000).

Table 4.36: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	28.038	15	.021
Deviance	19.215	15	.204

The goodness-of-fit statistics for logistic regression are displayed in Table 4.36. With 15 df, the Pearson chi-square value is 28.038 and the p-value is 0.021, representing a discrepancy between the model and the observed data. Nonetheless, the model closely matches the data, as evidenced by the deviation chi-square value of 19.215 with 15 df and a p-value of 0.204.

Table 4.37: Pseudo R-Square

Cox and Snell	.192
Nagelkerke	.237
McFadden	.128
Link function: Logit.	

Table 4.37 indicates that the model accounts for a modest degree of variance, with McFadden's R-square at 0.128, Cox and Snell's R-square at 0.192, and Nagelkerke's R-square at 0.237.

Table 4.38: Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OS = 1.00]	.740	.832	.790	1	.374	-.891	2.371
	[OS = 2.00]	3.395	.693	23.991	1	.000	2.037	4.754
	[OS = 3.00]	7.873	.818	92.590	1	.000	6.269	9.477
	[OS = 4.00]	10.970	1.018	116.060	1	.000	8.974	12.966

Location	Financia l Factors	1.947	.239	66.293	1	.000	1.478	2.415
Link function: Logit.								

Table 4.38 provides significant estimates for financial factors affecting organisational sustainability, with threshold estimates for OS = 2 (p = 0.000), OS = 3 (p = 0.000), and OS = 4 (10.970). The financial variable (F) shows a significant estimate of 1.947 (p = 0.000), indicating that managing operating costs and diversifying income streams affect sustainability. This supports H8, which states that financial issues strongly affect healthcare organisations' post-pandemic sustainability.

Hypothesis 9

H9: The impact of COVID-19 has led to the adoption of long-term sustainability practices that significantly improve organizational sustainability in medium and large healthcare organizations in post-pandemic India.

Table 4.39: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	139.201			
Final	56.268	82.932	1	.000

The Table 4.39 demonstrates that, with a Chi-Square score of 82.932 (p = 0.000), the final model fits better than the intercept-only model. The final model's -2 Log Likelihood value decreased from 139.201 for the intercept-only model to 56.268, indicating that the explanatory power of the model was greatly enhanced by the predictors.

Table 4.40: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	36.670	15	.001
Deviance	24.210	15	.062

Table 4.40 shows model goodness-of-fit. Pearson's Chi-Square value is 36.670 with 15 df, and significance level is 0.001, suggesting a substantial difference between actual and predicted values. The Deviance Chi-Square score is 24.210, with a significance of 0.062, representing that the model fits well despite considerable difference.

Table 4.41: Pseudo R-Square

Cox and Snell	.242
Nagelkerke	.298
McFadden	.166

Table 4.41 shows Pseudo R-Square values for Cox and Snell at 0.242, Nagelkerke at 0.298, and McFadden at 0.166, demonstrating that the model explains moderate organisational sustainability variation.

Table 4.42: Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OS = 1.00]	.807	.793	1.036	1	.309	-.747	2.362
	[OS = 2.00]	3.490	.634	30.268	1	.000	2.246	4.733
	[OS = 3.00]	8.277	.804	105.969	1	.000	6.701	9.853
	[OS = 4.00]	11.392	1.006	128.215	1	.000	9.420	13.364
Location	COVID	2.047	.230	79.525	1	.000	1.597	2.497
Link function: Logit.								

Table 4.42 assesses COVID-19's influence on organisational sustainability parameters. Significant Wald statistics (p-values < 0.05) suggest that pandemic-induced adoption of long-term sustainability practices improves organisational sustainability. The threshold estimates for increasing sustainability levels (OG = 2.00 to 4.00) are very significant, with odds ratios indicating significant post-pandemic sustainability growth. The COVID location variable has a significant beneficial effect (Estimate = 2.047, p < 0.001). These findings confirm H9 COVID-19 has driven medium and large healthcare organisations in post-pandemic India to embrace long-term sustainability strategies that considerably increase organisational sustainability.

4.5   Summary of Finding

The study demonstrates multiple influences that shape organizational sustainability outcomes in healthcare organizations following the pandemic. Scientific progress demonstrates an upward correlation with business performance which underscores technology as the fundamental force behind enterprise expansion. Operational plans along with financial resources and site selection directly affect sustainability improvement for organizations creating fundamental conditions that influence outcome effectiveness. Proof shows that technological elements deeply influence total organizational sustainability reinforcing their core position. According to the data, offering medium and large healthcare organizations in India the ability to enhance their sustainability between pandemic waves depends on establishing three key practices: long-term sustainability practices together with financial management plus COVID-19 crisis management.

4.6   Conclusion

Healthcare systems endured major challenges throughout the COVID-19 crisis that stretched existing infrastructure networks while disrupting supply channels and speeding up digital healthcare adoption. Organizations maintain inconsistent progress toward

recovery after the pandemic through digital transformation alongside service diversification efforts yet many struggles to develop new services and earn financial success. The analysis of the hypotheses, through Spearman's correlation and ordinal regression models, reveals significant relationships between organizational and technological factors, and growth and sustainability. Study results demonstrate that technological progress leads to better organizational growth alongside sustainable development outcomes. Healthcare organizations need additional investments in digital solutions along with improved infrastructure and strategic planning to achieve sustainable development with enhanced organizational resilience. Fundamental implementation of these practices shows varied implementation across the sector.

CHAPTER V:

DISCUSSION

5.1 Discussion of Results

Multiple essential findings have emerged from this analysis about how organizational factors interact with technological impacts. The data indicates that better technological factors create a direct connection to higher organizational growth rates. Fostered organizational development demands the integration of sophisticated technology through this established connection. Analysis through ordinal regression reveals how organizations experience impactful outcomes from external variables, including location and contextual elements, which demonstrate that particular geographic conditions and environmental factors directly influence organizational results. The study demonstrates that both organizational sustainability and technological factors demonstrate positive correlations because technology fosters sustainable practices. External factors, including location and COVID-19, show predictive potential through regression models as organizations demonstrate their ability to respond through adaptation and resilience in changing conditions. Research findings demonstrate that technology adoption, together with contextual factors, exercises a substantial influence on organizational growth and sustainability, thus requiring deliberate digital transformation investments for enduring business success.

Healthcare workers participated in a central leadership position during India's complicated management of COVID-19 pandemic. Healthcare workers throughout India struggled to manage an already burdened healthcare system during the pandemic, which resulted in both supply shortages and insufficient infrastructure. Healthcare organisations encountered various obstacles, yet medical professionals displayed strong capabilities for resilient work combined with adaptable performance and significant dedication to medical

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duties. Even before the pandemic, there were problems with the Indian healthcare system. India's healthcare system is now even more overburdened by the pandemic. Combating the growing prevalence of both communicable and noncommunicable diseases was the primary challenge facing the healthcare sector. (Nimavat et al., 2022). Healthcare workers revealed both physical and emotional distress following long hospital shifts, together with worrying about virus transmission within their households. For Indian "healthcare workers" (HCWs), a supportive work environment, mental health assistance, and mental health policies are necessary. (Mathias et al., 2023).

The Indian government reduced coronavirus transmission through fast lockdown applications along with large-scale vaccination schemes and healthcare infrastructure investments. Lastly, this study has recommended giving medical professionals who are giving their life to advance humanity the greatest safety gear and equipment available. (Mandal et al., 2020). Frontline medical staff encountered major obstacles due to insufficient protective equipment, together with limited training in new patient care procedures. Through their remarkable determination, healthcare workers kept the healthcare system functional even as they encountered operational challenges.

The healthcare system of India encountered major challenges during the pandemic because healthcare professionals provided essential management of the crisis. Healthcare workers demonstrated unsoldered commitment combined with governmental surveillance solutions that worked effectively to control the pandemic spread. Future public health emergencies require long-term reforms in both infrastructure development and workforce preparedness after systemic health system shortcomings revealed during the pandemic became apparent.

The COVID-19 pandemic produced considerable institutional consequences that struck both mental and physical health aspects and economic functions as well as social

interplay structures throughout the global population. The pandemic triggered millions of global deaths and healthcare system operational overload, affecting the most seriously vulnerable groups, including older people and persons with ongoing health problems. The swift transmission of the virus initiated the worldwide adoption of safety protocols, including lockdowns and mask mandates, while enforcing social distancing duties to control immediate virus spread (Bavel et al., 2020).

Universal psychological distress emerged from pandemic-related uncertainty together with fear and isolation that generated higher anxiety levels and depression and significantly increased stress throughout the population. (Gunnell et al., 2020) showed social isolation along with financial insecurity and infection anxiety as primary reasons for poor mental health outcomes throughout this period. Such effects worsened for numerous individuals after the shutdown of educational institutions, places of work, and public establishments since these closures demonstrated how crucial social routines, along with interaction, determine mental well-being (Pfefferbaum & North, 2020).

Pan-democratic challenges resulted in worldwide economic declines as unemployment expanded severely, and multiple businesses, especially those in hospitality along with travel and retail, faced severe survival challenges(FMI, 2020). Some countries proposed economic support packages, yet the financial aid systems failed to reach low-income neighbourhoods equally (Noya et al., 2020). Global supply chains revealed their extreme vulnerability during the pandemic forcing leaders to understand the requirement for better economic systems with increased resilience and diversity following the crisis.

The pandemic revolutionized social connections through increased digital engagement across work duties and classroom learning environments as well as personal relationships. Technology upgrades introduced by the pandemic enabled limited normalcy yet they amplified existing social inequalities because not every person obtained equal

access to internet services and digital platforms(Reynolds, 2021). Social behaviours changed due to the pandemic as people emerged with higher hygiene education and newfound public health responsibility and protocol understanding.

During the COVID-19 pandemic, our societies demonstrated both vulnerability and strength, which emphasizes the necessity of strengthening global teams, public health foundations and mental-health assistance networks to overcome future large-scale crises.

In order to critically examine healthcare management across emerging markets, there are notable disparities and challenges that prevent delivery of equitable and efficient healthcare services. The healthcare system in India features low public expenditure in the form of 1.4% of GDP in 2021, which presents a number of limitations on workforce and infrastructure and the healthcare providers are mostly concentrated in urban areas. Therefore, a large part of the population is dependent on out of pocket payments, which made up 48% of overall healthcare expenditure in 2018, putting 50-60 million people into poverty each year as a result of medical expenditures (Ehrbeck et al., 2010; Roemer-Mahler, 2014; The Geneva Association, 2019).

However, the implementation of e-health initiatives in Turkey has been met with several obstacles such as the lack of information communication technology infrastructure, regulatory challenges and cultural resistance of healthcare professionals. These are the issues that prevent the adoption of digital health solutions in an efficient way, thus preventing improvement in the health care delivery efficiency (Uluc, 2016). Also, Egypt Arabia faces the same impediments to its e health development, for instance lack of finances, supply chain management failures and concerns about the privacy of the patients. All of these factors lead to a slow movement towards a modernized healthcare service system, which in turn affects the quality of care. Although quite progressive, the United Arab Emirates itself has its own set of challenges related to e-health development such as

cultural and clinical adaptation of users, financing, and supply chain management. The obstacles hinder the realization of full benefits of e-health, hence affecting the efficiency and effectiveness of healthcare delivery.

Together, these emerging markets constitute a breadth of challenges in healthcare management ranging from infrastructural deficiencies and financial woes, to cultural resistance and regulatory barriers. The solutions to these problems require well-crafted strategy taken in regard to the uniqueness of each country and include robust policy reforms, infrastructure investment and improvement of digital literacy of the health workers. Without such targeted interventions, these nations can continue to experience major challenges in being able to realize equitable, efficient, health care systems, and these challenges will ultimately impact the health of their populations.

5.2 Discussion of Research Questions One

What were the primary concerns with COVID, facing medium-sized and large healthcare institutions?

The COVID-19 pandemic posed unprecedented challenges for medium and large healthcare institutions, significantly affecting their operations, financial stability, and service delivery. One of the primary concerns was resource availability, including shortages of medical supplies, PPE, and ventilators. These constraints led to operational inefficiencies and increased pressure on healthcare workers. Additionally, staffing shortages due to infections, burnout, and increased patient loads created workforce management challenges, requiring hospitals to adapt quickly through emergency recruitment and task reallocation.

Financial strain emerged as another major concern, with institutions experiencing rising operational costs due to infection control measures, while simultaneously facing revenue declines from reduced elective procedures and outpatient visits. Many hospitals

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had to seek financial assistance or restructure their budgets to sustain essential services. Patient management complexities also intensified, with the need for specialized COVID-19 wards, strict isolation protocols, and overwhelmed intensive care units (ICUs), leading to ethical dilemmas in resource allocation.

Moreover, technological adoption accelerated as hospitals integrated telemedicine, AI-driven diagnostics, and remote patient monitoring to maintain continuity of care. The crisis underscored the importance of resilient healthcare models, prompting institutions to reassess emergency preparedness, digital transformation, and supply chain diversification to mitigate future disruptions.

5.3 Discussion of Research Questions Two

What sustainable and growing strategies were employed to address these issues?

Multiple key measures enable organizational success during pandemics through adaptive strategies, resilient leadership, and proactive planning initiatives. The steps taken by organizations serve to minimize current difficulties while creating foundations for enduring expansion and stability.

1. **Embrace Digital Transformation:** Organizations must make accelerating their digital transformation initiatives one of their primary strategic moves. Remote work and online engagement, together with e-commerce, have become crucial business elements because of the pandemic. Organizations which use digital tools, including cloud computing video conferencing and e-commerce platforms, successfully maintain their operations while preserving business continuity and maintaining customer relationships (Donthu & Gustafsson, 2020).

2. **Prioritize Employee Well-being and Safety:** Companies that make employee safety their top priority achieve better morale results and heightened workplace productivity. Organizations should implement remote working flexibility

alongside strong safety regulations for office personnel combined with mental health resources and direct information about safety guidelines. Taking good care of employee well-being reduced risks yet simultaneously established trust and employee loyalty according to research by (Carnevale & Hatak, 2020).

3. **Agile Decision-Making: Times** of crisis demand organizations to demonstrate agility. Organizations need to make quick decisions along with rapid strategic adjustments and slight changes to meet evolving circumstances. Agile frameworks combined with teams fostered across functions alongside empowered leadership help organizations maintain their responsiveness and resilience.

4. **Diversify Supply Chains and Operations:** The pandemic exposed many weaknesses in worldwide supply chain operations. Companies should create domestic or near-domestic supply chain options to break their dependence on one supplier or country. The pandemic presents possibilities for companies to build new sourcing networks and production capabilities through manufacturer relocation to local vendors and reserving plants for essential production(Ivanov & Das, 2020).

5. **Pivot Business Models and Offerings:** The pandemic produced favourable results for those organizations which modified their business models. By adapting their products and services organizations can fulfil emerging market needs. Manufacturers made the transition from producing standard products to producing personal protective equipment (PPE) while various organizations shifted to subscription-based services and home delivery solutions. Flexible approaches to product development, together with service delivery, create opportunities for organizations to access multiple revenue streams(Arslan, 2021).

6. **Strengthen Corporate Social Responsibility (CSR):** By putting corporate social responsibility initiatives first organizations can constructively improve their public image and build better connections with their staff members customers and neighbourhood communities. Organizations which funded pandemic relief while backing healthcare professionals and helping their local areas gained trust from both customers and communities. CSR initiatives bring dual benefits of social impacts while delivering marketing potential along with clear brand distinctions(He & Harris, 2020).

7. **Financial Management and Cost Control**: Financial management requires exceptional effectiveness when a pandemic occurs. Organizations need to track their cash flow closely as they work to cut unnecessary expenses while efficiently managing their financial resources. Through strategic cost reductions including intermittent spending cuts of non-vital operations and modified contract terms organizations can perform financially well enough to survive according to (Bartik et al., 2020)

A combination of implementing digital transformation alongside employee well-being strategies together with agile decision-making and supply chain diversification business model pivots, enhanced CSR efforts, and effective financial management enables organizations to overcome pandemic pressures while building organizational resilience.

5.4 Discussion of Research Question Three

To what degree did these strategies sustain operations and expansion?

Businesses involved multiple sustained operational approaches alongside employee safeguard measures when the COVID-19 pandemic happened. To minimize virus spread, many businesses selected remote work as their most important operational adjustment. Entire organisations began developing digital tools alongside technology platforms that

made home-based work possible using cloud services along with video conferencing technology combined with collaboration software(Gibbs et al., 2021). Remote work transitions operated as a dual solution that maintained operational continuity and protected employee productivity throughout pandemic lockdown periods.

The benefits organizations provided to support their employees' well-being included flexible work schedules together with changes to operational hours designed for personal challenges, especially caregiving duties and health needs. The implementing procedures improved stress reduction and decreased work-life imbalance in times of uncertainty(De Menezes & Kelliher, 2011). The implementation of upgraded health procedures by businesses protected on-site employees through PPE distribution intensified sanitization efforts and mandated social distance adherence(Bartik et al., 2020).

Throughout the pandemic employers recognized mental health as a top priority by offering counselling services and enabling mental health days and wellness programs for employee psychological support. Whether through video events or remote collaboration initiatives some firms recognized employee isolation's effects by creating virtual social frameworks to strengthen staff morale while boosting workplace engagement. Organizations demonstrated flexibility by granting paid sick days along with extended parental leave programs and alternative financial resources to support their personnel during pandemic times(Chen et al., 2020).

Organizations focusing on employee well-being through technology aims with flexible structures and thoughtful healthcare and mental health solutions proved superior at operating gracefully throughout the pandemic crisis while strengthening their employee commitment.

The strategies adopted by medium and large healthcare institutions during the COVID-19 pandemic played a crucial role in sustaining operations and enabling

expansion. While the immediate focus was on survival and resilience, many of these approaches facilitated long-term growth, operational efficiency, and enhanced healthcare delivery.

One of the most impactful strategies was digital transformation, which not only allowed hospitals to maintain continuity of care during the crisis but also positioned them for long-term expansion. The adoption of telemedicine, AI-powered diagnostics, and remote patient monitoring significantly improved accessibility and efficiency, enabling institutions to extend their services beyond traditional hospital settings. These digital advancements became a core component of post-pandemic healthcare strategies, reducing operational costs while improving patient outcomes.

Workforce well-being initiatives also had a lasting impact on organizational stability. By prioritizing staff safety, mental health, and flexible work arrangements, institutions improved employee retention and satisfaction. This not only ensured a more stable workforce during the crisis but also enhanced long-term productivity, reducing the risks associated with burnout and high turnover rates.

Agile decision-making proved critical in navigating uncertainty. Institutions that embraced flexible governance models and empowered leadership were able to respond swiftly to evolving challenges. This adaptability allowed for efficient resource allocation, streamlined operations, and improved crisis management, reinforcing long-term institutional resilience.

The diversification of supply chains and operations ensured sustainability by reducing dependence on single-source suppliers. This approach mitigated risks associated with global disruptions and strengthened procurement strategies, creating a more robust operational framework for future challenges.

Additionally, financial management and cost control enabled hospitals to navigate economic downturns while positioning themselves for future growth. By optimizing expenses, securing funding, and reallocating resources strategically, institutions-maintained stability and expanded critical services.

In conclusion, these strategies not only sustained healthcare operations during the pandemic but also paved the way for long-term expansion, efficiency, and resilience, reinforcing the need for continued investment in innovation and crisis preparedness.

5.5 Discussion of Research Question Four

In what ways will these strategies affect Indian healthcare in the long run?

A pandemic offers organizations the opportunity to survive and develop through market modifications while using technology alongside workforce care programs. By implementing flexible business models such as digital platforms and remote service delivery organizations can operate during physical restriction periods (Sheth, 2020). Businesses increase their operational resilience through digital transformation investments that include e-commerce platforms together with cloud computing and remote collaboration tools to establish new customer reach (Verma & Gustafsson, 2020). Working organizations should direct attention to employee safety by installing teleworking capabilities and workplace mental health programs and safety protocols. To avoid supply chain disruptions businesses should explore diverse distribution networks while implementing flexible planning methods according to (Ivanov & Dolgui, 2020). Improved stakeholder communication together with increased use of government resources through financial assistance programs can strengthen organizational resilience. Through implementing these measures businesses secure their survival during emergencies while creating conditions to flourish in the economy once the pandemic ends.

The strategies adopted during the COVID-19 pandemic will have a lasting influence on the Indian healthcare sector, shaping its resilience, efficiency, and accessibility in the long run. The acceleration of digital transformation, including telemedicine, AI-driven diagnostics, and remote patient monitoring, will continue to enhance healthcare accessibility, particularly in rural and underserved areas. This shift will reduce dependency on physical infrastructure and improve cost efficiency. Workforce well-being initiatives will lead to better employee retention, lower burnout rates, and improved service delivery, fostering a more sustainable healthcare workforce. The emphasis on agile decision-making and crisis management will encourage proactive governance, making institutions more responsive to future public health emergencies. Supply chain diversification will mitigate risks associated with global disruptions, ensuring stable access to critical medical supplies and reducing dependency on imports. Financial management and cost-control measures adopted during the pandemic will lead to more sustainable budgeting practices, improving the financial health of healthcare institutions. Additionally, the prioritization of corporate social responsibility (CSR) will strengthen trust between healthcare providers and the public, encouraging more community-focused healthcare models. Collectively, these strategies will drive a more robust, technology-driven, and patient-centric healthcare ecosystem in India, ensuring long-term growth and sustainability.

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

This study explored the challenges faced by medium-sized and large healthcare institutions in India during the COVID-19 pandemic and the strategies they employed to sustain operations and ensure long-term growth. The findings highlight critical concerns such as resource shortages, financial strain, workforce challenges, patient management complexities, and the need for rapid technological adaptation. These challenges significantly impacted healthcare service delivery, necessitating urgent and innovative responses to ensure operational continuity and sustainability.

Research participants from the healthcare industry participated in an experiment involving study groups with diverse age distributions, gender compositions, and professional roles across various facility types and educational attainment levels. Middle-aged healthcare professionals with advanced degrees were selected as research subjects at private healthcare facilities providing specialized care to semi-urban communities in India. As medical organizations aimed to integrate digital healthcare, they faced several new challenges sparked by the COVID-19 pandemic, which increased patient volumes while forcing them to cope with limited resources, staff shortages, and financial instability. Ineffective strategies for organizational growth, such as workforce development, digital adoption, and public-private partnerships to expand services, yielded unpredictable results. Organizations made significant progress by enhancing health services, reducing costs, and streamlining processes; however, their technology use still requires further refinement for both disaster response and ongoing operations. Although external environmental factors influenced both sectors, statistical analysis indicated strong causal relationships between organizational growth, sustainability, and technological advancement. Research findings

illustrate how, through intelligent technology deployments, appropriate training, and governance frameworks to build organizational resilience, organizations can achieve alignment with strategic plans and maintain sustainable operations.

The primary problem during the pandemic arose from a shortage of medical supplies alongside "personal protective equipment" (PPE) and ventilators resulting from operational disruptions that severely burdened healthcare personnel. The challenges of health worker management deteriorated because of staffing shortages stemming from infections and workplace burnout and heavy workloads which forced hospitals to conduct emergency staff hiring and strategic task distribution. Hospitals faced substantial financial challenges because they spent greater funds on infection management along with reduced cash flow resulting from decreased elective admissions and outpatient visits which created serious difficulties with financial sustainability. Managing COVID-19 cases demanded substantial adjustments to healthcare facilities by creating dedicated areas for patient care accompanied by rigid isolation rules and optimized resource utilization which generated functional challenges and moral issues.

The challenges demanded healthcare institutions to implement multiple strategic responses. The implementation of advanced digital healthcare combined with AI diagnostics and remote medical monitoring achieved better health service access while optimizing operational processes. Healthcare facilities implemented employee safety programs which increased workforce retention giving better service results. Agile decision-making helped hospitals carry out fast responses to changing circumstances to maintain adaptability during crisis management. The spread of medical supply procurement across multiple sources decreased vulnerability by reducing dependence on distant networks during international disruptions. The financial stability of institutions received support through implementation of cost control measures along with optimized budgeting during

the crisis period. Organizations employed corporate social responsibility (CSR) programs to solidify trust relationships with local communities as they simultaneously strengthened their social public image.

Ultimately, this study underscores the importance of resilience, innovation, and strategic planning in transforming healthcare systems for sustained growth and preparedness against future disruptions.

6.2   Implications

For healthcare providers to succeed over the long term in their changing healthcare market, research findings include practical suggestions that they must put into practice. Healthcare organisations must invest in workforce training that incorporates operational technology systems and digital health transformation initiatives due to the vast power of technological breakthroughs.

Healthcare organisations must deal with continuing shortages of materials, staffing shortages, and budgetary constraints, particularly from the COVID-19 pandemic era, by consciously developing policy resistance and fostering greater public-private healthcare operator collaboration. When services vary along with operational changes, strategic effectiveness is still an issue, and better ways must be developed to meet local healthcare demands as well as organisational goals.

Due to the substantial correlations between sustainable practices and favorable results, organizations should adopt them through governance systems that involve stakeholders. In order to meet changing healthcare demands, strategies that integrate sustainable practices with technological advancements and strategic governance frameworks are essential for long-term healthcare success.

6.3   Recommendations for Future Research

1. **Examination of Technology Adoption Barriers:** In order to develop appropriate policy solutions, training strategies, and financial incentives to address these issues, particularly in rural and underserved medical settings, future research should pinpoint the specific challenges that healthcare organisations encounter when implementing new technologies.

2. **Longitudinal Studies on Sustainability Practices:** Studies that track changes over time provide important insights into how sustainability practices affect the growth of organisations and the health of patients over long-time spans.

3. **Impact of Public-Private Partnerships:** Comprehensive studies involving public-private entities in COVID-19 operational emergency management procedures and healthcare resilience building indicate the possibility of new cooperative approaches.

4. **Comparing Organisational Strategies Across Regions:** Studies that contrast healthcare practices in urban and rural areas identify unique strategies that produce crucial data for developing sustainable and long-lasting regional plans that promote growth.

5. **Financial Models for Healthcare Sustainability:** By examining cost management strategies that improve care delivery and protect the environment, researchers must develop sustainable financial systems that support healthcare sustainability.

6. **Evaluation of Workforce Training Programs:** After the pandemic, future studies should evaluate healthcare workforce training systems for their role in improving the quality of medical care while implementing contemporary healthcare technology approaches and their relationship to staff development initiatives.

7. **Patient-Centric Technology Integration:** Research assessing the impact of integrating patient-focused telemedicine and electronic health record systems on clinical workflow satisfaction levels, including cost reduction and improved practitioner and patient experience, is necessary.

6.4 Conclusion

This study examined the challenges faced by medium and large healthcare institutions in India during the COVID-19 pandemic and the strategies employed to sustain operations and drive long-term growth. The findings underscore the immense pressure these institutions experienced due to resource shortages, financial strain, workforce challenges, and the complexities of patient management. However, the crisis also catalyzed transformation, pushing healthcare institutions to adopt innovative and sustainable strategies to navigate the unprecedented disruptions.

Through telemedicine, AI-driven diagnostics, and remote patient monitoring, the study emphasizes how digital transformation was essential to preserving continuity of care. Improved employee well-being programs increased workforce resilience, which in turn improved job satisfaction and service effectiveness. Healthcare organizations were able to effectively respond to the changing situation through the use of agile decision-making, quick policy changes, and supply chain diversity. Additionally, the sustainability of operations was supported by financial prudence through cost-control measures and optimized budgeting. Healthcare organizations were able to strengthen their commitment to public welfare and gain the trust of communities by implementing CSR programs.

In the long run, these strategies will reshape the Indian healthcare sector, fostering a more resilient, technology-driven, and financially stable system. The integration of digital healthcare solutions will enhance accessibility, while strengthened governance and supply chain resilience will better prepare institutions for future crises. Employee well-being

measures will continue to play a vital role in maintaining a motivated and efficient healthcare workforce.

Ultimately, this study emphasizes the need for proactive planning, continuous innovation, and strategic management to ensure the long-term sustainability of healthcare institutions. By leveraging the lessons learned during the pandemic, healthcare organizations can build a robust and adaptable framework that not only withstands future disruptions but also contributes to the overall improvement of healthcare services in India.

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DATASET

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	What	What	What	What	Which	What	How	In wh	What	What	What	Our or	The or	The ac	We ha	The or	Our he
2	3	1	3	2	1	1	2	2	2	3	3	2	4	4	2	3	4
3	4	2	4	1	2	1	2	3	2	4	2	2	3	2	2	2	4
4	1	2	2	2	2	1	2	2	2	2	3	4	1	3	4	1	3
5	3	1	3	2	3	2	3	4	3	5	1	4	2	4	2	2	4
6	4	2	5	2	3	1	2	2	1	6	7	4	2	4	2	2	4
7	3	1	4	3	1	2	2	4	1	1	1	3	3	3	3	4	3
8	2	1	3	2	4	2	3	5	1	8	5	1	4	1	4	2	4
9	1	2	3	1	3	1	1	1	1	4	7	4	3	3	4	4	4
10	4	3	4	3	4	2	2	3	3	7	4	4	4	3	3	2	3
11	2	1	3	3	3	2	3	3	2	4	8	2	4	2	4	4	1
12	4	2	3	2	3	1	1	3	2	6	6	2	3	2	4	5	4
13	1	2	3	2	3	2	3	1	2	4	6	4	1	4	4	4	1
14	4	2	4	1	3	2	2	5	3	6	5	2	4	1	4	4	1
15	1	1	2	5	5	1	1	5	3	1	1	1	1	1	1	1	1
16	4	1	2	3	2	2	3	1	2	5	4	1	4	1	4	2	4
17	1	2	2	2	2	2	1	2	2	2	2	2	3	3	2	3	2
18	3	1	3	3	4	1	3	4	3	3	4	2	4	2	4	2	4
19	3	1	3	2	2	2	3	2	2	4	4	4	2	4	2	2	4
20	3	4	4	2	4	2	2	3	2	5	6	3	4	3	4	3	4
21	2	2	3	2	1	1	3	3	2	6	6	3	4	3	2	4	3
22	3	2	3	4	3	2	2	4	2	5	4	2	4	2	4	4	1
23	3	1	4	3	4	2	2	4	3	5	2	4	2	5	1	4	3
24	4	1	3	3	2	2	3	4	2	3	4	2	4	2	4	2	4
25	3	2	4	3	3	1	2	3	2	6	3	4	3	4	3	4	3
26	3	2	3	3	2	2	3	3	1	6	4	4	3	3	2	4	3

R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP
The or	Our or	The or	Invest	Collab	The or	Techn	Our or	We re	Opera	Our or	The or	Our he	The or	Invest	The or	Health	The or	Policy	Enviro	The or	Social	The C	The h	The sh
2	4	2	4	2	4	2	4	4	1	4	4	4	1	4	4	4	2	2	4	1	4	4	2	4
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