



ASSESSMENT OF IMPACT OF COVID-19 ON STAKEHOLDERS BEHAVIOR IN HIGHER EDUCATION OF PHARMACY AND ENGINEERING

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Abstract:

Engineering and pharmacy education faced unique challenges due to their practical and hands-on curriculum, requiring innovative solutions like virtual labs and simulations. Universities and colleges invested in digital tools, expanded online resources, and offered training for faculty to address the shift, but financial constraints limited their capacity in many cases. The study intends to discover and comprehend recent shifts in investment education and induced behaviour from the same using a sample of 200 pharmacy and engineering level students in Pune City in India, during the covid-19 crisis. This is a cross-sectional questionnaire-based study on investment education and behaviour, wherein factors designed by the authors are studied on linear and Likert scales. The study aimed to investigate how the COVID-19 pandemic affected the investment behavior of stakeholders associated with higher education sectors, particularly in pharmacy and engineering. It sought to understand the changes in their risk tolerance, decision-making strategies, and the influence of market volatility on their investment choices during the pandemic. Surveys and interviews were conducted with stakeholders connected to higher education institutions in pharmacy and engineering. Stakeholders showed heightened caution and reduced risk-taking behavior, especially in the early stages of the pandemic. The COVID-19 pandemic reshaped the behavior of students, faculty, institutions, and employers, driving a shift towards digitalization, flexibility, and a reimagined educational framework in pharmacy and engineering fields. This transformation highlights the need for continued innovation and investment to sustain progress.

Keywords: Higher Education, Investment education, Covid-19 pandemic, stakeholder Analysis, Impacts, Problems and Challenges.

I. INTRODUCTION

The highly contagious Covid-19 pandemic caused significant disruption in human life. To combat the outbreak, measures such as social isolation, self-isolation, the closure of educational systems and establishments, the restriction of modes of transportation, and national lockdowns were implemented. While such measures appeared essential given that this was a novel disease with no treatment available, the impact on global economic activity was noteworthy.



Pharmacy and engineering programs, traditionally reliant on hands-on lab work and practical sessions, had to adapt quickly to online platforms. Virtual simulations and remote labs were adopted, though they sometimes fell short of replicating real-world experiences. Stakeholders, including students, parents, and institutions, faced financial challenges. Many students reconsidered enrollment due to increased tuition, lack of campus-based experiences, and uncertainty about job prospects in these fields. The pandemic heightened interest in pharmacy education due to the global focus on healthcare. Similarly, engineering disciplines such as biomedical and software engineering saw increased relevance, aligning with pandemic-driven innovations. Universities invested heavily in digital infrastructure to support hybrid learning, influencing the cost structures and long-term strategies of stakeholders. Stakeholders in education sectors saw opportunities in ed-tech and e-learning platforms, driving a shift in investment focus.

The pandemic altered student priorities, with many valuing flexibility and skills-based learning over traditional degree structures. This shift impacted enrollment trends in pharmacy and engineering programs, compelling institutions to reassess program offerings.

1.1. Healthcare (Pharmacy Education):

The shift to virtual and hybrid education emphasized digital tools for practical and hands-on learning, such as virtual simulations for pharmaceutical formulations and patient interactions. Stakeholders prioritized aligning educational outcomes with industry needs, focusing on telepharmacy, drug delivery systems, and pandemic preparedness. Increased demand for pharmacists highlighted the importance of accessible, practice-oriented training.

1.2. Technology (Engineering Education):

Hands-on engineering labs moved to virtual platforms using augmented reality, remote labs, and simulations, impacting how students gained practical experience. Stakeholders invested in R&D for technologies that supported healthcare, such as medical devices and AI, fostering interdisciplinary approaches. Institutions and investors leaned towards flexible and resilient education models to prepare engineers for dynamic global challenges.

1.3. Cross-Disciplinary Impact:

The pandemic heightened awareness of the need for adaptable, skill-based learning. Stakeholders supported technologies bridging gaps in physical training, ensuring students in pharmacy and engineering remained competent despite disruptions. These changes reflected a broader shift in stakeholder behavior toward sustainable, tech-driven education.

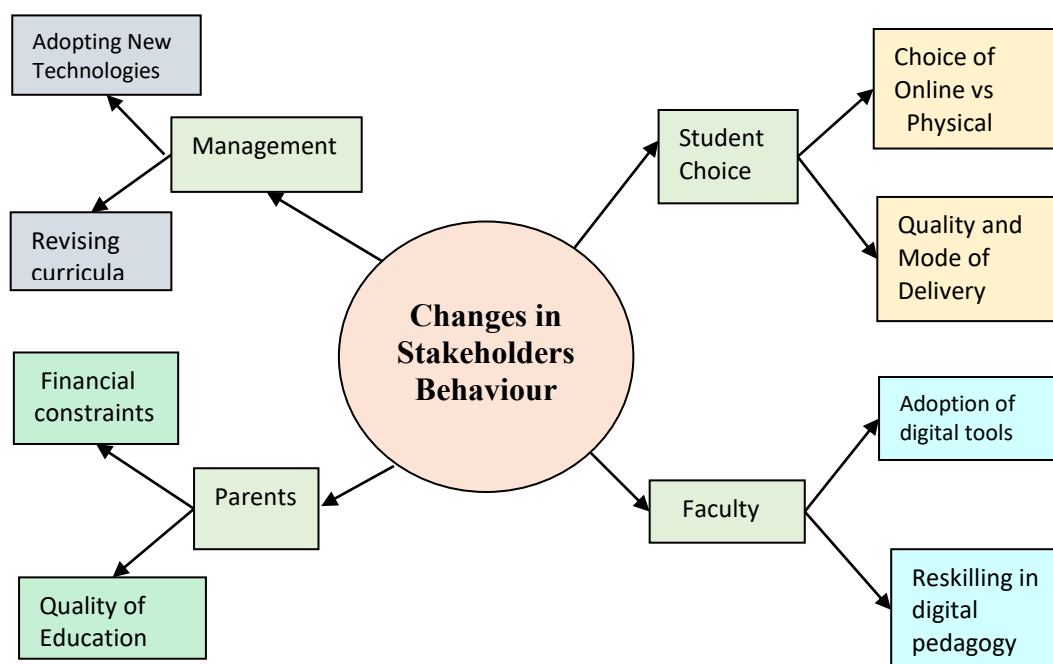
The COVID-19 pandemic significantly disrupted the higher education landscape, particularly in specialized disciplines like pharmacy and engineering. Stakeholders, including students, educators, institutions, and industry partners, experienced profound changes in their behaviors, perceptions, and expectations. These shifts were driven by challenges such as the abrupt transition to online learning, reduced access to practical and lab-based education, altered assessment methodologies, and the growing emphasis on digital competencies.

For students, the uncertainty of the pandemic impacted their learning preferences, career aspirations, and engagement levels, while educators faced challenges in adapting to virtual teaching tools and methods. Institutions had to rethink resource allocation, student support systems, and curriculum delivery to ensure continuity. Meanwhile, employers and industry partners raised concerns about the preparedness and skill set of graduates, given the constraints on experiential learning.

This study seeks to examine the impact of the pandemic on the behaviors, perceptions, and expectations of stakeholders in pharmacy and engineering education. Specifically, it aims to explore how these changes have reshaped approaches to teaching and learning, stakeholder satisfaction, and the alignment between educational outcomes and industry needs. The findings will provide valuable insights for adapting higher education strategies to meet evolving demands in a post-pandemic world.

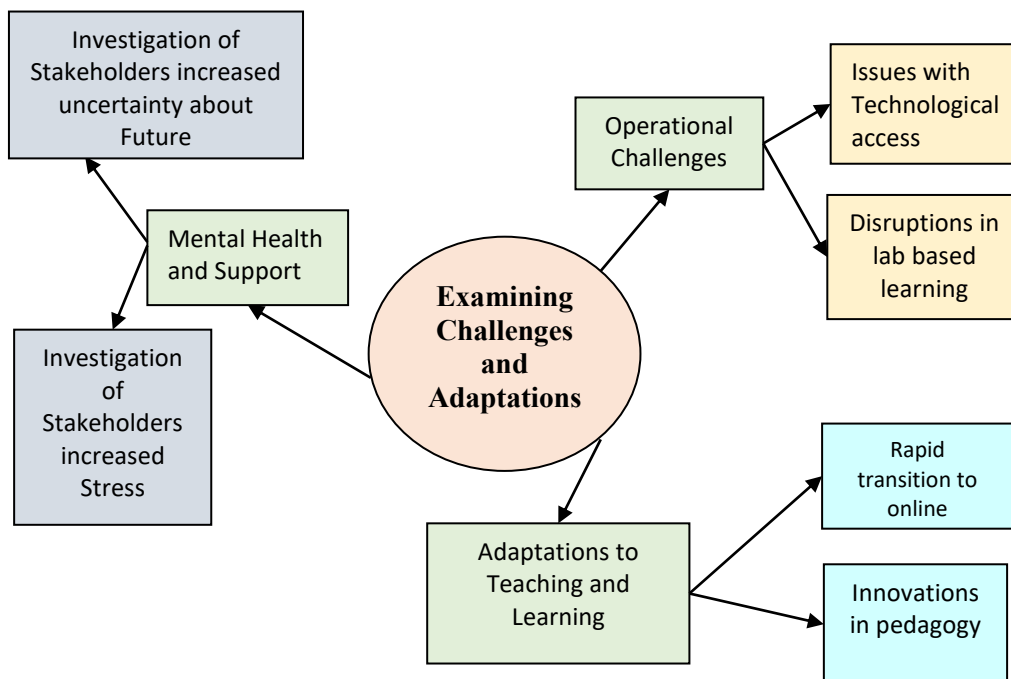
1.4. Understanding Changes in Stakeholder Behavior

With the help diagram given below we can understand changes happened in the behavior of Stakeholders.



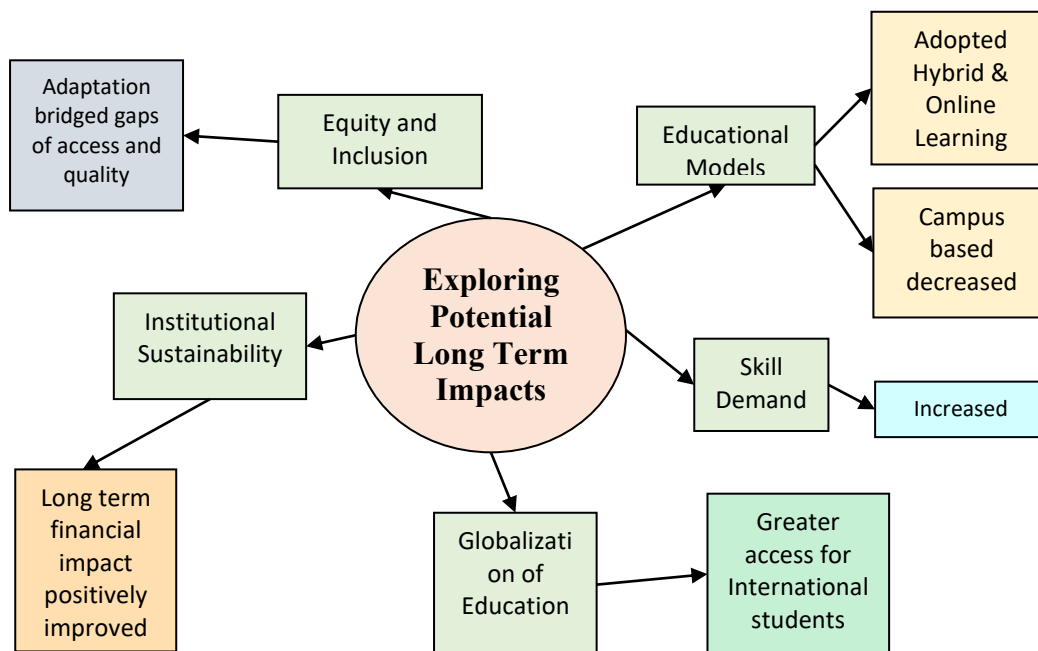
1.5. Examining Challenges and Adaptations

With the help diagram given below we can examine challenges and adaptations happened in the behavior of Stakeholders.



1.6. Exploring Potential Long-term Impacts

With the help diagram given below we can explore potential long term impacts on Stakeholders.



1.7. Policy Formulation



Understanding how stakeholders, including investors, administrators, and policymakers, behaved during the COVID-19 pandemic provides insights into their priorities, challenges, and risk tolerance. This information is essential for creating resilient policies that align with stakeholder expectations and financial health. The pandemic exposed vulnerabilities in funding models for higher education. By analyzing stakeholder behavior, policymakers can better allocate resources to ensure financial stability and continuity in pharmacy and engineering programs.

Insights from the study can guide the development of robust frameworks to manage future disruptions, ensuring that education systems can withstand economic shocks without compromising quality.

1.8. Curriculum Adaptation

The pandemic reshaped industries, particularly pharmacy and engineering, with increased focus on healthcare innovations, digital infrastructure, and supply chain management. Understanding stakeholder reactions can help institutions adapt curricula to meet evolving industry demands and attract investment. Pharmacy and engineering students must be equipped with crisis management and adaptability skills. Research findings can inform curriculum updates to include training on handling disruptions and leveraging technology effectively during crises.

Changes in stakeholder preferences for digital and physical investments can influence how curricula incorporate hybrid learning solutions to ensure sustainable education delivery.

1.9. Crisis Management in Higher Education

Examining stakeholder behavior during COVID-19 reveals gaps in crisis preparedness, offering a blueprint for building resilience in higher education institutions. This includes ensuring funding continuity and maintaining stakeholder confidence. Stakeholder responses during the pandemic can provide behavioral insights that inform how institutions should engage with investors, donors, and government bodies in times of crisis.

The pandemic highlighted the need for collaborative approaches between educational institutions, governments, and private sector stakeholders. Findings can promote partnerships to ensure the stability and growth of critical disciplines like pharmacy and engineering.

This research bridges financial, educational, and societal aspects, offering a comprehensive understanding of how crises impact higher education's economic and operational frameworks. By examining stakeholders' behavior, policymakers, educators, and administrators can make informed decisions to ensure sustainability, relevance, and resilience in the face of future challenges.

II. RELATED WORK

The author has carried out a detailed literature review to compare the findings of other similar studies undertaken before and analyses the research gap. The findings from the literature review.

The COVID-19 pandemic profoundly impacted higher education, accelerating the adoption of online and hybrid learning models as institutions adapted to lockdowns and social distancing mandates. Universities faced financial strain due to reduced enrollments, campus closures, and the need for technological investments. Students experienced disruptions in their academic journeys, including challenges with remote learning, limited access to resources, and mental health concerns. Faculty were compelled to innovate teaching methods while navigating their own pandemic-related pressures. Despite these challenges, the crisis spurred a reevaluation of educational models, highlighting the potential for technology to enhance accessibility and foster resilience in higher education systems.

In higher education, the pandemic accelerated the adoption of online learning. A major transformation occurred with universities shifting from in-person to remote education to ensure the safety of students and staff. This transition was challenging for both faculty and students, with varying levels of preparedness and technological access. Many students and instructors faced difficulties with online engagement, leading to disparities in learning outcomes, particularly for vulnerable groups. However, this period also prompted universities to refine their digital infrastructures, which some view as a long-term advantage for post-pandemic education. For pharmacy and engineering programs, online learning proved especially challenging due to the hands-on nature of practical training. Pharmacy students, for instance, typically require lab work and internships that were difficult to replicate virtually. In response, institutions developed alternative strategies such as virtual simulations, but these solutions were often seen as insufficient compared to in-person experiences. Engineering programs also faced similar hurdles, with students unable to complete lab-based coursework, internships, and industry placements, which are critical for their training. From a financial perspective, the pandemic affected stakeholder behavior in higher education, particularly regarding the market value of universities and related sectors. Many investors expressed concerns about the long-term financial stability of educational institutions, as campuses closed, and revenue from tuition, research grants, and auxiliary services declined. This uncertainty led to changes in stakeholder behavior, with some shifting investments away from higher education institutions. The pandemic reshaped how higher education institutions operate, especially in disciplines requiring practical and hands-on training. While some of these changes were temporary, others may lead to lasting transformations in how education is delivered and experienced, particularly in online learning and its integration into traditional programs.

1. Summary of key findings and their implications

Factor	Pharmacy Education	Engineering Education	General Impact on Stakeholder Behavior
Impact on Enrollment	Decreased enrollment in certain programs	Enrollment patterns showed some decline, especially	Stakeholders may show cautious optimism about

	due to uncertainty and economic constraints.	in specialized engineering fields.	institutions that can maintain enrollment.
Online Learning Transition	Rapid adoption of online learning for theory-heavy courses. Concerns about lab-based experiences.	Engineering programs adapted with more online tools for theory, but labs and practicals posed a challenge.	Stakeholders might favor institutions that successfully transitioned to hybrid or fully online education models.
Stakeholder Confidence in Education Sectors	Some decline in stakeholder confidence due to the uncertain future of traditional education models.	Increased interest in innovation, such as virtual learning environments and AI applications in engineering.	Increased scrutiny on the adaptability of educational institutions and their resilience to future crises.
Technological Adoption	Pharmacy programs increasingly adopted telehealth and online services for training.	Engineering programs embraced digital tools for collaboration and simulation.	Investors may favor institutions that are leading in tech adoption, ensuring relevance in a digital age.

2.1. Students' Response and Behavior

Students in higher education faced a significant transition from in-person to online learning. Research indicates that students had mixed reactions. Some adapted well to online education, enjoying the flexibility it offered, while others struggled with the lack of interaction, technical issues, and challenges related to self-regulated learning. Studies in pharmacy and engineering found that the practical components of these disciplines, such as lab work and clinical placements, were particularly difficult to replicate in an online environment.

The isolation, uncertainty, and anxiety caused by the pandemic led to a rise in mental health challenges among students. A study in engineering education found that students reported increased stress levels, anxiety, and feelings of isolation. Similar patterns were observed in pharmacy students, where the pressure of maintaining academic performance combined with fear for health and future employment outcomes created a challenging environment.

Studies also highlighted how students in pharmacy and engineering adapted by engaging more with virtual resources like online tutorials, virtual labs, and simulation

software. However, the effectiveness of these resources varied depending on the field and the students' prior technical skills.

2.2. Parents' Response and Behavior

Many parents in both pharmacy and engineering programs faced financial strain due to job losses, which affected their ability to support students financially. The rising costs of tuition and the uncertainty about the job market after graduation added to parents' concerns about the value of their children's education.

Parents in some cases took a more active role in supporting their children's learning, especially in terms of providing emotional and logistical support. This was especially pronounced for students in more structured programs like pharmacy, where hands-on training was disrupted.

Parents expressed concern over the quality of education during the transition to online learning. The pandemic led to discussions about how to maintain educational standards, particularly in professional programs like pharmacy, where practical skills are critical.

2.3. Faculty's Response and Behavior

Faculty members, especially in fields like pharmacy and engineering, faced the challenge of moving from traditional face-to-face instruction to virtual teaching. Research found that some faculty adapted quickly to the new modality, but others faced significant challenges, particularly in maintaining engagement and effectively delivering complex content.

Faculty in both pharmacy and engineering programs had to redesign their courses to accommodate online formats. In pharmacy, for instance, online exams, virtual clinical simulations, and telehealth were integrated, while engineering faculty focused on virtual labs, project-based learning, and using simulation tools.

Many faculty members reported increased workloads due to the additional time required to develop online content and support students virtually. Studies also highlighted concerns about faculty well-being and burnout, as they were balancing teaching responsibilities with research and administrative duties.

2.4. Stakeholder Interaction:

Effective communication among stakeholders (students, parents, faculty, and administrators) was critical during the pandemic. Clear, transparent, and timely communication helped alleviate anxiety, clarify policies, and manage expectations.

In some cases, the pandemic fostered a sense of community and collaboration. For example, faculty and administrators worked together to create hybrid models, while students and parents joined in advocating for mental health resources and financial aid.

The pandemic accelerated the adoption of digital tools across higher education. In pharmacy and engineering programs, stakeholders leveraged technologies like virtual labs, learning management systems (LMS), and telehealth platforms. This shift revealed the importance of digital literacy for both students and faculty.

The pandemic underscored the resilience and adaptability of stakeholders in higher education. While many experienced initial struggles, all groups gradually adjusted to the new reality and developed coping strategies.

2.5. Lack of Focus on Specific Fields (Pharmacy and Engineering)

Much of the research on the impact of COVID-19 on shareholder behavior in education has focused on broader educational sectors, such as business or the general higher education industry. These studies typically don't take into account the specific dynamics that might exist in fields like pharmacy or engineering.

Pharmacy and engineering are both fields that require hands-on practical learning, internships, laboratory work, and interaction with healthcare or industrial environments. The COVID-19 pandemic disrupted these specific learning modes, but much of the existing research has not deeply explored how these disruptions uniquely affected stakeholders in these fields.

The pharmacy sector, for example, has specific accreditation requirements for clinical practice, and engineering students require access to labs and internships. These factors may have led to unique challenges for stakeholders (e.g., students, faculty, and institutions) and consequently for shareholders invested in the institutions offering these programs.

2.6. Limited Understanding of Indirect Stakeholder Impacts

While many studies consider the direct impact on students, faculty and institutional management, the role of parents as indirect stakeholders has often been overlooked. Parents, especially in cultures where family involvement in education is strong, are critical decision-makers. They influence student enrollment decisions and, by extension, the financial stability of institutions. The pandemic may have heightened concerns regarding tuition costs, safety, and the shift to online learning, affecting how parents view the financial health of educational institutions.

Administrative staff often play a pivotal role in managing transitions, especially in crises. However, there is limited understanding of how administrative responses to the pandemic—such as shifts in operational strategies, the move to virtual learning, or changes in student support services—impacted stakeholders' trust in the institution, and therefore, its stakeholder value.

Parents and administrative staff also influence the broader financial ecosystem of higher education institutions. For example, administrative decisions on tuition waivers, scholarships, or the adoption of online learning may directly affect revenue streams, alumni contributions, or investment strategies that impact stakeholder behavior.

In the prior studies on the impact of COVID-19 on shareholder behavior in higher education provide valuable insights, there is a pressing need to focus more specifically on fields like pharmacy and engineering. Moreover, the indirect impacts of COVID-19 on stakeholders such as parents, administrative staff, and faculty members, along with the long-term effects on stakeholder trust and financial behavior, have been under-explored. Addressing these gaps would provide a more comprehensive understanding of the complex dynamics at play, leading to more nuanced recommendations for higher education institutions and their investors.

III. METHODOLOGY

A mixed-method approach to studying the impact of COVID-19 on stakeholders' behavior in the higher education sectors of pharmacy and engineering would integrate both qualitative and quantitative methods to provide a comprehensive understanding. Qualitative methods, such as interviews and focus groups, would capture in-depth insights from key stakeholders—including faculty, students, investors, and administrators—on how the pandemic has shaped their perceptions, decision-making, and behavior in relation to educational investments. These discussions would help uncover themes such as uncertainty, risk perception, and strategic shifts. Complementing this, quantitative methods like surveys and statistical analysis would allow for the collection of measurable data on trends in stakeholder behavior, such as changes in investment patterns, stock price fluctuations, and financial outcomes post-COVID. By triangulating both data types, the study can offer a nuanced perspective on how COVID-19 has reshaped stakeholder behavior in these educational sectors.

To collect data from various stakeholders such as students, faculty, and parents within pharmacy and engineering institutions for a study on the impact of COVID-19 on stakeholder behavior in higher education, a combination of quantitative and qualitative research methods could have been employed. Here's a description of how data might have been collected from these groups:

1. Students:

Online surveys were likely distributed to students from both pharmacy and engineering institutions to gather insights on how COVID-19 affected their academic behavior, learning preferences, mental health, and overall educational experience. These surveys could include Likert-scale questions, multiple-choice questions, and open-ended questions. To understand the Factors impacted, the Focus group discussions have been conducted with a representative sample of students to dive deeper into their experiences, perceptions of online learning, and challenges they faced during the pandemic. Semi-structured interviews with students could have provided more personal and detailed accounts of their challenges, learning outcomes, and coping strategies during the pandemic.

Academic records or enrollment data may have been used to analyze changes in student performance, attendance, and course completion rates before, during, and after the pandemic.

2. Faculty:

Faculty members were likely surveyed to understand how they adapted to remote teaching, their challenges in delivering content online, and their views on the impact of COVID-19 on student engagement and learning outcomes. This data could be obtained through structured or semi-structured questionnaires. Individual or small group interviews with faculty members could have been used to gather qualitative data on their experiences, adjustments to teaching methods, and how they perceived the shift to online or hybrid learning formats. Data related to faculty workload, such as the number of hours spent on

teaching, grading, and preparing online materials, could have been compared to pre-pandemic times to evaluate the change in work-life balance.

Faculty feedback on institutional support during the pandemic (e.g., access to technology, professional development, training) could also have been examined through official reports or faculty committees.

3. Parents:

Parents of students in pharmacy and engineering institutions could have been surveyed to assess their perspectives on the impact of COVID-19 on their children's education. This might include questions about parental support for remote learning, concerns about student well-being, and changes in family dynamics due to the shift to online education.

In-depth interviews with parents could have been conducted to understand their level of involvement in their child's education during the pandemic, including support for learning at home and perceptions of the quality of remote education. Parents could have participated in focus groups to discuss their concerns, challenges, and expectations related to the education of their children during COVID-19.

4. Institutional and Governmental Data:

Institutions could have provided data on how they responded to the COVID-19 pandemic, such as the transition to online learning, changes in academic policies, and student support services. This could include institutional surveys, government-funded reports, or publications on the state of education during the pandemic. Analysis of institutional records, such as changes in student enrollment patterns, drop-out rates, and financial impacts, could help to understand how COVID-19 affected stakeholder behavior from an administrative perspective.

5. Data Analysis:

Responses from surveys could be analyzed using statistical methods to identify trends, correlations, and differences between stakeholder groups (students, faculty, parents) in terms of their attitudes and behaviors toward education during the pandemic. Transcripts from interviews and focus groups would be analyzed using thematic analysis to identify recurring themes or issues such as challenges, coping mechanisms, and expectations from the stakeholders.

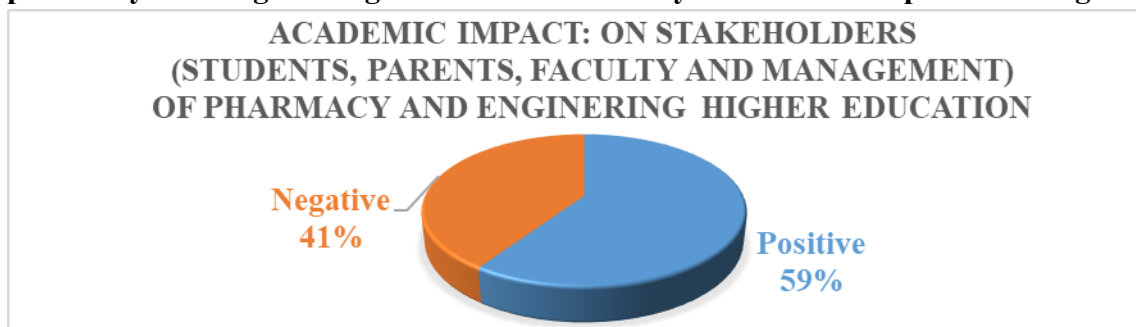
6. Sample Size

Ideally, the sample size should be large enough to provide statistically significant results. For this type of study, you may need a sample size ranging from 200 to 500 participants depending on the desired level of precision (confidence level of 95% and a margin of error of 5%).

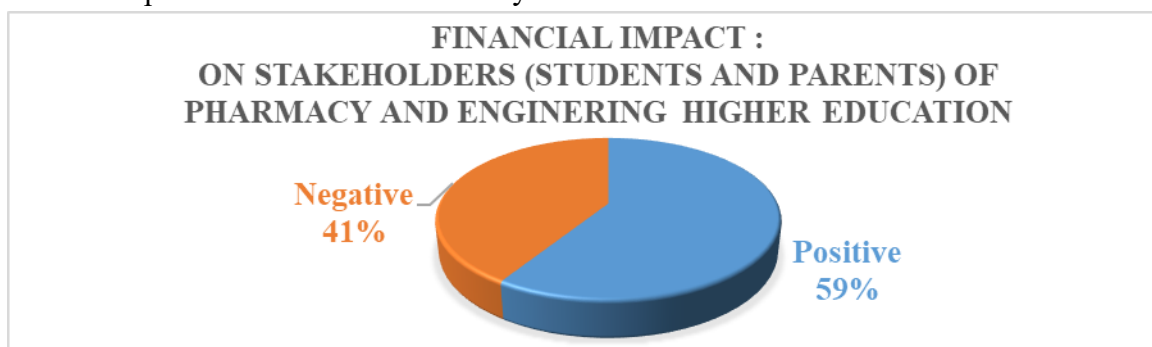
IV. RESULT AND DISCUSSION

The COVID-19 pandemic significantly influenced stakeholders' behavior in higher education, particularly in pharmacy and engineering institutions, as reflected in various statistical findings as mentioned below.

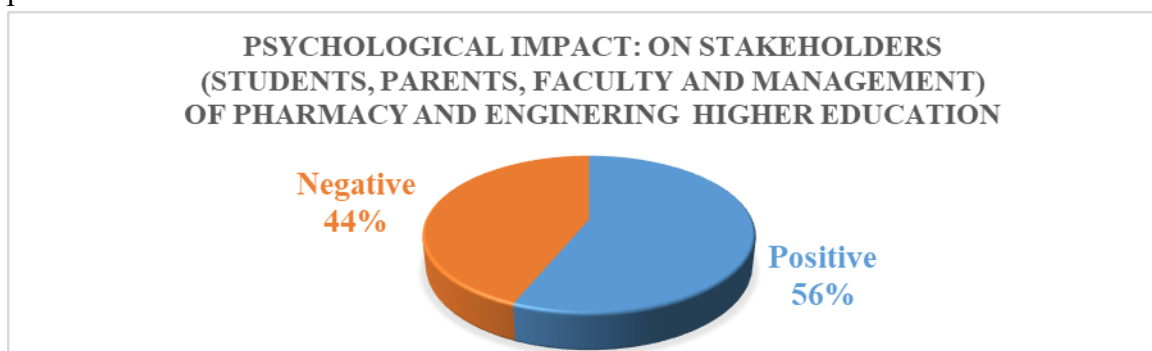
1. Impact of Covid-19 Pandemic on stakeholders involved in the Higher Education of pharmacy and Engineering Faculties can be analyzed with the help of following Charts.



As per the results analysis shown in the Pie Chart, Academic Impact on Stakeholders (Students, Parents, Faculty and Management) of Pharmacy and Engineering Higher Education resulted as 59% positive and 41% Negative which shows that 41% of stakeholders observed Academic performance as unsatisfactory.

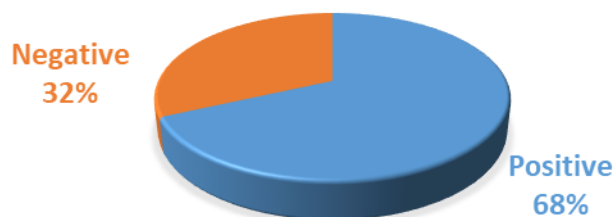


This analysis of Financial Impact on (Student and Parents) of Pharmacy and Engineering Higher Education resulted as 59% positive and 41 % Negative, which shows 41% of Students and parents faced financial crisis.



This analysis of Psychological Impact on (Student, Parents and Faculty combined) of Pharmacy and Engineering Higher Education is marked 56% positive and 44% Negative. This shows that 44% of stakeholders of Pharmacy and Engineering Higher Education undergone psychological issues.

IMPACT ON PROFESSIONAL DEVELOPMENT: ON STAKEHOLDERS (FACULTY) OF PHARMACY AND ENGINEERING HIGHER EDUCATION



This analysis of Impact on Professional Development on Stakeholders (Faculty) of Pharmacy and Engineering Higher Education is marked 68% positive and 32% Negative. This shows that 32% of Stakeholders (Faculty) of Pharmacy and Engineering Higher Education could not achieved their professional development.

IMPACT ON PRACTICAL AND HANDS ON LEARNING: ON STAKEHOLDERS (MANAGEMENT) OF PHARMACY AND ENGINEERING HIGHER EDUCATION



The analysis of Impact on Practical and Hands-On Learning on Stakeholders (Management) of Pharmacy and Engineering Higher Education is resulted as 51% positive and 49% Negative. This shows that 49% of stakeholders (Management) of Pharmacy and Engineering Higher Education not satisfied about on Practical and Hands-On Learning.

2. The comparison of impact of Covid 19 on Engineering and Pharmacy of Higher Education can be analyzed with the help of following Charts.

ACADEMIC CHALLENGES: IMPACT ON STUDENTS OF ENGINEERING

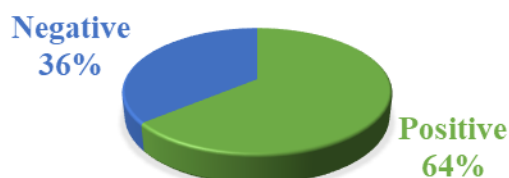


ACADEMIC CHALLENGES: IMPACT ON STUDENTS OF PHARMACY

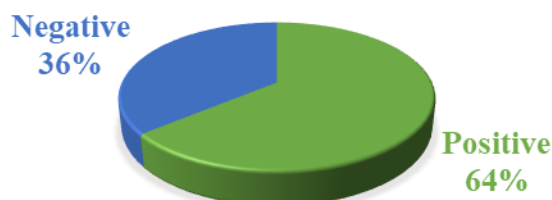


This analysis shows that Academic Impact on Students of Engineering resulted as 59% satisfactory and 41% Unsatisfactory, and Pharmacy Higher Education resulted as 49% satisfactory and 51% Unsatisfactory, which means that Covid 19 Pandemic has affected the Academics of students of Pharmacy students severely as compared to Engineering

EMOTIONAL WELL-BEING: IMPACT ON STUDENTS OF ENGINEERING



EMOTIONAL WELL-BEING: IMPACT ON STUDENTS OF PHARMACY



The analysis of Emotional Well-Being Impact on Students of Engineering resulted as 64% positive and 36% Negative and also Pharmacy resulted as 64% positive and 36% Negative, which shows that Covid 19 Pandemic has affected 36% students' mental health both for the Engineering and Pharmacy.

SOCIAL INTERACTION AND PEER SUPPORT: IMPACT ON STUDENTS OF ENGINEERING



SOCIAL INTERACTION AND PEER SUPPORT: IMPACT ON STUDENTS OF PHARMACY



The analysis reviewed the Impact Social Interaction and Peer Support on Students of Engineering as 53% satisfactory and 47% Unsatisfactory and for Pharmacy 58% satisfactory and 42% Unsatisfactory which shows that Covid 19 Pandemic has affected 47% of engineering students constraining them off from social interaction and peer support.

Pharmacy students experienced a smaller decline in performance compared to engineering students, potentially due to better adaptability to theoretical and online formats. A significant increase in e-resource utilization due to restricted access to physical facilities. The isolated nature of online learning led to increased stress levels and lower peer engagement, impacting overall performance. Engineering students, reliant on hands-on learning, faced more challenges adapting to virtual formats compared to pharmacy students.

The results on the impact of COVID-19 on stakeholder behavior in pharmacy and engineering higher education reveals significant shifts in priorities, including increased focus on digital transformation, mental health support, and flexible learning approaches. Challenges included adapting to rapid transitions to online learning, ensuring equitable access to resources, and maintaining academic integrity. These sectors adapted by embracing hybrid educational models, fostering interdisciplinary collaborations and integrating emerging technologies. Implications for future educational models include the need for resilience-focused curricula, skills training for digital proficiency and prioritizing experiential learning. Policy and curriculum reforms must address inclusivity, technology-driven pedagogy, and stakeholder engagement to ensure education systems remain robust and adaptable in the face of future disruptions.

V. CONCLUSION

The COVID-19 pandemic had a profound and statistically significant impact on higher education, particularly in the domains of pharmacy and engineering education in Pune City. While there were some positive adaptations, the overall effects were predominantly negative, impacting students, faculty, and parents alike.

Approximately **41% of stakeholders** reported negative academic impacts. The transition to online teaching revealed a lack of preparedness among **41% of educators**, many of whom encountered online teaching methodologies for the first time. The financial burden of the pandemic was significant, affecting an average of **67% of parents** who faced difficulties in supporting their children's education.



Faculty members also faced psychological challenges, with 44% of pharmacy educators and 10% of engineering educators struggling to adapt to online teaching. Furthermore, 61% of faculty reported being unable to adequately engage students in practical sessions, a critical component of both pharmacy and engineering education.

The COVID-19 pandemic significantly influenced stakeholders' behavior in higher education, particularly in pharmacy and engineering disciplines. The abrupt shift to online learning, changes in job market dynamics, and heightened focus on healthcare innovation reshaped investment and decision-making strategies. Stakeholders prioritized digital infrastructure, curriculum adaptability and the alignment of educational outcomes with emerging industry demands. Pharmacy education experienced a surge in interest due to its direct relevance to the pandemic, while engineering saw an emphasis on technological advancements. These shifts underline the need for resilience and innovation in higher education to meet evolving societal and market expectations in a post-pandemic world.

REFERENCES:

- Adeyeye, P. O., Aluko, O. A. & Migiro, S. O., 2018. The global financial crisis and stock price behaviour: time evidence from Nigeria. *Global Business and Economics Review (GBER)*, 20(3), pp. 2-9.
- Agarwalla, P. S. K. & Barua, P. S., 2012. A Survey of Financial Literacy among Students Young Employees and the Retired in India. *Indian Institute of Management Ahmedabad*, 1(1), pp. 4-22.
- Allam, S., Abdelrhim, M. & Mohamed, M., 2020. The Effect of the COVID-19 Spread on Investor Trading Behavior on the Egyptian Stock Exchange. *SSRN*, 18 June, pp. 1-13.
- Anon., 2017. Investment Awareness Among Young Generation. *Advances in Economics, Business and Management Research*, 36(11), pp. 5-23.
- Azhar, Z., Juliza, Azilah, N. & Syafiq, A., 2017. Investment Awareness Among Young Generation. *Advances in Economics, Business and Management Research*, 36(11), pp. 5-23.
- Azhar, Z., Juliza, Azilah, N. & Syafiq, A., 2017. Investment Awareness Among Young Generation. *Advances in Economics, Business and Management Research*, 36(11), pp. 126-135.
- Baliga, D. B. V. & Maroor, D. J. P., 2018. Individual investment behaviour of young investors in stock market. *NOLEGIEN Journal of Consumer Behavior & Market Research*, 1(1), pp. 1-26.
- Barberis, N. & T. & Richard, 2003. A survey of Behavioral Finance. *Handbook of the Economics of Finance*, 1(1), pp. 1-19.
- Bhargava, K., 2021. Why is share market resilient in face of Covid-19?. [Online] Available at: <https://www.financialexpress.com/market/cafeinvest/why-is-share-marketresilient-in-face-of-covid-19-kalpen-parekh-reveals-says-watch-these-stocksinterview/2254224/> [Accessed 1 June 2021].
- Bird, M., 2021. The Wall Street Journal. [Online] Available at: <https://www.wsj.com/articles/indias-stock-market-mania-defies-economicreality-11613732914> [Accessed 2 June 2021].



- Dhall, R. & Singh, B., 2020. The COVID-19 Pandemic and Herding Behaviour: Evidence from India's Stock Marke. *Millenial Asia*, 11(3), pp. 366-390.
- Khakhar, D. C. D., Aggarwal, N. & Rughani, D., 2019. A Study on Behavioral Finance in Investment Decisions of Investors in Ahmedabad. *International Journal of Research in Commerce, Economics and Management*, 9(12), pp. 1-17.
- Liu, Y. & Tsyvinski, A., 2021. Risks and Returns of Cryptocurrency. *The Review of Financial Studies*, 34(6), p. 2689–2727.
- Mishra, R., n.d. Financial Literacy, Risk Tolerance and Stock Market Participation. *Asian Economic and Financial Review*, 8(12), pp. 1457-1471.
- Naseem, S. et al., 2021. The Investor Psychology and Stock Market Behavior During the Initial Era of COVID-19: A Study of China, Japan, and the United States. *Frontiers in Psychology*, 12(1), pp. 1-10.
- Ortmann, R., Pelster, M. & Wengerek, S. T., 2020. COVID-19 and Investor behavior. *Finance Research Letters*, 37(-), pp. 1-20.
- Pandey, S. K. & Vishwakarma, A., 020. A Study on Investment Preferences of Young Investors in the City of Raipur Chhattisgarh, India. *PalArch's Journal of Archaeology of Egypt / Egyptology*, 7(9), pp. 9757-9768.
- Ravi, S., 2020. *Business World*. [Online] Available at: <http://www.businessworld.in/article/Impact-Of-COVID-19-On-The-Indian-Stock-Markets/11-05-2020-191755/> [Accessed 23 June 2021].
- Riaz, S., Ahmed, R., Parkash, R. & Ahmad, M. J., 2020. Determinants of Stock Market Investors' Behavior in COVID-19: A Study on the Pakistan Stock Exchange. *International Journal of Disaster Recovery and Business Continuity*, 11(3), pp. 977 -990.
- Saikia, Sudarshana. "Investment Pattern of Youth in India with particular reference to Mumbai." (2018).
- Sayankar, D. V., Sonawane, D. M. & Joshi, P. M., 2021. A Study on Impact of Demographic Factors on Overconfidence Bias in Investment Decision Process. *International Journal of Management*, 12(5), pp. 64-71.
- Sharma, A. J., 2016. Role of Behavioural Finance in the Financial Market. *International Journal of Business and Management Invention*, 5(1), pp. 1-5.
- Sharma, A. & Kumar, A., 2019. A review paper on behavioral finance: study of emerging trends. *Qualitative Research in Financial Markets*, 12(2), pp. 137-157.
- Shukla, S. & A, A., 2019. A Study on the Awareness and Perception of Cryptocurrency in Bangalore. *Indian Journal of Applied Research*, 9(4), pp. 15-24.
- Singh, J. & Yadav, P., 2016. "A Study on the Factors Influencing Investors Decision in Investing in Equity Shares in Jaipur and Moradabad with Special Reference to Gender. *Amity Journal of Finance*, 1(1), pp. 117-130.
- Sohail, A., Hussain, A. & Qurashi, Q. A., 2020. An Exploratory Study to Check the Impact of COVID-19 on Investment Decision of Individual Investors in Emerging Stock Market. *Electronic Research Journal of Social Sciences and Humanities*, 2(4), pp. 1-13.
- Yoshida, Y., 2010. Is this time different for Asia?: Evidence from stock Markets. *Discussion Paper*, 4(40), pp. 9-15.



- Gadde, T. & Gupta, D. A., 2020. The study of Risk-Taking Ability among Young Investors. *Journal of Xi'an University of Architecture & Technology*, 12(6), pp. 508-515.
- Gill, S., Khurshid, M. K., Mahmood, S. & Ali, A., 2018. Factors Effecting Investment Decision Making Behavior: The Mediating Role of Information Searches. *European Online Journal of Natural and Social Sciences*, 7(4), pp. 758-767 .
- Giudici, G., Milne, A. & Vinogradov, D., 2020. Cryptocurrencies: market analysis and perspectives. *Journal of Industrial and Business Economics*, 47(1), p. 1–18.
- Gurbaxani, A. & Gupte, R., 2021. A Study on the Impact of COVID- 19 on Investor Behaviour of Individuals in a Small Town in the State of Madhya Pradesh, India. *Australian Accounting, Business and Finance Journal*, 15(1), pp. 70-92.
- Himanshu, Ritika, Mushir, N. & Suryavanshi, R., 2021. Impact of COVID -19 on portfolio allocation decisions of individual investors. *Journal of Public Affairs*, pp. 1-6.
- Jani, Shailak. "The growth of cryptocurrency in India: Its challenges & potential impacts on legislation." *Research gate publication* (2018).
- Karkacier, A. & Ertaş, F. C., 2017. ndependent auditing effect on investment decisions of institutional investors. *Journal of Accounting and Management Information Systems*, 16(3), pp. 297-319.
- Kaur, A., 2021. Covid returns: Will stock market crash again in 2021?. Available at: <https://www.businesstoday.in/markets/market-perspective/story/covid-returns-will-stockmarket-crash-again-in-2021-293247-2021-04-12> [Accessed 12 april 2021].
- Khan, D. S., Upadhyaya, D. C., Gautam, D. S. & Natu, D. P., 2020. A study on the impact of covid-19 on the investment pattern of investors with specific reference to traditional investment (real estate and gold) and market based financial products (equities) in mumbai. *European Journal of Molecular & Clinical Medicine*, 7(11), pp. 5644-5660.
- Syed, Z. & Bansal, D. R., 2017. Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets* , 10(5), pp. 210-251.
- V.V, D. A. K. & P, S., 2019. A study on opportunities and challenges of india with special reference to bitcoin. - *International Journal of Research and Analytical Reviews*, 6(1), pp. 774-780.
- Lusardi, A. (2019). Financial literacy and the need for financial education: evidence and implications. *Swiss Journal of Economics and Statistics*.
- P., A. (2018). Financial Literacy and Financial Education in India: An Assessment. *International Research Journal of Commerce Arts and Science*, 9(3), 72-79.