

# Digital Health Initiatives in Chronic Disease Management: An Exploratory Study

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## Abstract

Chronic diseases are the largest contributors to the Global Burden of Disease. As per a report (June 2021) published by World Health Organization (WHO), 41 million people died of non-communicable diseases. Remote patient engagement assumed unprecedented importance as managing chronic diseases was a global priority. Digital health initiatives (DHI) in the form of mobile health (mhealth) apps, connected health, e-health, beyond-the-pill, and wearable devices gained prominence for remote patient engagement. It has been established that DHI have the potential to impact patient engagement and treatment outcomes in non-communicable diseases (NCD). These were adopted by healthcare providers, government entities, patients, and pharmaceutical companies. The objective of this research paper is to study the DHI adopted by major pharmaceutical companies which are focused on managing chronic diseases. This was an exploratory study as scant scholarly work was done by keeping the company (pharmaceutical companies) in mind.

**Keywords:** Digital health Initiatives, m-health, remote patient engagement, chronic disease, connected health, e-health, T-O-E, NCD, digital health, digital therapeutics

## 1. Introduction

Chronic diseases contribute to a great extent to the global burden of disease (GBD). GBD is a parameter that is tracked by 3600 researchers across 45 countries. It tracks mortality, disability, injuries, and risk arising from major diseases. World Health Organization (WHO) terms chronic diseases as non-communicable diseases (NCDs). As per a fact sheet published in April of 2021 by WHO, Non-communicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally. The Covid-19 pandemic accentuated the focus on NCD management. As per a report by Lancet in October 2020, urgent action was advised to address the global pandemic of chronic diseases, social inequalities, and COVID-19 to ensure robust health systems and healthier people (The Institute for Health Metrics and Evaluation, 2020). Limited mobility, and restricted in-person consultations among doctors and patients, posed challenges in gaining desired outcomes of the treatments prescribed, thus making a pronounced case for DHI enabling remote patient engagement. There were substantial benefits to screening patients for Covid 19, using DHI and hence digital health assumed the limelight. (Ford et al, 2020). A report published by WHO titled "Global Strategy On Digital Health 2020-

2025” mentions that in May 2018 the Health Assembly adopted a formal resolution on digital health. This goes to show the importance of DHI at the global level. In light of this focus, the researcher was keen to study the DHI adoption by pharma companies and the next section has the details.

The research focused on understanding the triggers, and type of DHI adopted, and seeking evidence of the impact of DHI adopted by pharmaceutical companies in the NCD domain. A literature survey was undertaken, which helped in concluding that DHI did have relevance in the patient engagement domain in the NCD segment. The literature survey pointed to a research gap in studying the DHI adopted by pharmaceutical companies. This paper serves as an exploratory study for the following questions,

RQ1. What could be the triggers for the adoption of DHI by pharmaceutical companies?

RQ2. Which DHI are adopted by leading global pharmaceutical companies?

The propositions that the researcher had were as follows,

P1. The triggers for DHI adoption would originate from the environmental aspect of the T-O-E framework.

P2. The DHI would be in the form of mHealth mobile application and wearable devices.

P3. The objectives of the DHI would be tracking health parameters and medication adherence.

The scope and context of inquiry included the study of DHI in terms of patient engagement domain, taken up by pharmaceutical companies, in managing NCD. The diseases were diabetes, cardiac diseases, neurological disorder, and arthritis. DHI would mean, mHealth applications (mobile apps), web-based tools for patient interaction, patient data management portals, telemedicine, wearable devices, and metered/connected injections/devices. DHI taken up by hospitals, NGOs, government health care organization, were not considered. In order to address the research questions posed, the propositions, and the scope of inquiry, a research methodology was firmed up. The next section has the details on the same.

## **2. Theoretical Framework Identification**

Prior to embarking upon the data collection, it is important to clarify certain definitions of the terminologies that are used in this research paper. Once these are defined, a theoretical framework relevant to the topic needs to be chosen. Digital health initiatives (DHI), m-health, health, connected health, electronic health records (EHR), etc are various terminologies that have come up in the last decade and have been used in various contexts and would carry varied perceptions. Hence the researchers deem fit to establish definitions for clarity. This section would have a brief understanding of the structure of the pharmaceutical industry as well, to build a context in which the research is being conducted.

**Table 1. Key operationalization of terms**

m-health	As per Abidi (2015), “mHealth (also written as m-health) is an abbreviation for mobile health, a term used for the practice of medicine and public health supported by mobile devices.” (Adibi, 2015). The mHealth field has emerged as a sub-segment of eHealth, the use of information and communication technology (ICT), such as computers, mobile phones, communications satellites, patient monitors, etc.
Digital Health	As per Mesko, et al (2017), digital health is a theme that is defined as “the cultural transformation of how disruptive technologies that provide digital and objective data accessible to both caregivers and patients leads to an equal level doctor-patient relationship with shared decision-making and the democratization of care”. The researcher assumed that pharmaceutical companies would fall into the group of caregivers, as they are the
	source of medication. The initiatives which fall into the above-mentioned domain would be termed digital health initiatives (DHI).
Non-communicable disease (NCD)	The paper terms chronic disease as a non-communicable disease (NCD). The terms are interchangeable as per the World Health Organization (World Health Organization, 2022). The meaning of chronic disease or NCD, in the context of this paper, would mean a disease for which long-term (more than six months) or lifelong medication is prescribed.
Leading global pharmaceutical companies	The pharmaceutical companies which feature in the top 20 pharmaceutical companies of the world, with respect to revenue, which are into managing NCD, and have/had their own patented drugs are termed as leading global pharmaceutical companies. Global, here would mean, having a market in multiple countries and headquartered in the US or UK.

Models and frameworks which focused on aiding the study of adoption of digital initiatives at the company level, were explored and identified. As per Tiago Oliveira et al (2011), the framework which were relevant for studying technology initiatives with the company in mind, were as follows, diffusion of innovation (Rogers, 1995) and T-O-E framework (Tornatzky and Fleischer, 1990). Based on the fitment to research questions, the T-O-E framework was chosen (Refer Figure 1).

### 2.1 T-O-E Framework

“The T-O-E framework is a general framework in innovation studies that describes three contexts that may influence the process of technological innovation adoption and implementation at the organizational level. The three contexts are: technological, organizational, and environmental” (Tornatzky & Fleischer, 1990). To address the research question of this study, the T-O-E framework is adopted. The DHI would be studied in the context of the T-O-E aspects. Technology, organization, and environment would be viewed as the factors affecting DHI adoption. These are elaborated as under.

- **Technology:** The researcher studied characteristics in terms of the types of DHI adopted. “Types” denotes the technology used in the DHI. For e.g. A type would be a mobile app, another type of technology could be connected devices, etc. Technology aspect would explore the skills and technology platform availability for floating these DHI.
- **Organization:** This would cover the leadership mindshare in the organization towards DHI. It will explore whether there are digital initiatives within the organization which are not aimed at patient engagement. This will give an idea of the culture of digital initiatives. Size, as an aspect would be measured by the revenue generated and would be a basis for selecting the organization to be studied.

- Environment: This would consist of the patient, healthcare delivery ecosystem, the competition, the regulations, the technology landscape, etc. Basically, the factors from environment which may be relevant to adoption of DHI.

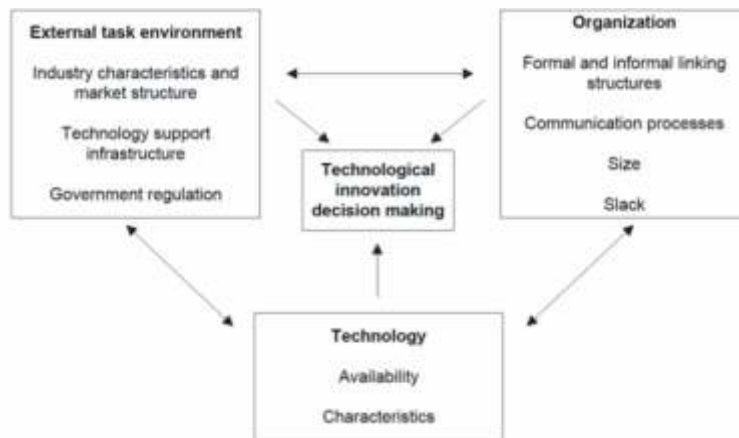


Figure 1: *Technology, Organization, Environment – Framework, Tornatzky and Fleischer 1990*

### 3. Research Methodology

#### 3.1 Qualitative research and case study method

The research questions are exploratory in nature. They attempt to understand the perspectives, or experiences of the pharmaceutical companies regarding DHI adoption. Since the questions are seeking perspectives and types of initiatives, qualitative research as a method was chosen (Hammarberg et al., 2016). Within the domain of qualitative research, a case study method using secondary data was adopted. Since the nature of the questions relates to “why” and “what” (DHI initiatives), the exploratory case study method was adopted (Yin, 2009). The DHI adoption by pharmaceutical companies was studied in reference to theoretical frameworks targeted at the company (company) level.

#### 3.2 Desk Research and case study from secondary sources of information

As is known, one of the first exploratory activities that is conducted is desk research. As per the definition “desk research is the non-systematic collection of material that helps to learn as much as possible about the context (in this case DHI adoption) (Wentzel, Beerlage-de Jong, & van Gemert-Pijnen, 2014).” While conducting desk research or studying secondary data, which may be copyrighted or non-copyrighted, there was a requirement of following a basic structure. Hence, the researcher identified a method explained in a conceptual paper published in International Management Review (2012), authored by Agrawal and Reddy from IIT Roorkee. In this, they have explained the concept of conducting a case study based on secondary data.

#### 3.3 Identification of leading pharma companies, sampling and data collections sources

Leading pharmaceutical companies were identified based on the criteria mentioned below.

1. Global leaders with respect to market capitalization in the year 2020 (Preferred parameter)
2. Higher level of engagement in the DHI space. More than five DHI. (Preferred parameter)

3. Chronic disease management portfolio of drugs (Mandatory parameter)
4. Pharmaceutical or a Biotech/Biopharma company.

As is mentioned in the brackets, apart from the chronic disease portfolio, the other three parameters were used under the “OR” condition and not the “AND” condition. From the list of top 20 companies, five companies were chosen based on a method called purposive sampling. This was found suitable as the companies were selected based on the characteristics that were needed in the sample (explained in the latter part of this paper). In other words, units are selected “on purpose” in purposive sampling (Guest et al., 2006). The companies studied were Sanofi S.A., Eli Lilly, Bayer, and Janssen. The data collection effort was structured to gather information for addressing the research questions and verifying the propositions. After collecting data regarding 31 initiatives across five pharmaceutical companies, the researcher concluded that the data had reached a saturation point, as no new type of DHI emerged, in the patient engagement domain. Hence, after 31 initiatives the data collection was concluded. The data collected were analyzed by segmenting the findings among technology, organization, and environment aspect. The method was similar to thematic content analysis, where the themes were on T-O-E aspects.

#### 4. Findings

The data collected has been tabulated and presented as a part of Annexure A, which summarizes the triggers of DHI adoption. This annexure is in context of research question 1, pertaining to seeking an understanding about triggers of DHI adoption. Annexure B has details of the types of DHI the pharmaceutical companies have adopted along with the other parameters. This annexure is in context of research question 2. The findings were segregated in terms of T-O-E framework and are described in this section. It may be noted that the source links have been cited in the same annexure as they are tagged to specific DHI initiative.

##### 4.1 Technology aspects

DHI objective: DHI was well adopted by the pharmaceutical companies studied. A total of 31 initiatives were studied. In terms of the objectives of DHI, there were eight areas in which these were deployed. The most prominent area was that of remote parameter tracking. There were 11 instances which addressed this objective. The other major objectives served by DHI were enabling early diagnosis (5), aiding medication adherence (5), seeking real world evidence in clinical trials (5), increasing awareness (4), and helping in accurate insulin dosage for diabetics (4). The DHI were also used for increasing access for treatment via telemedicine and in interacting with patients in neurological diseases. The number in bracket indicates the number of DHI with the corresponding objective.

Technology type of DHI: In order to service the above mentioned objectives, there were five major types of DHI adopted. The most prominent were the usage of mobile app and connected devices. There were 27 instances where these were used as a DHI. The other types of initiatives were patient data portals (3), web based artificial intelligence tools (3), and the use of social media for informative videos (1). mHealth apps had a positive perception regarding ease of use and hence this measure was adopted extensively by pharmaceutical companies. Among the patient community, perceived usefulness, attitude toward using, and promotion of health had a significant impact on the intention to use mHealth apps. Moreover, the perceived ease of use, prospective health benefits, and promotion of health had a significant impact on the use of mhealth apps (Palos-Sanchez PR, 2021). In terms of the use of medical devices, patients exhibited intentions to use these devices as they had a perception of providing data privacy, ease of use, and usefulness (Kun-Huang Huarng, 2022). Hence, pharmaceutical companies, in order to leverage these perceptions had emphasized the use of mHealth apps and wearable/connected devices.

NCD targeted by DHI: Upon studying the 31 initiatives, it was understood that the adoption was fairly extensive in managing diabetes. There were 14 initiatives which were targeted towards this disease. This was followed by DHI intervention on cardiac diseases, which was observed in 8 initiatives. Neurological disorders were attempted to be mitigated by digital patient interaction tools, and this was observed in 3 cases. Oncology did find a mention in one of the DHI initiatives. Apart from disease specific DHI, there were 2 instances where general DHI were floated and were applicable to a larger disease group in NCD domain. These were telemedicine and mobile app for medication adherence. Both of these initiatives were meant for use across disease groups.

DHI adoption growth: This attribute is not in the context of the technology domain. However, this aspect was studied to understand if there is a trend of adoption. An assumption of increase adoption rate, would be that the DHI do have an impact in patient engagement domain and have a perceived benefit for the organization. From the metric related to the timeline, there were categories, spanning four years starting 2009 and ending in 2021. It was noted that from among the companies studied, from 2009-2012, there were 5 DHI which were adopted. From 2013-2017, the number increased only till 6, but from 2017-2021, there were 20 initiatives which were adopted among these five companies.

Technology availability: As per Tornatzsky and Fleischer, the availability aspect within the technology domain indicated the presence of skill sets required to adopt the IT initiative. The assumption being, if the availability aspect was higher, it meant a higher rate of DHI adoption. While studying the 5 companies, it was observed that quite a few initiatives were floated in partnership with firms/companies which have a dedicated focus on creating internet platforms, patient data aggregation services, rolling out digital campaigns, etc. These partnerships were seen in 12 initiatives out of 31 studied. It was hence assumed that there is a healthy population of technology companies focused on DHI initiatives and catering to pharmaceutical companies as their clients, thus pointing to a healthy skill availability aspect.

## 4.2 Organization aspects

Here the aspects such as mindshare of the leadership team, mention of DHI in strategic documents such as annual reports, evidence of digital initiatives within the organization's functional areas (apart from patient engagement) and evidence of dedicated teams for managing digital initiatives was explored. After studying the 5 companies on the organizational aspect, the following evidence was identified.

**Sanofi S.A.:** Sanofi was an early mover in the digital health domain and had created an organizational structure that helped in focusing on the digital agenda. The company had carved out a separate unit termed "Sanofi Ventures" to leverage the digital transformation being witnessed in the industry(BIO: Diversity, Digital, and Partnerships Combine to Push Forward New Ideas in Healthcare, n.d.). Sanofi's digital health strategy was built around five pillars. The larger three streams were as under (Five Key Pillars of Sanofi's Digital Strategy, 2019),

1. Drugs +, which combines therapy and technology
2. Standalone digital therapeutics
3. Tech-enabled virtual healthcare including virtual clinics, telehealth and wearables

Thus, at Sanofi, organization was an enabler towards DHI adoption, as DHI had a mindshare in leadership team and had clearly defined pillars around which the adoption was driven.

**Eli-Lilly:** Spotting the need for having a digital focus, Lilly had on its executive committee, a Senior VP and Chief Information and Digital Officer position (Bulik, 2021). Eli Lilly also has set up a digital health office to focus on digital health initiatives. Set up around 2018, the objective of the division was trying to figure out

the way to bring new digital health solutions to patients and doctors and health systems. Hence, there was a clear focus on digital initiatives at Lilly, which was reflected in its organization structure.

**Bayer:** Bayer's organizational focus towards digital strategy can be summed up by a quote from Jeanne Kehren, PhD, Head of Digital & Commercial Innovation and Member of the Pharmaceuticals Executive Committee of Bayer AG. (2020). "Building new digital business models is a key element of our business strategy with the ambition to actively shape the future of healthcare." (Hale & Floersh, 2020). Bayer has set up a Digital and Commercial innovation division in order to focus on DHI. Bayer has a clear focus in terms of its internal team alignments which manage digital farming, accelerators, and incubators. Hence, there was enough evidence that as an organization, Bayer is geared up for maximizing the returns from DHI (Bayer Digital Transformation, 2019).

**Roche:** The company had set up a Digital Excellence team with an intention of building digital health solutions for major diseases that they address. These are related to building partnerships with medical software companies, digital and connected devices for parameter tracking as well as seeking real world evidence for clinical trials. The organization has specific positions such as head of digital engagement, digital planning lead, and strategy leader (Source <https://www.youtube.com/watch?v=dhPCDDVWOM>). Hence on a digital initiatives aspect, there is evidence to assume that the organization is inclined to leverage DHI in patient engagement domain.

**Janssen (Johnson & Johnson company):** From the annual report of FY 21, digital initiatives were viewed as a tool which helped meet patients where they were (Johnson and Johnson, 2022). Hence, there is evidence which indicates a positive mindshare of the leadership team. Organizations of the size of Johnson & Johnson have a chief digital officer or a similar designation. In the case of Johnson & Johnson, the designation of the top executive in the technology domain is executive vice president and CIO. It was probable that below this designation, there would be a team of digital health executives focusing on the digital initiatives. To probe this, social media sites such as LinkedIn were explored. It was then evident that there were dedicated teams driving the digital surgery and robotics division at Johnson & Johnson (LinkedIn, 2022). Thus, organization aspect was an enabler for DHI adoption.

### 4.3 Environment aspects

In order to address prepositions related to triggers lying in the environmental domain, the study was undertaken to seek evidence of triggers of DHI adoption. It is important to note that in all the companies studied, Covid-19 pandemic acted as a major trigger and a disruptor. The lockdowns acted as a trigger for launching digital/virtual patient engagement initiatives.

At Sanofi, the trigger for the DHI adoption was the expectations of patients from healthcare, they now wanted competitive collaboration between all healthcare organizations to ultimately expedite innovation in the delivery of new solutions to health crises. Moreover, healthcare service providers and players wanted to not only reduce costs but also know for sure that the treatments they were using were getting the desired results (BIO: Diversity, Digital and Partnerships Combine to Push Forward New Ideas in Healthcare, n.d.).

At Eli Lilly, quoting from their website, "The need to adopt digital health accelerated in 2020, partially due to the COVID-19 pandemic. While digital services helped connect patients and health care providers, digital technologies, like devices and wearables, put more control in the hands of people by making important health information readily available". Hence Covid-19 was a major trigger from the environment.

At Bayer, the researcher came across certain triggers which emanated from the environment. Certain triggers from the environment are captured in this section. The basic trigger for Bayer's digital strategy was in the emergence of Industry 4.0. This mean an interconnected digital architecture which spanned major



functions of the organization including manufacturing and supply chain. The other trigger was from the demographic shift, which meant that the human race would live longer and hence healthcare in the latter years would assume importance. Again, as mentioned on Bayer's website, "according to the World Health Organization (WHO), chronic disease prevalence is expected to rise globally by 57% by 20201. The proliferation of internet and mobile devices, along with ubiquitous content around health care has empowered patients to make better and empowered choices. This shift has been recognized by Bayer as a trigger for its DHI strategy. As per Bayer's website, the patient can now participate in decision making with respect to his own health. This has led to a democratization of healthcare (Langguth, 2022).

At Roche, a trigger related to the adoption of remote monitoring care was identified. "Managing patients outside the clinical setting was a requirement" and hence the above initiative presented a solution (Pak & Petillon, 2020). Hence, remote monitoring presented a solution. Patients having type 2 diabetes, who were on an insulin prescription, were not achieving treatment goals, despite glucose monitoring systems apart from the insulin delivery (Kulzer, Daenschel, Daenschel, Schramm, & Messinger, 2018). From an organizational aspect, the trigger emanated from Roche's objective around "clear focus on creating a digital customer experience and providing new digital products and solutions that solve your customer's biggest needs", as quoted by Dr. Ulrich.

At Janssen (Johnson & Johnson), the major triggers were the costs associated with phase 3 of clinical trials. The costs then translate into the overall pricing of the drug post successful approvals. In order to reduce the costs associated with logistics, and patient recruitment, and other aspects the CHIEF HF initiative was launched. The virtual onboarding and managing of patients reduce costs related to patient recruitment as well as logistics, especially when the trials deal with more than a lac of patients (Dave, 2019). Medication non-adherence was a major trigger for Janssen. This aspect and the snow-balling effect leading to costs and adverse outcomes was the trigger to launch a DHI, Care4today, with the objective of improving adherence (Janssen Healthcare Innovation Launches Care4Today™ Mobile Adherence Medication Reminder Platform - Janssen Healthcare Innovation Launches Care4Today™ Mobile Adherence Medication Reminder Platform, 2012). Another trigger stemmed from the domain of cardiac disease. Approximately six million Americans had AFib, which increased their vulnerability to an adverse cardiac incidence. Up to 30 percent of all AFib cases went undiagnosed until a critical symptom surface (Svennberg E, 2015). This warranted a need for early diagnostics systems which could be deployed at scale. This aspect, was the trigger behind the mSTOPs DHI (New Late-Breaking Study Finds Wearable Electrocardiogram (ECG) Monitoring Patch Can Detect Atrial Fibrillation Earlier and More Efficiently Than Routine Care - 2018).

After having studied the above, a list of unique triggers was formed, as certain triggers, for eg. The need for remote parameter tracking on account of Covid-19 induced lockdowns, was an overlapping trigger. A list of 13 unique triggers was arrived and they were ascribed to either the environmental aspect or an organizational aspect (table 2).



**Table 2. Summary of triggers for DHI adoption**

<b>Unique Triggers for DHI adoption in 5 global pharma companies</b>		
<b>Sr No</b>	<b>Trigger</b>	<b>Type of Trigger</b>
1	Patient demand for integrated healthcare	Environmental
2	High cost of drug development	Organizational
3	Covid-19 induced remote parameter tracking	Environmental
4	Suboptimal treatment outcomes in paediatric diabetic patients	Environmental
5	Speed and accuracy in drug development	Organizational
6	Emergence of industry 4.0 and the need for data integration	Environmental
7	Promise of DHI in NCD management	Environmental
8	Proliferation of internet and mobile devices	Environmental
9	Trends of automation, AI, and digitalization	Environmental
10	Suboptimal treatment outcomes in diabetics	Environmental
11	Need to conduct efficient clinical trials at scale	Organizational
12	Late diagnosis of certain diseases	Environmental
13	Medication non-adherence in NCD	Environmental

## **5. Implications**

The academic contribution of the study can be deemed as presenting the first step towards understanding the DHI adoption by pharmaceutical companies in patient engagement domain, with a focus on NCD management. This arguably would be the first attempt in the academic domain. The study provides a framework based on which further, detailed evaluation can be done.

In terms of the implications for the industry, the DHI have shown promise and the triggers are most relevant in current scenario and in foreseeable future. The subject will stay in lime light as digital therapeutics as a subject is gaining prominence. Themes such as precision medicine, rapid development of vaccines, etc would be good use cases for digital health domain where trends such as artificial intelligence and analytics can be leveraged. Since this is a nascent area in terms of academic research, pharmaceutical companies would do well to tie up with universities apart from industry partners while driving critical digital initiatives. This would lend the required academic knowledge and learning which can be utilized for future deployment of DHI.

### **5.1 Enrichment of theoretical framework & Future research agenda**

The study of the five pharma companies, in light of the T-O-E framework indicates that for DHI adoption, the enablers lie in availability of skills in the technology aspect, the perceived ease of use of mHealth apps and wearable devices. On the organizational aspect, factors such as mindshare of leadership, forming of dedicated teams for digital initiatives and certain triggers around efficient clinical trials, aid the adoption of DHI. The largest source of triggers in terms of DHI adoption was the environmental aspect which included the patient's

desire for integrated healthcare, emergence of industry 4.0, the trends around automation, AI, digitalization fueled by proliferation of internet and mobile devices. These trends enabled the emergence of empowered patient who was more aware and capable of taking medication related decisions. The T-O-E framework that emerged after the study is mentioned on the following page.

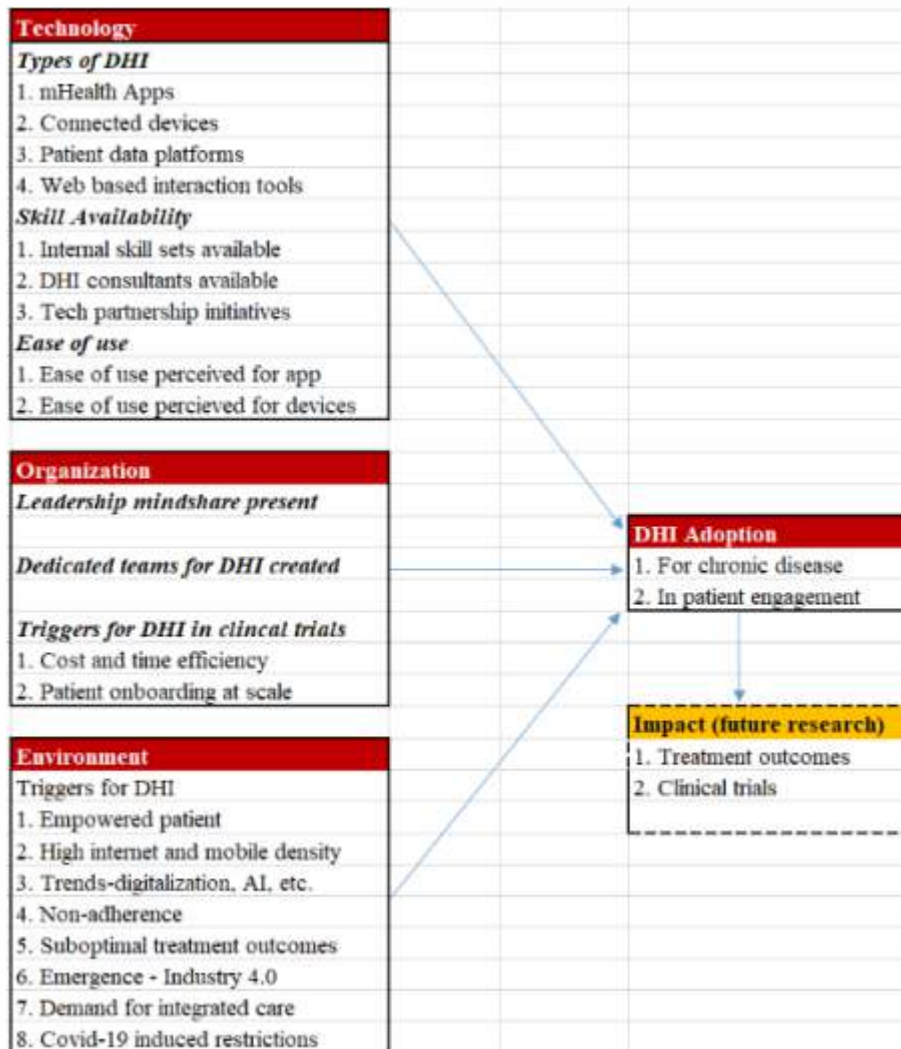


Figure 2. T-O-E framework for DHI adoption by pharmaceutical companies, and future area of research

This study has focused on the triggers and types of DHI in patient engagement domain, it would be academically important to understand and if possible, quantify the impact of DHI in terms of treatment outcomes and making clinical trials accurate, fast, and economical. The future area of research can pick up one chronic disease and can evaluation various types of DHI to understand which are most effective and why. If conducted successfully, this future area of research can become a stepping stone for further advancements in research as well as deployment of DHI.

The limitations of this study are around resources and access. The study was conducted by a single individual and hence paucity of time, bandwidth, and diverse view points were the limitations. The study was done in India and hence seeking primary data, while was desirable, was not practical as Covid-19 induced restrictions made it tough to establish contact with intended respondents. This was not funded research and the researcher does not have any direct or indirect association with the companies studied.

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Ganpat University strives to promote teaching and research in emerging areas in Engineering & Technology, Pharmacy, Management, Computer Applications, Science, Social Sciences & Humanity, Architecture, Design & Planning etc. GNU-CARS has been established to promote excellence in research at University by supporting research programmes through financial assistance and incentive to the faculties and students.



#### **Schemes for faculties & students:**

##### **Major Research Project**

Maximum of Rs. 3 lakh per project for maximum of 3 years

##### **Minor Research Project**

Maximum of Rs. 1 lakh per project for maximum of 1 year

##### **Organization of**

##### **Conference/Seminar/Workshop**

Maximum of Rs.50,000/- per program

##### **Participation in**

##### **Conference/Seminar/FDP**

##### **Regional & National**

Employee: 100 % Travelling cost & Registration fee up to Rs. 6,000

Students: 100 % Travelling cost & Registration fee up to 50 % or Rs. 500/-

##### **International**

Employee: Travelling cost & Registration fee up to Rs. 75,000/-

#### **Publications of Research Papers/Books**

Paper Publication in Journals included in SCOPUS & WEB OF SCIENCE: Rs. 5000/-

Paper Publication in Journals included in CSIR, Pubmed, Indian citation Index, Thomson & Reuter, Science Direct, Elsevier, Emerald, Proquest, Taylor and Francis: Rs. 3000/-

Paper Publication in Journals included in UGC: 2000/-

#### **Publications Book or Book Chapter**

Book Chapter up to 5000/-

Text Book: INR 15,000/-

Reference Book: INR 30,000/-

#### **Patent Filing**

Full Financial Assistance including Patent Attorney charges

#### **Incentive from the grant received through Sponsored Research Projects**

10% of total amount received as a Grant to the employee



## About Faculty

FMS constantly attempts to convert students' expectations into realities through internships, real-life experiences, business simulations, practical learning. Apart, persona attention for affordable career preparation through learned faculties, well-blended research approach and industry-oriented academic culture with vibrant campus life are the value proposition bundled in the core of offerings.

## List of institutes

V. M. Patel Institute of Management

Centre for Management Studies & Research

V. M. Patel College of Management Studies

GNU-NSE Skills centre for Capital Markets

GNU-Victoria University Collaborated Programmes

## Key Events

### PRATIBHA

National Level Summer Project Competition

### GCEMP (INTERNATIONAL CONFERENCE)

GNU-FMS International Conference on Emerging Management Perspectives, Practices & Research Trends)

### PROTSAHAN (CONFLUENCE OF IGNITED MINDS)

Management-Cum-Cultural Fest

## STUDENTS LABS

- Business Simulation Lab
- Data Analytics Lab (SPSS 20.0)
- Communicatory English Lab
- Digital Library  
(having access of 1400+ Journals in Proquest)

## Pioneering initiatives

- First to offer sectorial specialization with functional specialization in Gujarat
- First to offer industry focused BBA/MBA programmes in Healthcare, Agriculture, Capital Markets, Retail and other services domain in Gujarat
- Started executive MBA programme to cater the needs of banking industry
- Pioneer in networking with foreign universities to give global content & exposure
- First to practice block module delivery as a part of teaching pedagogy

## Key Achievements

- Received an award for being the institute offering most promising PG Program in Agribusiness by ASSOCHAM during 12th Global FAD-2018
- Received an award for the category Innovation in Building Academic & Industry Interface in the 7th DNA Innovative B-Schools Awards in 2015

## 10 Good Reasons to Choose For

**22 Years**  
of educational experience

Faculty  
**Publications**  
in Top Rated Journals  
(Scopus & ABDC Listed)

Intensive Industry  
**Interaction**

Only Faculty  
**Offering**  
Programmes Catering  
Rural and Urban sector needs

Awards to Faculties & Students  
**72 Best**  
Research Paper

**90%+ Placement**  
Track Record by Dedicated Placement Cell

**30000+ Books**  
in Library with Online Databases

**6300+ Alumni**  
Serving Various Sectors

Diversified  
**Specializations**  
as per Industry Needs

Will Blended Eco-system to foster  
**Employable Skills**  
& Entrepreneurship



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