

Generic Adaptive Emergency Agile Model for Health care and Pharmaceuticals in crisis situation

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Abstract

Pandemic challenges demanded immediate solutions and continues improvement in solutions on field which motivated the entire world's research community to find an opportunity to provide speedy solutions to problems. Agile developments provide immediate improvements which functioned on the grounds of assorted health care units, medical facilities, pharmaceuticals and variants of COVID 19 cases. Agile developments proved its effectiveness for immediate solutions which take full advantage of aids to health and pharmaceutical organizations and also exploits worth rapport with health stakeholders. This springs a thirst for carrying out the study on agile developments and its effectiveness for health and pharmaceuticals so, the study focuses to design generic adaptive emergency agile model for Health care and pharmaceuticals to deal with Crisis pressure which will support COVID 19 medical research field.

Keywords: Agile developments, COVID 19, immediate solutions, health care organizations, pharmaceuticals.

1. INTRODUCTION

Many patients would have saved their lives with proper exact and timely treatments or would have controlled existing medical problems so to stabilize immunity during pandemic period and other health aggressive limits. According to digital.ai report out of 1100 IT and business professionals, 60% respondents agreed that agile has improved speed of Market. The COVID-19 has banged the limitations of decision making in health treatments and decision making at different level of health and pharma decisions. Many technical and digital solutions offered to address different problems in combination with expertise skills and knowledge of medical professionals for treatment and decision making in such pandemic uncertainty.

Digital Support / Solution to get the track of necessary to identify and analyses the effectiveness of agile development during and after pandemic for society.

An existing research study helped to learn techniques and implementation and different advanced techniques applied in different areas.

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Figure No.1 Features of Agile Framework

Agile Framework follows comprise requirements discovery and solutions enhancement through the joint effort of self-organizing and cross-functional teams with their customer(s)/end user(s), adaptive planning, evolutionary development, early delivery, continual improvement, and flexible responses to changes in requirements, capacity, and understanding of the problems to be solved as shown in figure no.1. Basically, agile software is working software which adopts changes of respondents and works very close in real time environment and customers. Due to these best qualities changes, customer requirements (needs) are easily identified, reframed, redesigned and implemented.

Rationale and Significance of the Study

The proposed study will be significant for digital and technical support in treatment and decision making with immediate solutions of agile developments.

- This study primarily determines different methods of software project development during the COVID 19 pandemic for health and pharma organizations.
- The digital solutions implemented to help medical stakeholders to identify tracks for treatment, priorities and segregation of patients, medicines and all necessary resources. The study classifies impact into Serious, Average and deferred cases so accordingly research can focus to class specific symptoms and accordingly treatment can be planned.
- Technical analysis will help to identify resources of input variables on Health condition of a Patient with reduced dimension to get real insights of data spread.
- Agile development strategy will assist to design strategic policies with additional importance in all fields of COVID-19 research and impact.

2. A Brief about the Present Research Status in Domain under Consideration (Literature Review)

After studying current ML applications for range of clinical outcomes, prediction, diagnosis and reporting performance, authors Suggested need of improvement in ML applications especially in diverse health settings, primary care and routine clinical care environments [6]. Authors [5] explored that machine learning algorithms implemented in data analytics can provide better predictions based on variants of imprecise and incomplete data.

Scaled Agile Framework (SAFe®) stays to be the most popular scaling method adopted which proved as most effective method. In pandemic forced remote agile teams proved highly productive and effective (Table 1: Digital.ai) study functioned in right environment. So due to uncertainty and other factors changes in market changing focus of development from waterfall to rapid development in agile form.

Sr.No.	Findings	Percentage of Respondents supporting to finding
1	Their company plans to increase the use of Agile in the next 12-14 months	53%
2	Their momentum for Agile adoption has increased over the past 90 days,	43%
3	They increased or expanded Agile adoption in the last 90 days to help manage distributed teams.	33%

Source: Secondary data Compiled by the researcher
Data Source: Digital.ai

According to author [Stephanie Baum (Jul 2022)], in uncertainty and unclear COVID 19 Vaccine discovery agile is the best aspect implemented in pharma industries and so pharma industries have developed their generic end to end agile process for further drug discovery and vaccine development. KC George and Gina Fridley (2021), exemplar diagnostic produced a test within 3 weeks and also made available to customers in world class time for market within two months all due to agile development process the firm adopted. The tumultuous development of the pandemic brands a dominant circumstance for agile invention in healthcare and pharma.

Authors suggested that, COVID-19 seen to consider control problem with delay and uncertainty with model-based agile and multilayered systems engineering [2]. Author explained that problem needs emergence of local and partial solutions in different sectors mostly in medical, financial and transportation. Authors [1] studied different software companies using Agile development methods to determine the important causes for the failure of agile methodology during the current pandemic situation and found issues like lack of

communication between the leader and staffs while working remotely, mismanagement of types and time etc.

Research Gap

After going through the preliminary research investigation, it seems as problem is very recent, very less work is addressed so quicker, easy and innovative working models can be developed to address crisis situations. The pandemic triggered immediate need of possible engineering and development solutions to support medical, pharma resources and stakeholders. This is crisis banged the researcher's interest with need of emergency solution models to control crisis problems.

3. The objectives are to study

- i. To identify major beneficial elements and constraints of agile developments.
- ii. To study agile development methods and its effectiveness on health and pharma sector.
- iii. To design the generic emergency agile model for health care and pharma in crisis situation.

4. Tentative Research Methodology

The researcher plan to follow Design and Creation research Strategy. The strategy focuses on design of generic agile model for health care and pharma crisis situation considering COVID-19 data analysis and relative study.

4.1 Data Collection:

Primary Data: Bharati Hospital, Pune

Secondary Data: News, articles, Research articles, from Media like websites, New Papers, TV etc.

Thus, researcher has planned to design agile model approach as given to get improved design for generic health crisis to support to health care and drug discovery models.

4.2 Scope of the Study

- Irrespective of varied usefulness of COVID-19 patient's data, researcher has planned to focus agile model design and software engineering for health crisis for health and pharma sector only.
- Major software development model issues for emergency solution will be identified on the basis of COVID-19 pandemic and will implemented for generic model for any such health crisis.
- For research scope of area will be restricted to Pune city of Maharashtra State only.

4.3 Research Motivation

Dynamic environment, unclear cases, mainly not having

historical data or cases created major problem and mismanagement of health care setup during COVID-19 pandemic. And also, patients observed with new symptoms, new variants of viruses, having diverse existing health conditions were resulting in drastic tragedies in different countries. Health care organizations and pharmaceuticals were forced for rapid development and agile implementations seeking resources management and drug discovery. So, this one major health crisis of COVID-19 is lesson for researchers to cater for new innovative models which possibly could be implemented in emergency quickly to cope with such uncertain problem.

So, The Researcher has identified some software engineering challenges for health care and pharma industries for analysis of data through initial study and reflection. To explore unacquainted, to analyze omissions, happenings, cases by using strategic, designed, controlled and organized model to reach at finer product or discover significant vaccine or drug is motivating potency for research in Agile framework for pharma and health care organization on the grounds of COVID 19 data analysis.

4.4 Statement of Problem

Initially demonetization, then COVID-19 pandemic and later on Russo-Ukraine War are recent uncertainties disturbing to society and economic development. Challenges are changing with short span of time, COVID virus variants are also mutating with different symptoms and impact level. This needs continuous development and health care treatment, strategy and also in drug discovery.

So, the researcher aims to address the need of emergence of model design by proposing study titled,

“Generic Adaptive Emergency Agile Model for Health care and Pharmaceuticals in crisis situation.”

5. Proposed Research Model

The new model considering improvement in requirement tracing set using data analytics and machine learning algorithms when base is unclear. Machine can help in classification, identification, and prioritization when facts are incomplete, uncertain and imprecise.

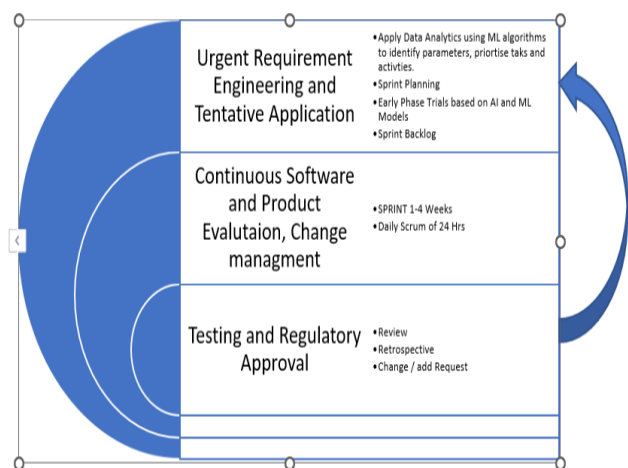


Figure No. 2 Proposed Generic Adaptive Emergency Agile Framework

Sprint planning and early phase trials based on artificial intelligence and ML model will be more refined set as well as in each next iteration of development backlog will be considered for improvement with adoption of set requirements. At stage daily scrum development and evaluation continuous change management will add value to new environments are consideration of new set of constraints and parameters of compositions for drug discovery in pharmaceuticals is possible.

In Testing and regulatory approval in each iteration review, retrospective will provide actions for improvement. Change or additional request from customer environment will be also added for enhancement of the product. With such continuous improvement rapid product/software will lead in better, restored and quicker performance model controlling delays.

6. Research Impact and Expected Outcome

The research outcome for proposed work can be as follows

6.1 Generic Adaptive Emergency Agile Model -

This model can help to plan the set of pharmaceuticals, clinical treatments, experts, necessities and other resources. This can be identified as Techno-commercial advantage in medical field.

6.2 Solution to analyses Pre COVID and design Post COVID data-

Post COVID problems rising with its variants need to addressed at its initial level to avoid its severe impact or losses. Pre-COVID certainty can set standards for testing.

6.3 Operational Pharma and healthcare setup design. -

Pharma and medical Organizations can deal with daily developments and discoveries can add value every day to immediate discoveries in crisis which will help teams of

organizations to handle problems under pressure. This emergency model can help as techno-medical- management immediate strategic models to design and plan daily emergencies in future work for Hospital Management.

6.4 Consideration for IPR –

The Proposed design can be deliberated for IPR process in future proposal.

Drug and Simulation models designed can be patented by Pharmaceuticals and Researchers.

7. Conclusion:

In the research work, the researcher studied the need of model which should work in emergency and crisis uncertainty. The Proposed Generic Adaptive Emergency Agile Model can deal with immediate needs as well as continuous iterative developments. In further part of work, researchers will explore the design and build prototype for Agile Drug Discovery method to generate implementation scenario and improve the design. The proposed model design further can be enhanced or altered for future research for different other fields of crisis like war, attacks also.

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