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A Conceptual Study on Current Business Models Being Innovative or Adaptive Focusing Healthcare Sector in Madurai Region

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Abstract

This research paper is a conceptual study done with an attempt to analyse if the business model taken up for study are creating new value (innovative) or adjusting to changes (adaptive). The study is done in Madurai district of Tamil Nadu with 10 famous healthcare centers as case study keeping in mind the drastic change in health sector sectors in the past decade. There is a mix of new, long-standing and progressive healthcare centers. The external factors play major role in the firms being adaptive or innovative in their business models. The study aims to identify key Indicator of innovative and adoptive business models. Indictors are then rated on scoring matrix The study has tried to give a conclusive outcome to the business models, based on the domination level of the indicators. It clearly shows that there is a significant concentration of firms on the Adaptive side of business models than Innovative side. The limitation of the study lies in the reliance on secondary data and scoring is based on subjectivity of available data. Also, this study cannot be generalized to tier- cities or rural health centers.

Keywords: business model, innovative, adaptive, disruptive, dynamic capability, hospitals, indicator, score

INTRODUCTION

Madurai, the Tamil Nadu's second largest city, is one of the oldest continuously inhabited cities in India. IT is a 2-Tier city not much large or economically dense like the tier 1 or 2 (like Chennai, Mumbai or Delhi) but is fast-growing and is emerging urban center where traditional industries and modern enterprises coexist. Some external aspects like booming internet (ease of communication, data storage, transfer, accuracy and speed), after effects of Covid-19, unrelenting technologies and gadgets make it necessary for the firms to revise their business models. Madurai has a strong base in healthcare (world-class hospitals like Aravind Eye Hospital), textile and handloom industries, small and medium enterprises and growing IT sector (small and large IT and BPO companies). This mix of old and new is an ideal context to observe how traditional institutions and emerging enterprises respond to changing market dynamics. As it is less saturated than Tier 1 cities, innovation and adaption patterns are more visible and easier to study.

Health sector which evolves rapidly and service innovation are continuo and necessary for all times, there has been crisis pressure from pandemics, policy reforms and shifts in public health expectations. In this backdrop the central government is bringing AIIMS in Madurai with futuristic facilities and as a core

medical research institute in south India region which will respond to advanced surgical treatments of cancers and cardiovascular diseases and other difficult diseases.

This study includes diverse health ecosystems that offer a good comparison on how organisation innovate and adapt. It's a combination of tertiary care centers (Apollo and Aravind), ever expanding institutions (Meenakshi Mission & Vadamalayan), government hospitals (GRH) and nice private hospitals (Rio and Buma). One can find volume data on patients, technology adoption, cost structure, service innovation and crisis handling in these hospitals. The sector provides measurable indicators for evaluating business models. This makes it suitable for both qualitative and quantitative analysis.

The significance of the study

The study holds its significance in understanding through the lens of health sector in Tier-2 city, how various businesses are navigating the challenges and opportunities posed by innovation and adaption. (1) It offers insight to the policy makers to support or reform innovational practices in different levels of businesses where required. (2) It provides strategic view to hospital management to identify their what kind of business model they are following and how to have competitive edge in the future service models, (3) The study fills the gap in research on innovation and adaptability in healthcare outside tier-1 cities, clearly giving a regional perspective that seen very often. (4) The innovative and adaptive indexes developed can be used as a benchmark in studies for other sectors (5) It has integrated two robust theoretical frameworks – disruptive innovation and dynamic capabilities – bringing a interdisciplinary contribution to research related with healthcare, management and public policy.

The scope of the study

The study focuses on evaluating the existence and shift in the innovativeness and adaptiveness of the business models within the hospital sector of Madurai, Tamil Nadu, India. The study examines a mix of hospitals: both private and public, super-speciality, average and niche markets. One can assess the innovativeness of the business model of these hospitals. Also, the measure of adaptiveness to external factors is included. Hence, a comparison is drawn between the types of different hospitals based on the key indicator (Innovative Business Model: I-BM & Adaptive Business Model: A-BM) assumed to be very prevalent in this sector taken mainly from the secondary data, case studies and possible interviews.

Research Questions

1. Is the current Business Model innovative or adaptive in Madurai region, focusing on health sectors?
2. What key indicators make business model innovative or adaptive?

Methodology

The research is a conceptual-comparative study using applied frameworks to assess innovation and adaptability in healthcare sector of tier-2 Indian city. It is theory driven, based on Disruptive innovation theory and Dynamic capability theory. It analyses business model concept (innovation vs adaptation) in hospitals. Its comparative because the study applies structed indicators to compare real-world institutions followed by scoring matrix. Tools likes graphs and indexes show real differences in their behaviour.

Sampling technique used is purposive sampling method by selecting 8-10 prominent hospitals in Madurai based on ownership type, scale of operations, reputation of service innovation.

The data source is primarily secondary from academic literature, annual reports, new articles, websites,

and case studies. There is no field survey or experimental intervention.
Tools like scoring matrix (5-point scale) was used to rate each hospital across the indicators. Five indicators (Innovative /Adaptive) were assumed based on the available qualitative and quantitative information.
Data was analysed by simple Index calculation. Also, comparative tables and graph were used to visualize and analyse the pattern across the healthcare institutions.

Literature Review

Pavithra While (2024) on Business process modelling in SMES "most people see modelling as the process of drawing elaborate diagrams, we see modelling as a structured, problem-solving strategy and as a means to cope with complexity".
Osterwalder and Pigneur\u27s book "Business model is all about value proposition, sources of costs and revenues, partnerships, and customers in a concise and graphical manner"
Teece et al., 1997, p. 172, "A business model can be thought of as a system of how a company operates and does business with its customers. It represents "the design or architecture of the value creation, delivery, and capture mechanisms of a firm"
Al-Debei & Avison, 2010; Bagnoli et al., 2018, "Business models are used as a conceptual framework, dimensions of which provide a holistic representation of the underlying corporate logic of an organisation, as an intermediate layer between strategy and process."
Olivier Serrat (2012) Business Model Innovation "A business model is the core design, the logic, that enables an organization to capture, create, and deliver value to meet explicit or latent needs and in so doing derive some form of profit itself. Likely, it embodies characteristics of an organization's way of thinking, operational system, and capacity to generate value."
Leyla Djuraeva (2021) emphasizes that business model innovation can be a basis of sustainable competition for companies and innovators may increase their returns 4 times than product and service developers.
Natnael Salfore, Matiwos Ensermu, Zerihun Kinde (2023), "increasing use value or decreasing exchange value with customers will help firms create more value and surpass competitors in the marketplace, while also allowing them to capture more value for themselves."
According to Zott and Amit (2010), "innovative business models can be developed through linking activities in a novel way that generates more value. They argued that alternative business models can be explored by configuring business model design elements (e.g. governance) and connecting them to distinct themes (e.g. novelty)"
Ramdani, B., Binsaif, A. and Boukrami, E. (2019), "Business model innovation: a review and research agenda" state that new developments in digital technologies such as blockchain, Internet of Things and artificial intelligence are disrupting existing business models and providing firms with alternative avenues to create new business models. It highlights the key areas of innovation, namely, value proposition, operational value, human capital and financial value.
Innovation Experimentation, open innovation and disruption have been advocated as approaches to business model innovation. Experimentation has been emphasised as a way to exploit opportunities and develop alternative business models before committing additional investments (McGrath, 2010)"
Innovation Business models can be developed through varying degrees of innovation from an evolutionary process of continuous fine-tuning to a revolutionary process of replacing existing business models. Recent

research shows that survival of firms is dependent on the degree of their business model innovation (Velu, 2015, 2016). This review classifies these degrees of innovation into modifying a single element, altering multiple elements simultaneously and/or changing the interactions between elements of the business model innovation framework.

Also, there is lack in the integration of internal and external perspectives of business model innovation. Very few studies look at the external drivers of business model innovation and the associated internal changes. The external drivers are referred to as "emerging changes", which are usually beyond manager's control (Demil and Lecocq,2010). Inconclusive findings exist as to how firms develop innovative business models in response to changes in the external environment.

Another link that is worth exploring is business model innovation and social value, which has only been explored in a few studies looking at social business models e.g. Yunuset al., 2010; Wilson and Post, 2013). Further research is needed to examine this link and possibly examine both financial and non-financial business performance.

Theoretical Foundation

Disruptive Innovation Theory developed by Clayton Christeen in 1995, means that Disruptive Innovation happens when a small size company with fewer resources successfully challenges bigger established business by offering simpler, cheaper or more convenient products or services. Disruptive products are usually lower quality and target overlooked markets. They start small in niche or ignored markets. Eventually they take over the mainstream market. Here the disruption is not about technology – it's about a different business model or customer focus.

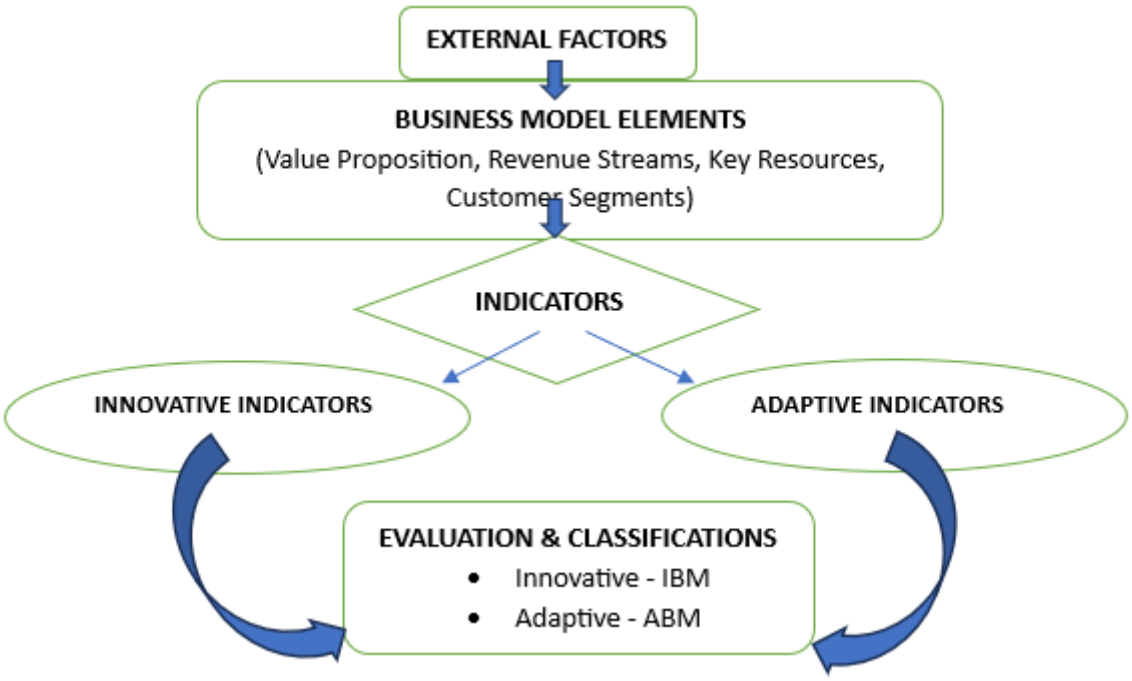
Dynamic Capabilities Theory developed by David Teece, Gary Pisano and Amy Shuen in 1997, says that Dynamic capability is an organization's ability to adapt, integrate and reconfigure internal and external resources to match rapidly changing environments. Sensing (recognizing opportunities and threats), Seizing (mobilizing resources to capture opportunities) and Transforming (continuously changing the business to stay competitive) are the key components of this theory revolving around flexibility, learning, evolving and adapting capabilities and not just improving products.

CONCEPTUAL FRAMEWORK

Business Model Classification - Innovative or Adaptive

Conceptual Framework Design

Independents Variables	→	**Moderators**	→	**Dependent Variables**
1. Innovations Indicators 2. Adaptive Indicators		1. Industry Changes 2. Market Dynamics		BM classifies as Innovative or Adaptive



External Factors:

The external factors can stimulate or limit a hospital's ability to innovate or adapt. These are not controlled by these hospitals but significantly impact its strategic decisions and performance. These factors include technological environment – digital health tools (telemedicine, AI diagnostics, world-wide adoption of electronic medical record); Market trends – coming in of hight performing hospitals (raising standards, need for differentiated patient services); Epidemics and crises – COVID like health emergencies and service disruption.

Business Model

Business Model Components: Business model is an outline explaining how and organisation creates, delivers and captures value both monetary and non-monetary. It consists of

- Value Proposition – What unique value is offered
- Revenue Stream – How does the firm earn money
- Customer Segments – Who are the customers
- Key Activities – What core activities does it do
- Key Resources – Assets, IP, people
- Cost Structure – Where does it spends money

Innovative Business Model (IBM)

An innovative business model is a new or significantly improved method of doing business compared to traditional method. It often disrupts industry norms, improves efficiency, reaches new customers or offers new services that did not exist before. Like in value proposition Aravind Eye Hospital providing world-class eye care at ultra-low cost. In process innovation, hospitals are giving mobile clinics, AI diagnostics, in market disruption, Buma nursing home is reaching middle-income paediatrics patients with advanced care, in technology leverage, Apollo's Tele-ICU, health app and digital health record is seen a big step

ahead.

Innovative indicators:

- New products / services
- New delivery methods
- New customer experience
- Disruption of industry norms

Adaptive Business Model (ABM)

An adaptive business model is flexible in operations. They have the ability to modify processes or workflows based on demand. For example, reallocating beds for COVID care within few days. It shows their rapid response to crisis. This model does service reconfiguration. Like altering service offerings to meet patient needs. Sometimes such models adopt technology enabled tools to maintain operational efficiency.

Adaption indicators:

- Changes in strategy based on market shifts
- Adjustments to customer needs or competitions
- Upgrades or improvements, but not radical change

Case Study – Hospitals in Madurai

Hospitals	Disruptive Innovation (IBM Rating)	Dynamic Capability (ABM Rating)	BM - Description (Tracing indicators)
Aravind Eye Hospital	High	High	(I) Cost innovation low-cost high quality surgery, tele ophthalmology, rural outreach, (A) mass eye camps, telemedicine, COVID protocols maintained, surgeries continued
Apollo Speciality Hospital	Medium	High	(I) Advanced technologies, robotic surgeries, (A) expanded digital consultations services
Velammal Medical College Hospital	Medium	High	(I) Advanced technologies, (A) App based appointments, rapid expansion of ICU facilities during

			pandemic, affordable multi-speciality services
Meenakshi Mission Hospital	Medium	High	(I) Advanced technologies, cancer care updates, robotic surgeries (A) Early vaccine setup, telemedicine, mobile app, online portal
Vadamalayan Hospitals	Medium	Medium	(I) Upgraded cardiac and emergency care (A) Moderate digitalization of services
Govt. Rajaji Hospital (GRH)	Low	High	(I)Basic technology adoption, limited EMRs, rigid systems but free care, (A) Quick repurposing for pandemic care
Guru Hospital	Low	Medium	(I) Specialized fertility services, (A) moderate adoption of digital health services
Rio Children's Hospital	Medium	High	(I) Advanced paediatric intensive care units (PICUs), Specialized neonatal care units, (A) Expanded paediatric COVID-19 vaccination and post-covid care for children
Buma Nursing Home	Low	Medium	(I) Affordable maternity and child care (A) basic telemedicine, Quick adjusted patient management protocol during pandemic, COVID maternity care
Devadoss hospital	High	Medium	(I) Advanced diagnostics, EMRs digital imaging, customized package (A)

			capacity constraint during crisis adaptability

Aravind Eye Hospital has pioneered a disruptive model by offering low-cost, high-quality cataract surgeries, hereby revolutionizing access to eye care not only in India but globally. Its ability to deliver affordable healthcare at scale disrupted traditional high-cost eye hospitals. Similarly, Velammal Medical College hospital disrupted healthcare delivery in Tier-2 cities making multi-speciality services affordable to a broader section of the population. Also, it swiftly expanded its intensive care infrastructure and vaccination program during pandemic showing capabilities of adaptation to external factors. In terms of dynamic capabilities, Apollo Speciality Hospital adapted rapidly to external shocks such as the COVID-19 by introducing digital health records, telemedicine services and home monitoring solutions.

Identifying Key Indicator & Rating Explained

Based on the above consolidated report of business model description on healthcare centers, the key indicators were identified, assumed and framed. Instead of limiting the rating to "high", "low" or "moderate" they classified into innovative and adaptive indicators and are described in the table below. These are then assigned numerical scores based on specific indicators using scoring system (0-5 scale). Starting from 5 – Very high, 4 High, 3 Moderate, 2 low, 1 very low and 0 not observed. Each hospital gets a score from 0 to 5 on each indicator. Add all scores for total (max 25). Divide total by 5 to get average score (out of 5). From the average the innovation index and the adaptive index are prepared.

Key Indicators	**Description (Average of)**
INNOVATION Index	
New Service Introduction (NSI)	Launch of innovative services/product - speciality care
Technology Adoption (TA)	Use of digital tool, telemedicine, AI diagnosis, EMRs digital imaging
Cost Innovation (CI)	Offer cheaper but quality healthcare solutions – low-cost/free service for all,
ADAPTIVE Index	
Response speed to crisis (e.g. COVID) (RC)	How fast adopted operations -service reconfiguration, service flexibility
Customer/patient engagement Innovation (CE)	New methods to improve customer/patient experience – customized consultation

Evaluation and Classification of Business Models

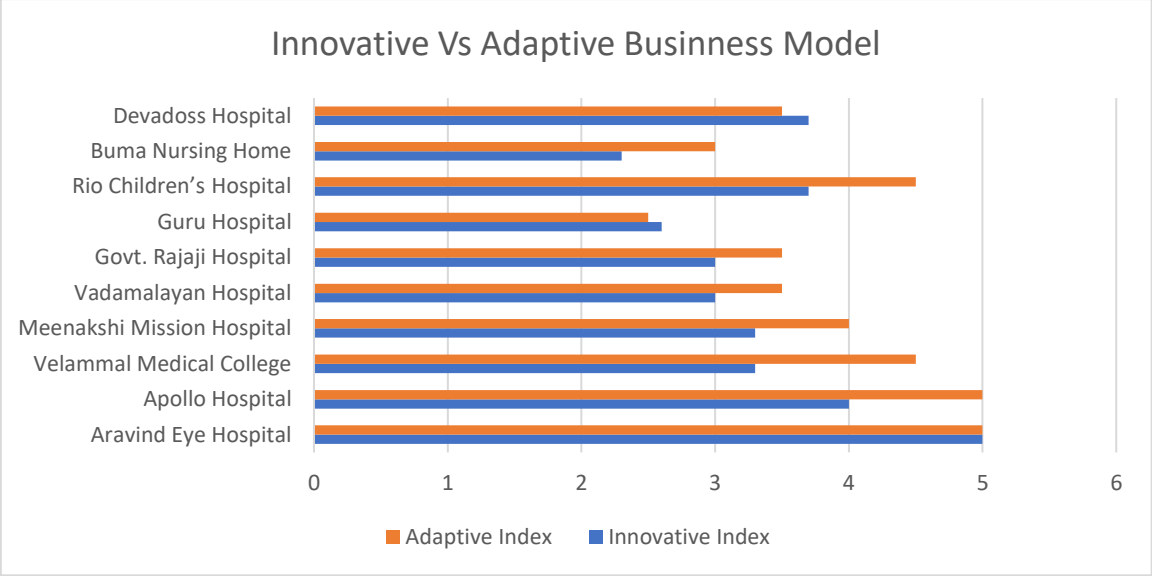
Scoring Table for Hospitals

Hospital Name	**INNOVATION**			**ADAPTIVE**		**AVERAGE**
	NSI	**TA**	**CI**	**RC**	**CE**	
Aravind Eye Hospital	5	5	5	5	5	5
Apollo Hospital	4	5	3	5	5	4.4

Velammal Medical College	3	4	3	5	4	3.8
Meenakshi Mission Hospital	3	4	3	4	4	3.6
Vadamalayan Hospital	3	3	3	4	3	3.2
Govt. Rajaji Hospital	2	2	5	5	2	3.2
Guru Hospital	2	3	3	2	3	2.6
Rio Children's Hospital	4	4	3	5	4	4
Buma Nursing Home	2	2	3	4	2	2.6
Devadoss Hospital	4	4	3	3	4	3.6

Calculating the Indexes

Hospital Name	**Innovative Index (Avg. of 3)**	**Adaptive Index (Avg. of 2)**	**Towards Innovation or Adaption**
Aravind Eye Hospital	(5+5+5)/3 = 5	(5+5)/2= 5	Innovative & Adaptive
Apollo Hospital	(4+5+3)/3 = 4	(5+5)/2= 5	Adaptive
Velammal Medical College	(3+4+3)/3 = 3.3	(5+4)/2 = 4.5	Adaptive
Meenakshi Mission Hospital	(3+4+3)/3 = 3.3	(4+4)/2 = 4	Adaptive
Vadamalayan Hospital	(3+3+3)/3 = 3	(4+3)/2 = 3.5	Adaptive
Govt. Rajaji Hospital	(2+2+5)/3 = 3.0	(5+2) = 3.5	Adaptive
Guru Hospital	(2+3+3)/3 = 2.6	(2+3)/2 = 2.5	Innovative
Rio Children's Hospital	(4+4+3)/3 = 3.7	(5+4)/2= 4.5	Adaptive
Buma Nursing Home	(2+2+3)/3 = 2.3	(4+2)/2 = 3	Adaptive
Devadoss Hospital	(4+4+3)/3 = 3.7	(3+4)/2 = 3.5	Innovative



Limitations

1. Reliance of secondary data: the study was mainly carried out based on the secondary sources like websites, reports and case studies. Limited access to internal hospital data may have effect on the accuracy of scoring. It may also vary depending on the interpretation or data availability.
2. The study is limited to hospitals in Madurai and findings may not be generalised to tier-1 or rural healthcare systems

Conclusions

The study explored the nature and performance of innovative and adaptive business models within the healthcare sector in Madurai focusing both private and public hospitals. The assessment of key indicators such as service innovation, technology integration, crisis adaptability and cost accessibility, the research revealed a meaningful insight across hospitals in their strategic spectrum.

Mainly hospitals like Arvind Eye Hospital and Apollo Hospitals scored high on innovation due to latest technologies and futuristic models. Hospitals like Govt. Rajaji Hospital and Buma Nursing Home showed strong adaptive response during certain external disruption like pandemic.

Dual index approach provided a comprehensive framework to compare different organisations. Hospitals in Madurai predominantly exhibit high levels of adaptive business model changes, while true disruptive innovations are mainly observed in pioneering institutions like Aravind Eye Hospital.

Finally, a hybrid model combining both innovative and adaptive business model is most effective for healthcare institutions in a dynamic environment like Madurai.

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