

# AN ECONOMIC ANALYSIS OF INFORMATION TECHNOLOGY DIFFUSION IN HEALTH CARE: A CASE STUDY OF SELECT HOSPITALS IN BANGALORE

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**Abstract:** This study is aimed to quantify the perspective and the aspects in connection to the health care industry which has seen the result of the use of Information technology in its circumference. The examination of different phenomena using the methodologies to represent the theoretical framework and the use of SPSS software analysis have been imposed. There are many researchers who might have talked narratively about the influence of IT in healthcare industry. But this research is focused to bring out the precise facts which are involved in it as the might and main of the facts to enhance the health care industry. I have further chose to work on the detail part which is act as the elements and supported by the HIPAA regulations. There are many distinct ways which evaluate the section of IT influence in Health care as for example a doctors need for the influence of IT to keep the patient records or the diagnose a problem with the help of data managed in the server. The relationship between the IT industry and the health care industry special in the Bangalore city of India has seen a major difference. The objective picked for this study is to understand the cost benefit and conduct its analysis in connection to the IT industry's influence in the health care. I have further conducted the research to explore and analyze the implementation of adoption and diffusion of IT in major health care centers of Bangalore.

**Keywords:** Information Technology, Health care Industry, Diffusion

## 1. Introduction

The time for the adoption of Information technology has been passed years ago. Now it is the high time that the health care industry must be equipped with the IT. The IT has shown its effects on the health care due to its interface which caters the artificial intelligence with the ability to provide numerous solutions Scitovsky AA, McCall N (2010).

There are various resources and studied which suggests that the value ability of IT implementation across the health care industry were gradual to undertake it. To the extent that great issues in health care which includes affected person's safety, clinical mistakes, and escalating fees may be addressed through IT, accelerating its diffusion at some point of the system is an essential public policy problem. In this paper I examine the adoption and diffusion of a selected era artifact referred to as the electronic medical record which is extensively recounted that the EMR is one in every off, if not the maximum substantial innovation to effect the health care industry in latest years.

Many leading specialists in this domain take into account the EMR to be, "the most crucial aspect taking place in health care, the EMR offers the promise of unifying fragmented statistics and programs, providing a repository of patient data, and permitting the practice and administration of medicine which contain superior evidence based on the decision making capability for the doctors Barry, J, M. (2005). Yet it additionally increases concerns related to health practitioner and its changes, secrecy and implementation charges. Therefore, it isn't surprising the diffusion of EMRs across the hospitals or health care industry in Bangalore has been gradual. Drawing upon concept associated with the adoption and diffusion of improvements and the spread of epidemics I take a look at the phenomenon of EMR adoption by means of a health care facility. Previous studies has recommended that traits along with length and structure, and environmental factors including the movements of competition are crucial determinants of innovation adoption. The usage of a survival evaluation technique, provided by the IT in the health care industry caters the Complementary HIT awareness, Temporal Complementary HIT Adoption, and Spatial Contagion impact. The first constitute inner firm characteristics that capture the supply of information technologies, and a temporal aspect reflecting the cumulative mastering and revel in that the hospital has with statistics technologies. As a way to isolate the outcomes of those variables, some points like structural traits inclusive of size and facility kind that could affect the chance of adoption.

The health care industry's quality protocol has been on the increasing side due to the influence of the Information technology Barry, J, M. (2005). This is also cannot be stated that the use of almost every technology is essential for the clinical or purpose. However many new technologies are supposed to be ineffective or redundant in the direct health output of the patients. The health

output of the patients is directly inclined towards the treatment been adhered by the physician. The concept of the information technology has boosted the sector of health care industry in Bangalore due to its facts that it has the capacity of catering the best information and conducting the test which has been proved to be super beneficial for the patients. One such example could be the MRI machine. MRI is the short name of the Magnetic Resonance Imaging which caters the concept of the imaging of the actual problem mostly in the human anatomy Rao Krishnamurthy (2011). This example is fair enough to discuss and explain that how information technology is proving to be a beneficial blessing for the health care industry but on the coin-side it is also effecting the cost efficiency model which could be on the other side of the perspective.

This paper addresses four aspects of the relationship among new clinical era and fees. This paper is meant to review the evidence concerning the contribution of recent technology to the combination value of health care. This paper is further a review of the normative model of superior diffusion of technologies, which is further based on the evaluation of the price effectiveness in the health care industry. It could be further narrated that the capacity of a technology to improve health consequences. The impact of cost efficiency treatment across the hospitals of Bangalore that affect adoption of recent technology in the Bangalore health care system and evaluation the resulting priorities with those derived from the normative cost-effectiveness model. This paper is also meant to review at incentives for hospitals, charge-for-provider physicians, and health care alliances. Some of the examples would be cited under diffusion of value-information technologies and over diffusion of value-useless ones. Subsequently, this review paper is meant to touch upon future coverage alternatives for reaching a greater cost effective era for technology diffusion.

## 1.2 Research Objectives

This review paper will aim at fulfilling the following research objectives:

- To analyse the relationship between Information Technology and healthcare sector performance
- To evaluate the various economic issues involved in healthcare sector
- To conduct a cost benefit analysis of implementation of information technology in healthcare sector
- To identify the limitations of present healthcare information delivery model
- To explore and analyse implementation, adoption and diffusion of IT in major healthcare centres in Bangalore

## 1.3 Materials and Methods

This review is done on the basis of secondary data analysis which has been evaluated to understand the process of information technology and its influence on the health care industry of Bangalore. The secondary resources such as journal, internet articles, magazines books and other previous researches has been used as material. The data were collected and evaluated based on the current scenario of adoption and diffusion of IT in the health care industry of Bangalore. Certain researches which had previously talked about the context. To better understand the economic part of the IT influence of the health care industry I have further analyzed the process of different technology which is currently adopted for quick service and cost benefit.

## 1.4 Literature Review

While research at the adoption of improvements attempts to model the elements that drive the behavior of a single entity inclusive of a firm, diffusion models are generally used to explain the adoption of an innovation by way of a goal populace over a specific time period. The system itself should comprise an innovation, communicate channels, time, and a social system

Diffusion studies are useful because they can be used to be expecting will increase in wide variety of adopters and venture future trends Rao. Krishnamurthy (2011). A more contemporary article which showed and analyzes facts from several thousand fitness facilities across the hospitals of Bangalore and compares the diffusion of statistics technologies with different technologies. The findings recommend that data technology diffusion continues to be in a period of sluggish adoption boom and could no longer reach 82% reputation till roughly 2016 if it keeps at a pace matching the diffusion curves of different, similar innovations. Seminal work within the field of diffusion notes that the sluggish growth duration is normally accompanied by a surprising duration of fast adoption after which a slow leveling off, for this reason forming the acquainted shaped diffusion curve. The duration of speedy expansion occurs while social and technical elements align to create a surroundings conducive to increase.

Drawing from the popular press, one should acknowledge the extraordinary amount of media attention dedicated to fitness care and specially, health statistics technology these days. It's far well commonplace that messages approximately era improvements are transferred via mass media and/or with the aid of phrase of mouth; even though a few debate the impact of every relative to the opposite most famous diffusion fashions account for those social factors by means of incorporating estimation coefficients derived from the diffusion of different information technology that check the effect of internal and external affects in the health IT domain fits a ramification feature to his records and the usage of a cluster analysis technique of evaluation, chooses internal estimation coefficients primarily based on numerous characteristics of technology, which include innovation goal, network externalities, complexity, and whether or not the innovation is a tool or a device. Information technology match into a cluster described as big-scale relational database innovations (LSRD) and are very much like agency useful resource making plans (ERP) systems but, my aim isn't to undertaking adoption into the future or to evaluate diffusion at a populace stage.

Rather, I am searching for to expect a medical institution's chance of adoption inside the subsequent time period, given its movements and choices within the beyond. In addition, as argued in advance, facts technologies are a completely unique era concerning relatively complicated exercises ensuing in radical adjustments to workflows. In this study, I consequently adopt a variance-primarily based approach by using examining the historic diffusion of information technologies

## 2.1 Healthcare Sector and Information Technology

Latest advances in IT are permitting carriers to enhance the first-class of patient care. Today's healthcare it's far a lot extra than conventional remote computers and unfriendly applications. More and more, affected person care is exploiting the new technology and statistics that systems can provide, even as maintaining a patient-centric method to their use. Software program that supports the middle medical strategies, hardware that permits smooth get admission to records on the factor of care, and requirements that make the combination of different systems less difficult than ever earlier than are all key features of the new healthcare IT structures Singh. Prarashar (2005).

Healthcare industry is most likely benefited with the use of the MER technology as this is the vital role of the infrastructure influencing the usages of information technology in health care industry. This will most effectively realize the blessings of the EMR once the vital infrastructure for distributing the records within an incorporated healthcare network is mounted. This highlights the critical connection that organizations should establish among data and statistics get right of entry to the same time as the EMR on its very own is an effective tool, its mixture with different networked applications ensures availability of the suitable information; in which and while wished, on the point of care.

## 2.2 Contribution of IT towards quality Healthcare service

With expanded investment in contemporary IT structures as well as new centers, organizations are enhancing healthcare for patients, and elevating it to a global-elegance trendy .essential to the fulfillment of investments in IT, however, is ensuring a holistic technique to the technology, which means know-how the strategic dreams of the agency and information the way it, from technological and organizational views, can assist to gain them Singh. Prarashar (2005).

The driving pressure in the back of the revolution in healthcare it is the desire for companies to offer the fine feasible fashionable of care to each affected person. This has driven the emergence, and growing sophistication of the electronic clinical document, (EMR). This digital record can preserve the whole info of a character's scientific records, which in the end allows to direct diagnostic and therapeutic decisions whilst an affected person enters the healthcare system.

## 2.3 Vulnerabilities of IT enabled Healthcare service

Health care industry is on the edge of the growth by the use of Information Technology. However there are numerous aspects which states the vulnerabilities Deluca, J. & Enmark, R. (2002). Information technology is regarded as a sort of a new phrase in the healthcare industry. Historically, health specialists and the health care industry have placed significant emphasis on the practitioner's knowledge and skills and the practices of the person professional. Collaborative use of information technologies and systematic commercial enterprise management of essential health information is relatively threatening to the traditions of scientific practice.

There's an anxiety between the hobbies of the healthcare professional and the pursuits of the enterprise government. Business executives are worried with the economic viability of the employer, the return on investment, and the sales cycle, which might be typically the drivers for facts technology systems and initiatives. But, healthcare practitioners have to make use of those

structures, assist of their implementation, and make contributions to their optimization. There's massive chance in now not managing this organizational tension efficiently. Without the reputation and adoption of latest information generation by means of practitioners, the benefits may also never be realized. It is fundamental to the achievement of IT initiatives that they offer tangible blessings to the end user.

Using the era of Information technology across the healthcare surroundings introduces change, and alternate generates resistance. But, alternate is not new to healthcare. Until the past due 19th century, the scientific profession changed into based on mythology and lacked a scientific approach to analysis and treatment. Then elements of technology, scientific methods and empirical evidence have been brought to medication, and the phenomenal development since then has modified the path of records.

#### 2.4 Cost analysis of IT enabled Healthcare service

If new technologies boom health care costs, can we state that it is suitable for us or for the health care industry? To choose whether the concept of diffusion of particular technologies or of technologies in trendy is appropriate, we want some relevancy or criterion. One such criterion is based totally on the proposition that the objective of scientific technology is to enhance health results. Every clinical use of a technology utilizes a number of society's confined fitness care resources and, ideally, improves health consequences. The greater the society spends on health care, the more health is stepped forward Deluca, J. & Enmark, R. (2002). The more we increase the resources applied to health care, the greater fitness can be improved however the higher the incremental price consistent with additional unit of fitness development.

This gives a venture for manufacturers, utilizers, purchasers, and regulators of latest generation: to allow adoption of cost-effective new technologies without permitting them to take in widespread sources for cost effective uses.

#### Conclusion

With permitting technologies such as the internet, wireless conversation, effective processors, and extended battery life for laptop and tablet pcs turning into mature, society has reached a factor in which fewer technical barriers to innovation adoption exist. With technical obstacles being overcome with normal frequency, it is vital for comparable strides to be made in understanding why people struggle to simply accept the exchange that new innovations bring. Due to the fact they contain human conduct, in many approaches, social and societal issues are greater difficult to resolve than the ones which contain studies in the physical sciences. The capability fee afforded by means of the usage of statistics generation in healthcare is some distance too compelling to ignore clearly due to the fact there are challenges – including worries approximately privacy infringement – to getting a device implemented and embedded into paintings strategies.

While clinical group of workers and patients have constantly been and could stay on the heart of healthcare, the cost of the use of IT in an affected person-centric technique to care is starting to expose itself and for every person worried the improvements are there to see. With its increasing adoption, healthcare it's far probably to contribute notably to the overall stage of care that patients across the world get the advantage from.

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