IMPACT OF SERVICE CHANNEL ON CONSUMER SATISFACTION – A STUDY IN HEALTH CARE SERVICE

**THESIS SUBMITTED TO GOA UNIVERSITY
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DECLARATION

I, Tejashree M. Colvalcar, hereby declare that the present thesis entitled '**Impact Of Service Channel on Consumer Satisfaction – A Study In Health Care Service**' is a bonafide record of research work done by me under the supervision of Dr. Nandakumar Mekoth, Reader, Department of Management studies, Goa University and Dr. Gourish M. Naik, Professor, Department of Physics (Electronics), Goa University.

I further state that no part of the thesis has been submitted for a degree or diploma or any other similar title of this at any other University.

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CERTIFICATE

This is to certify that the Ph.D. thesis entitled **'Impact Of Service Channel on Consumer Satisfaction – A Study In Health Care Service'** is an original work carried out by Ms. Tejashree M. Colvalcar under our guidance and that no part of this work has been presented for any other Degree, Diploma, Fellowship or other similar titles.

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ABSTRACT

From the customer's point of view, the most vivid impression of service occurs in the service encounter, or the "moment of truth", when the customer interacts with the service firm. A service encounter occurs every time a customer interacts with the service organization. (Shostack, 1985) There are two general types of service encounters: remote encounters and face-to-face encounters. A customer may experience any of these types of encounters, in his or her relations with a service firm.

In this research, we are trying to evaluate the service encounter, where the core service that is health care is delivered through remote service encounter i.e. indirect channel and through face-to-face encounter i.e. direct channel.

Due to the importance of service encounters in building quality perceptions and ultimately influencing customer satisfaction, researchers have extensively analyzed service encounters in many contexts to determine sources of customer's favourable and unfavourable perceptions. There isn't much research regarding satisfaction studies in remote service encounters in health care.

The reason why health care is separate from other services is because of the credence qualities of health care service. *Service characteristics that customers find impossible to evaluate confidently even after purchase and consumption are known as credence attributes* because the customer is forced to trust that certain benefits have been delivered, even though it may be difficult to document them. An example would be, patients can't

usually evaluate how well the doctors have treated them. (Zeithaml, 1981) The customer in health care service is a vulnerable consumer. (Anderson and Manning, 1990) Healthcare is a high involvement and credence type service. (Zeithaml et al, 1996) Health care is a complex service involving a doctor dealing with the very "person" of the patient. (Parasuraman et al, 1985).

Long-term relationships are built through social and interpersonal bonds. Customers are viewed as "clients", not nameless faces, and become individuals whose needs and wants the firm seeks to understand. Services are customized to fit individual needs and service providers find ways of staying in touch with their customers, thereby developing social bonds with them.

Social, interpersonal bonds are common among professional service providers and their clients as well as among personal care providers (like health care providers) and their clients. A doctor who takes a few minutes to review the patient's file before coming in to the exam room is able to jog his/her memory on personal facts about the patient (occupation, family details, interests, health history). By bringing these personal details into the conversation, the doctor reveals his/her genuine interest in the patient as an individual and develops social bonds.

Social and Interpersonal bonds are difficult to achieve in remote health care settings. The doctor is oblivious of the personal facts about the patient such as occupation, interests, family details etc. In a remote health care setting, the patient is not experiencing a common

environment with the doctor, which he/she would have otherwise experienced in a face-to-face setting. In such a situation it is difficult for the doctor to create and sustain relationship building. Social and interpersonal bonding helps the doctor deliver service to the patient and it could be one of the factors influencing customer satisfaction. (Crosby et al, 1990) Hence it could be said that due to the nature of remote health care service, which is an impersonal or indirect channel of service delivery, it is difficult to achieve interpersonal bonding between the doctor and the patient.

Thus we see that channel of service delivery impacts customer satisfaction when the service is delivered in a high involvement high complexity situation.

This thesis examines the impact of service delivery channel on consumer satisfaction in high involvement high complexity situations.

The research is conducted using two sampling units:

- Patients availing of health care service through impersonal channel of service delivery (telemedicine)
- Patients availing of health care service through direct channel where there is face-to-face contact between patient and healthcare provider.

The sample size chosen for each of the two sampling units is ***200***. Hence a total of ***400*** patients are surveyed. A probability sample is chosen. Simple random sampling method is used. Statistical Inferential Analyses of data obtained from the surveys is carried out using the SPSS software package. The data from the questionnaires are tabulated, and analyzed using step-wise regression.

The major findings of the research are enumerated below:

[I] The relationship between complexity and satisfaction is negative when the channel of delivery is indirect in high involvement services.

[II] There is no relationship between complexity and satisfaction when the channel of delivery is face-to-face (direct) in high involvement services.

[III] Complexity moderates the relationship between predictor variables and satisfaction within face-to-face (direct) channel in high involvement services.

[IV] Predictor variables of satisfaction vary between channels in high involvement services in both high and low complexity situations.

CONTENTS

Chapter I: INTRODUCTION

Services dominate the modern economy. The service sector is going through a revolutionary change, which dramatically affects the way in which we live and work. New services are continually being launched to satisfy our existing needs and to meet needs that we did not even know we had. Not even ten years ago, few people anticipated a personal need for email, on line banking, web hosting, and many other new services. Today many of us feel we cannot do without them. (Lovelock et al, 2004)

Technology is a key driver of Service Innovation

The term technology, as commonly used, refers to the practical application of cutting edge tools and procedures. Innovative service providers are interested in how they can use new technological developments to automate and speed up processes, reduce costs (and perhaps prices), facilitate service delivery, relate more closely to their customers and offer them more convenience, add appeal to existing products, and make it possible to develop new types of services. Technology plays an important role, especially information technology- in driving service innovation. (Lovelock et al, 2004)

The ability of firms to generate business through technology driven service innovations is often dependent on customers having access to the necessary equipment and infrastructure. It's predicted that the growth of broadband telecommunications, which speeds customers' interactions with web sites, will provide a powerful stimulus for use of Internet channels. (Mullaney et al, 2003); (Lovelock et al, 2004)

Distribution channels take various forms

As a result of advances in computers and telecommunications, especially the growth of the Internet, electronic delivery of services is expanding rapidly. Any information-based component of a service can be delivered instantaneously to anywhere in the world. Thanks to e-mail and Web sites, even small businesses can offer their services inexpensively across vast geographic distances. (Lovelock et al, 2004)

One such new service launched in the field of health care is Telemedicine. The use of telecommunications to improve the delivery of healthcare is not a new concept. Physicians and nurses have been providing healthcare over voice telephone lines for many decades. However, over past few years the interest in using telecommunications in health care, now termed telemedicine, has increased greatly. The reason for the increased interest has stemmed from the recent advances in telecommunications technology. Available bandwidth has increased, allowing real time, two way video, audio and data signals to be passed through regular analog telephone lines. Compression technologies continue to improve, resulting in a maximization of available bandwidth to present the clearest video and audio signals and reducing the error in data transmission to a minimum. These improvements in technologies have not gone unnoticed in their ability to improve the quality of healthcare, while at the same time decrease healthcare costs. (Malagodi et al, 1999)

Telemedicine can be defined as the use of telecommunication and computer technologies for the purpose of delivering health care to patients. Telemedicine is a way to diagnose,

from the provider. Telemedicine technology has the potential to significantly change the delivery of health care. (Binshan et al, 2000)

The World Health Organization defines telemedicine as the delivery of health care services, where distance is a critical factor, by health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of diseases and injuries. (The Independent, 2000)

Developments in computer technology, the Internet, and wireless and satellite telecommunications have led to major innovations in the nature and delivery of health care that will have broad implications for the way people receive health information and treatment in the future. Health care systems are now linked into broad computer networks, which allow them to expand their reach and effectiveness by bringing medical services to the patient instead of the patient having to go to them. In addition, technology may now be able to provide much-needed medical information and services to rural and underserved populations. (Chepesiuk et al, 1999)

Motivation for the study undertaken by the researcher

Telemedicine centers were launched in India, for example Goa, Maharashtra, Karnataka etc. These centers were needed to make accessible the health care expertise that existed in urban areas.

Tertiary care hospitals such as district or state level hospitals are few and concentrated in pockets and large segments of the population have no access to them. The increasing

availability of excellent telecommunications, infrastructure and video conferencing equipment helps in providing a physician where there was none before through remote health care centres.

Telemedicine can thus avoid unnecessary travel and expense for the patient and the family, improve outcomes and even save lives. Once the "virtual presence" of the specialist is acknowledged, a patient can access resources in a tertiary referral centre without the constraints of distance.

Services have credence properties, which are characteristics that customers find difficult to evaluate even after consumption, because they are purchasing expertise in areas in which they are not very knowledgeable themselves.

The remote health care service is a high involvement high complexity service delivered through an impersonal channel. When a service is complex and it is high stakes, the channel of service delivery also becomes important. Even if disease is cured, the patient may still be dissatisfied with the service if it does not meet some process requirements, like if there is no face-to-face interaction between the provider and recipient, there maybe no satisfaction. This is an under-researched area in the service sector and requires due research. A research study in this direction is therefore required.

Organization of the thesis

Hence Chapter one gave an Introduction about Distribution channels for services and Motivation for the study.

The literature review provided in Chapter two offers the reader with a theoretical background for the study, an explanation of the theoretical rationale of the problem being studied, what research has been already done, how the findings relate to the problem at hand, and finally the research objectives and the conceptual framework.

Chapter three provides theoretical support for the hypotheses culled from the review of literature. The methodology used for testing these hypotheses, analysis, along with the preliminary results are also presented in Chapter three.

Chapter four presents the findings and results from the preceding chapter in a summary. First the main conclusions from the quantitative study are summarized and later the findings are discussed. This chapter also discusses the implications and possible future research extensions of this thesis.

Chapter II: Theoretical Background for the Study: Literature Review

This chapter looks at the literature related to the topic of research and provides the reader with a theoretical background for the study. It also gives an explanation of the theoretical rationale of the problem being studied, the research work carried out earlier and their findings that are related to the research issue in this topic culminating in the development of a conceptual framework and research objectives.

The service sector accounts for more than half the GDP (Gross Domestic Product) in most developing economies and for two-thirds or more in many highly developed economies. The service sector encompasses a large variety of industries, including many activities provided by public sector and nonprofit organizations. (World Economic Situation and Prospects, 2007) Services are responsible for the creation of a substantial majority of new jobs, both skilled and unskilled, in these economies. Service businesses govern modern economies and are the subject of academic research.

Service Business Is a System

The types of encounters that take place during service delivery depend to a great extent on the level of contact customers have with the service provider. A service business can be viewed as a system made up of three overlapping elements (Chase, 1978):

- *Service operations*, whereby inputs are processed and the elements of the service product are created.

- *Service delivery*, during which final "assembly" of these elements takes place and the product, is delivered to the customer.
- *Service marketing*, which embraces all points of contact with customers, including advertising, billing, and market research. (Lovelock et al, 2004)

Service Attributes

Service performances, especially those that contain few tangible clues, can be difficult for consumers to evaluate, both in advance of purchase and even afterwards. As a result there is a greater risk of making a purchase that proves to be disappointing. (Zeithaml, 1981).

- *Search Attributes*

  Tangible attributes help customers understand and evaluate what they will get in exchange for their money and reduces the sense of uncertainty or risk associated with the purchase occasion.

- *Experience Attributes*

  When attributes can't be evaluated prior to purchase, customers must experience the service to know what they are getting.

- *Credence Attributes*

  Product characteristics that customers find impossible to evaluate confidently even after purchase and consumption are known as credence attributes because the customer is forced to trust that certain benefits have been delivered, even though it may be difficult to document them. An example would be patients can't usually evaluate how well, the doctors have performed complex procedures. (Lovelock et al, 2004)

Intangibility of Service Performance

Providers of services that are high in credence characteristics have an even greater challenge. Their benefits may be so intangible that customers can't evaluate the quality of what they've received even after the service has been purchased and consumed. (Lovelock et al, 2004)

Service Process Classification

Numerous proposals have been made for classifying services. (Lovelock et al, 1983). Of particular significance is the classification based on the nature of the processes by which services are created and delivered. A process is a particular method of operation or a series of actions, typically involving multiple steps that often need to take place in a defined sequence. A process implies taking an input and transforming it into an output. Two broad categories of things get processed in services: people and objects. (Lovelock et al, 2004)

A pure operational perspective, of service processes can categorize them into four broad groups. (Morris & Johnston, 1987) Each category involves fundamentally different processes. The categories are referred to as *people processing, possession processing, mental stimulus processing, and information processing.* (Lovelock et al, 2004)

People Processing – To receive these types of services, customers must physically enter the service system. As customers are an integral part of the process, they cannot obtain the benefits they desire by dealing at arm's length with service suppliers; instead, they must be prepared to spend time interacting and actively cooperating with service providers.

Information Processing - Information is the most intangible form of service output, but it may be transformed into a more enduring, tangible form, represented by letters, reports, books, tapes, or disks. Among the services that are highly dependent on effective collection and processing of information are financial and professional services, such as medical diagnosis etc.

Possession Processing – Customers are less physically involved with this type of service than with people processing services. In most Possession processing services, the customer's involvement is usually limited to dropping off the item that needs treatment, requesting the service, explaining the problem and later returning to pick up the item and pay the bill.

Mental Stimulus Processing – These are services that interact with people's minds like education, news and information, professional advice etc. Anything touching people's minds has the power to shape attitudes and influence behaviour. (Lovelock et al, 2004)

Relating the above mentioned processes to a remote health care setting, it is seen that both people and information processing takes place. People processing takes place, as the people i.e. the customers of health care service have to physically visit a Telemedicine/ Remote health care center to get treatment. Hence the customer i.e. the patient has to physically enter the service system to receive service. Information processing takes place, as the information (medical diagnosis) is provided via the telecommunication network by specialist doctors who are not physically present in the health care center.

Nature of the Service Offering

When designing a service to implement a particular service marketing concept, product planners need to take a holistic view of the entire performance they want customers to experience. The design task must therefore address and integrate three key components: the core product, supplementary services, and delivery processes. (Eiglier et al, 1977)

Core Product

This central component addresses two questions: What is the buyer really purchasing? & Which customer needs are getting satisfied? The core product along with the tangible and augmented product supplies the benefits that customers seek.

Supplementary Services

These elements augment the core product, both facilitating its use and enhancing its value and appeal. The extent and level of supplementary services often play a role in differentiating and positioning the core product. Adding supplementary elements or increasing the level of performance can add value to the core product and enable the service provider to charge a higher price.

The combination of core product and supplementary services is often referred to as the *augmented product*. (Lovelock et al, 2004)

Delivery process

The third component deals with the procedures used to deliver both the core product and each of the supplementary services. The design of the service offering must address how the various service components are delivered to the customer, the nature of the customer's role in those processes, how long delivery lasts, and the prescribed level and style of service to be offered.

Each of the four categories of processes –people processing, possession processing, mental stimulus processing, and information processing --have different implications for customer involvement, operational procedures, the degree of customer contact with service personnel and facilities, and requirements for supplementary services. (Lovelock et al, 2004)

Documenting the Delivery Sequence over Time

A fourth design component that product planners must address is the probable sequence in which customers will use each of the core and supplementary services and the approximate length of time that will be required in each instance. (Lovelock et al, 2004)

The Services Marketing Mix

The 4 Ps – (Product, Price, Promotion and Place) of the Marketing mix are not enough to capture the distinctive nature of services as they are strategies used for products (McCarthy, 1960). In case of services, three more Ps are exhibited in the process of

service creation and consumption, i.e., : physical environment, process and people in order to capture the service performance. (Lovelock et al, 2004)

These 7Ps of services marketing represent a set of interrelated decision variables facing managers of service organizations. (Booms et al, 1981). They are as follows:

- *Product Elements*

  Managers must select the features of both the core product–either a good or a service – and the bundle of supplementary service elements surrounding it, with reference to the benefits desired by customers and how well competing products perform.

- *Place and Time*

  Delivering product elements to customers involves decisions on the place and time of delivery, as well as on the methods and channels used. Delivery may involve physical or electronic distribution channels or both, depending on the nature of the service being provided. Speed and convenience of place and time for the customer are becoming important determinants in service delivery strategy.

- *Promotion and Education*

  Effective communication is imperative for any marketing program, wherein it plays three vital roles: providing needed information and advice, persuading target customers of the merits of a specific product, and encouraging them to take action at specific times. In services marketing, most communication is educational in nature, especially for new customers. (Lovelock et al, 2004)

- *Price and Other User Outlays*

  This component addresses management of all the outlays incurred by customers in obtaining benefits from the service product. Consequently, services marketing strategy is not limited to the traditional pricing tasks of determining the selling price to customers, setting margins for any intermediaries, and establishing credit terms. Marketers must understand and, where feasible, seek to minimize other outlays that customers are likely to incur in purchasing and using a service. These outlays may include additional monetary costs (such as travel expenses to a service location), time expenditures, unwanted mental and physical effort, and exposure to negative sensory experiences.

- *Physical Environment*

  The appearance of buildings, landscaping, vehicles, interior furnishing, equipment, staff members, signs, printed materials, and other visible cues all provide tangible evidence of a firm's service quality. Service firms need to manage physical evidence carefully, as it can have a profound impact on customers' impressions.

- *Process*

  Creating and delivering product elements to customers require the design and implementation of effective processes. Badly designed processes often lead to slow, bureaucratic and ineffective service delivery, and result in dissatisfied customers.

- *People*

  Many services depend on direct interaction between customers and a firm's employees. The nature of these interactions, strongly influences the customer's perceptions of service quality. (Hartline et al, 1996); (Lovelock et al, 2004)

Service Factory Design

The nature of customer involvement often varies sharply among the four categories of service processes namely, people processing, possession processing, information processing and mental stimulus processing.

When customers visit a service factory which is unavoidable in case of people processing services, their satisfaction will be influenced by such factors as the appearance and features of both exterior and interior service facilities, encounters with service personnel, interactions with self-service equipment, and the characteristics and behavior of other customers. When the nature of the service requires customers to be physically present throughout delivery, the process must be designed with them in mind, from the moment they arrive at the service factory. (Lovelock et al, 2004)

Alternative Channels for Service Delivery

Unlike the situation in people-processing services, managers responsible for possession-processing, mental stimulus-processing, and information–processing services do not require customers to visit a service factory. Instead, these managers may be able to offer a choice from one of several alternative delivery channels. Possibilities include, letting customers come to a user-friendly factory, limiting contact to a small retail office, or "back office" that is separate from the main factory, coming to the customer's home or office, and, conducting business via phone, fax, e-mail or a Web site. Both physical and electronic channels allow customers and suppliers to conduct service transactions at arm's length.

Electronic distribution channels offer even more convenience, as transportation time can be eliminated. For instance, using telecommunication links, engineers in a central facility, which could be located in another corner of the world, may be able to identify problems in defective computers and software at distant customer locations and transmit electronic signals to correct the defects. (Lovelock et al, 2004)

Rethinking service–delivery procedures for all but people–processing services may allow a firm to get customers out of the factory and deliver the service at arm's length, wherein the design and location of the factory can focus on purely operational priorities. The chances of success in such an endeavor will depend on how well the customer accepts the new approach which in turn will be enhanced if the new procedures are user friendly, cost-effective, and offer customers greater convenience. (Lovelock et al, 2004)

Distributing Services

Delivering a service to customers involves decisions about where, when, and how. The rapid growth of the Internet and now also broadband mobile communications means that service marketing strategy must address issues of place, cyberspace, and time, paying at least as much attention to speed, scheduling, and electronic access as to the more traditional notion of physical location and logistics. (Lovelock et al, 2004)

Distribution In a Services Context

In the services context, experiences are generated and hence cannot be shipped and stored. Informational transactions in services are increasingly conducted via electronic, not physical, channels. In a typical sales cycle, distribution embraces three interrelated elements: (Light, 1986); (Lovelock et al, 2004)

- *Information and promotion flow* – The objective is to get the customer interested in buying the service
- *Negotiation flow* - The objective is to sell the right to use a service
- *Product flow* - Many services, especially those involving people or possession processing, require physical facilities for delivery. In this case, the distribution strategy requires development of a network of local sites. In the case of Information-processing services, such as Internet banking transactions, or remote medical consultations as in the case of Telemedicine; the product flow can be undertaken via electronic channels, using one or more centralized physical sites.

The Type of Contact: Options For Service Delivery

Decisions on where, when and how to deliver service have an important impact on the nature of customers' service experiences because they determine the types of encounters, if any, with service personnel and the price and other costs incurred to obtain the service.

Several factors shape distribution and delivery strategies. The main question is whether the nature of the service or the firm's positioning strategy requires customers to be in direct physical contact with its personnel, equipment, and facilities. This is inevitable for people-processing services but optional for other categories. Customers can visit the facilities of

the service organization, or the latter can send personnel and equipment to customer' own sites. Alternatively, transactions between provider and customer can be completed across multiple locations through the use of either telecommunications or physical channels of distribution. (Light, 1986); (Lovelock et al, 2004)

- *Customers Visit the Service Site*

  The convenience of service factory locations and operational schedules assumes great importance when a customer has to be physically present – either throughout service delivery or even only to initiate and terminate the transaction. The tradition of having customers visit the service site for services other than in the people-processing category is now being challenged by advances in telecommunications and business logistics, which are leading to a shift to services delivered at arm's length.

- *Service Providers Go to Their Customers - In this case, the supplier visits the customer.*

- *Service Transaction Is Conducted at Arm's Length* - Dealing with a service firm through arm's-length transactions may mean that a customer never sees the service facilities and never meets the service personnel face-to-face. An important consequence is that the number of service encounters tends to be fewer; those encounters that do take place with service personnel are more likely to be made by telephone or even more remotely, by mail, fax or e-mail, for example service delivered through call centres. (Lovelock et al, 2004)

In remote health care service, (i.e. Telemedicine), the *Customers Visit the Service Site* (i.e. the Tele healthcare center). The location of the *Service Factory* (i.e., Telemedicine center) is in the geographical vicinity of the patient. High contact services involve personal visits by customers to the service facility. Customers are actively involved with the service organization and its personnel during service delivery. As the customer (i.e. the patient) physically visits the Service Factory, this part of the service is a *high contact people–processing* service. This would be a part of the *Supplementary service* in remote health care services, which together with the *Core service* forms the complete service.

On the other hand, the *Core Service Transaction Is Conducted at Arm's Length*, as the specialist doctor offering the core service (medical consultation) is not physically present at the Service Site. This information is delivered via impersonal channel of service delivery through telecommunication networks. Hence this part of the service is a *low contact information processing* service.

Service Environments

Service environments, also called servicescapes, (Bitner, 1992), relate to the style and appearance of the physical surroundings and other experiential elements encountered by customers at service delivery sites. (Lovelock et al, 2004)

Physical evidence is the environment in which the service is delivered and where the firm and the customer interact, and includes any tangible aspects that facilitate performance of

the service. This physical facility is called servicescape and it encompasses the actual physical facility where the service is performed, delivered, and consumed. Physical evidence is particularly important in the context of *credence services.*

For organizations delivering high-contact services, the design of the physical environment and the way in which tasks are performed by customer-contact personnel jointly play a vital role in creating a particular corporate identity and shaping the nature of the customer's experience. The service environment and its accompanying atmosphere can impact customer behavior, both during the purchase and post purchase. Since services are intangible, customers often rely on tangible cues, or physical evidence, to evaluate the service before its purchase and to assess their satisfaction with the service during and after consumption.

Consumer Responses To Service Environments

The field of environmental psychology studies how people respond to environments. Services marketing academics have applied the theories from this field to better understand and manage customer responses to service environments. (Lovelock et al, 2004)

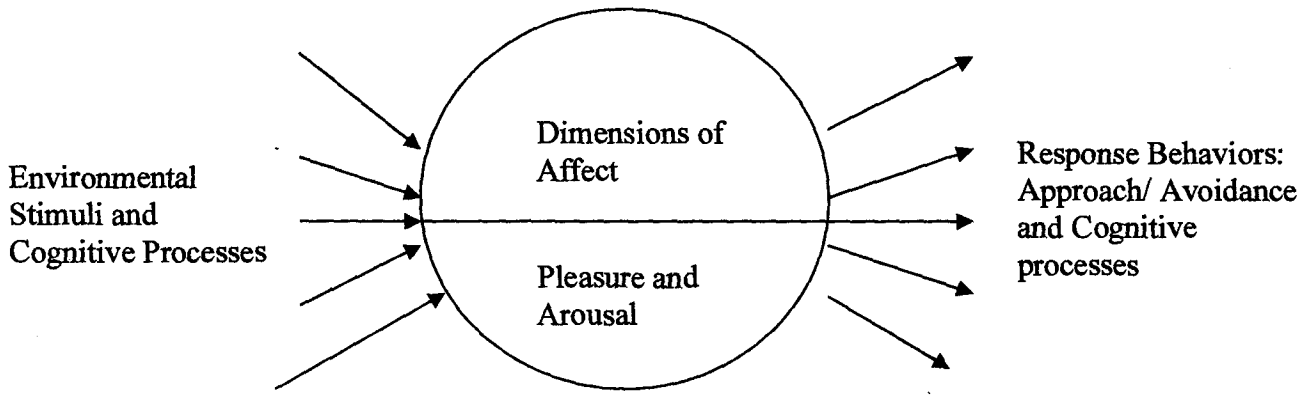
Feelings as a Key Driver of Customer Responses to Service Environments - The Mehrabian-Russell Stimulus-Response Model

Exhibit 2-1 below shows a simple yet fundamental model of how people respond to environments. The model, adopted from environmental psychology, holds that the

environment and its conscious and unconscious perception and interpretation influence how people feel in that environment. (Donovan and Rossiter, 1982)

For example, an environment is not avoided simply because there are a lot of people around; rather, one is deterred by the unpleasant feeling of crowding, of people being in the way, of lacking perceived control, and of not being able to get what one wants as quickly as one wishes to. (Lovelock et al, 2004)

Exhibit 2-1: The Mehrabian Russell Stimulus- Response Model



In environmental psychology, the typical outcome variable is approach or avoidance of an environment. In services marketing, one can add a long list of additional outcomes that a firm might want to manage, including how much money people spend while on the firm's premises and how satisfied people are with the service experience after they have left the environment. (Donovan and Rossiter, 1982); (Lovelock et al, 2004)

Relating the above Mehrabian Russell Stimulus- Response Model to remote health care service we see that the service delivered is the same, but the service environment is different as an impersonal channel is used for the delivery of the same core service of health care. The outcome variable in this case is the satisfaction of the patient with the service experience during the service encounter and after he has left the environment.

How Confirmation or Disconfirmation of Expectations Relate to Satisfaction:

Customer Perceptions

Customers perceive services in terms of the quality of the service and how satisfied they are overall with their experiences. (Zeithaml et al, 2000)

Satisfaction can be defined as an attitude like judgment following a purchase act or a series of consumer product interactions. (Yi, 1990); (Lovelock et al, 2004)

Most studies are based on the theory that the confirmation /disconfirmation of preconsumption expectations is the essential determinant of satisfaction. (Oliver et al, 2001); (Lovelock et al, 2004)

This means customers have certain service standards in mind prior to consumption, observe service performance and compare it to their standards, and then form satisfaction judgments based on this comparison. The resulting judgment is labeled negative disconfirmation if the service is worse than expected, positive disconfirmation if better than expected, and simple confirmation if as expected. (Oliver et al, 1997); (Lovelock et al, 2004)

When there is substantial positive disconfirmation, along with pleasure and an element of surprise, customers are likely to be delighted. (Lovelock et al, 2004)

Importance of customer satisfaction to service managers

It has been proved that there are strategic links between the level of customer satisfaction and a firm's overall performance. Researchers from the University of Michigan found that on average, every 1 percent increase in customer satisfaction is associated with 2.37 percent increase in a firm's return on investment (ROI). (Anderson and Mittal, 2000). And Susan Fournier and David Mick state:

"Customer satisfaction is central to the marketing concept ....(I)t is now common to find mission statements designed around the satisfaction notion, marketing plans and incentive programs that target satisfaction as a goal, and consumer communications that trumpet awards for satisfaction achievements in the market place." (Fournier and Mick, 1999). (Lovelock et al, 2004)

Service Quality

Service quality is a critical component of customer perceptions. In case of pure services, service quality will be the dominant element in customer's evaluations. Researchers argue that the distinctive nature of services requires a distinctive approach to defining and measuring service quality. Since customers are often involved in service production – particularly in people-processing services - a distinction needs to be drawn between the

process of service delivery (what Christian Gronroos calls functional quality) and the actual output of the service (what he calls technical quality).(Gronroos, 1990);(Zeithaml et al, 2000)

Gronroos (Gronroos, 1990) also suggests that the perceived quality of a service is the result of an evaluation process in which customers compare their perceptions of service delivery and its outcome against what they expect.

Service Quality Dimensions

Consumers consider five dimensions in their assessment of service quality (Parsuraman et al, 1988); (Zeithaml et al, 2000)

Reliability: Delivering on Promises. Of the five dimensions, reliability has been consistently shown to be the most important determinant of perceptions of service quality (Zeithaml and Mary Jo Bitner, 2000). Reliability is defined as the ability to perform the promised service dependably and accurately.

Responsiveness: Being willing to help. Responsiveness is the willingness of the service provider to help customers and to provide prompt service. Responsiveness is communicated by the length of the time they have to wait for assistance, answers to questions, or attention to problems. Responsiveness also includes the notion of flexibility and ability to customize the service to customer needs.

Assurance: Inspiring Trust and Confidence. Assurance is defined as employees' knowledge and courtesy and the ability of the firm and its employees to inspire trust and confidence.

This dimension is likely to be particularly important for services that the customer perceives as involving high risk and/or about which they feel uncertain about their ability to evaluate outcomes, for example in medical services.

Empathy: Treating Customers as Individuals. Empathy is defined as the caring individualized attention the firm provides its customers. The essence of empathy is conveying, through personalized or customized service, that customers are unique and special. Customers want to feel understood by and important to firms that provide service to them.

Tangibles: Representing the service physically Tangibles are defined as the appearance of physical facilities, equipment, personnel, and communication materials. All of these provide physical representation or images of the service that customers, particularly new customers, will use to evaluate quality. (Zeithamal et al, 2000)

Satisfaction versus Quality

Consensus is growing that the two concepts are fundamentally different in terms of their underlying causes and outcomes. (Parasuraman et al, 1994); (Oliver, 1994) While they have certain things in common, satisfaction is generally viewed as a broader concept while service quality assessment focuses specifically on dimensions of service. Based on this view, perceived service quality is a component of customer satisfaction. (Zeithamal et al, 2000)

Service quality is a focused evaluation that reflects the customer's perception of specific dimensions of service: reliability, responsiveness, assurance, empathy and tangibles.

Satisfaction on the other hand, is more inclusive: It is influenced by perceptions of service quality, product quality and price as well as situational factors and personal factors.

Customer Satisfaction

What is customer satisfaction?

According to Richard L. Oliver, Satisfaction is the consumer's fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provides a pleasurable level of consumption–related fulfillment.(Oliver et al, 2001);(Zeithamal et al, 2000)

Customer satisfaction will be influenced by specific product or service features and by perception of quality. Satisfaction will also be influenced by customer's emotional responses, their attributions and their perceptions of equity. (Zeithamal et al, 2000)

- *Product or service features*

  Customer satisfaction with a product or service is influenced significantly by the customer's evaluation of product or service features. (Oliver et al, 1997)

  Hence in conducting satisfaction studies like this one, the important features and attributes for the service are determined though field study and interviews. Then the perception of these features as well as overall service satisfaction are measured.

- *Consumer Emotions*

  Customer's emotions can also affect their perceptions of satisfaction with products and services. (Price et al, 1995) Specific emotions may also be induced by the

consumption experience itself, influencing a consumer's satisfaction with the service.

- *Perceptions of Equity or Fairness*

  Customers' satisfaction is also influenced by perceptions of equity and fairness. (Clemmer et al , 1996); (Zeithamal et al, 2000)

Health care service

Customer in Health care service

"In health care services given by the doctor, the customer is the patient. He is a different type of customer, from the customer of other services in many ways. Health care service is a high involvement service in which the patient is directly involved in the provider client interaction where the service is produced and simultaneously consumed by the patient. However due to lack of technical knowledge the patient does not know what he is getting from the doctor even after experiencing the service. As such a patient is somewhat different from other customers who consume other types of services in view of the credence qualities of health care services."(Zeithmal et al, 1996); (Salgaonkar, 2006)

"The behavior of a patient as a consumer of health care services is determined by various unavoidable factors like the physical condition of the patient, the illness involved and the seriousness of the case etc. Most often, the need for availing health care services from a provider i.e. doctor, becomes immediate and unavoidable as it may involve the question of life or death of the patient, whereas in case of a consumer of other services, the decision of consumption may be avoided or postponed for a future date depending upon the wishes of

the individual. Such a possibility does not exist in health care sector as usually the avoidance or postponement of consumption decision will lead to very serious implications for the health of the patient, either resulting in death or seriously debilitated health" (Salgaonkar, 2006).

"A patient is a consumer of such services where he has no choice of the type and quality of treatment given. He has no choice as regards the diagnosis, the various tests, scans etc. to be carried out. Also there is no choice about the medicine prescribed. Moreover a patient, unless he happens to be from the medical/paramedical field, does not posses sufficient knowledge about the disease and the treatment and has to depend fully on the doctor for his well-being. A patient is in the hands and control of the doctor as is a child in the mother's. To use the term coined by Anderson and Manning (1990) a patient may be called a "Vulnerable Consumer". They define vulnerable consumers as "those who are at a disadvantage in exchange relationship where that disadvantage is attributable to characteristics that are largely not controllable by them at the time of transaction". (Anderson and Manning, 1990); (Salgaonkar, 2006)

"In the course of health care service delivery, many a times the doctor lacks human warmth, concentration being more on medical treatment. The concept of "patient" and "illness" to the doctor are contrary to that of the patient himself. To the doctor, illness is a disease process that can be measured and understood through laboratory tests and clinical observations (Toombs, 1992), whereas to the patient, illness is a disrupted life (Korsch and Harding, 1998). The doctor's focus is more on keeping pace with the rapid advances in medical science than on trying to understand the patient's feelings and

concerns. They do not see the role of doctor as listener, but instead view their function more as a human 'car mechanic': find it and fix it (Rotter & Hall, 1992). Such behavior on the part of the doctor may make the patient psychologically irritated and more sick and unhappy with the whole experience. These aspects are more relevant in health care services in view of the high personal involvement (physical and mental) of the patient in the service encounter"(Salgaonkar, 2006).

"Moreover there are varied situations and conditions that a patient may encounter in health care service. Similarly there are various specialties of the doctors available ranging from general practitioners to the super specialists. Likewise a patient may seek medical advice and treatment in varied situations, like in routine ailments, in emergency situations, in treatment of chronic aliments, life-threatening ailments etc"(Salgaonkar, 2006).

"All these aspects clearly suggest that the healthcare service is different from the other types of services and the patient, who is the customer of health care services, is a different type of customer from customers of other types of services"(Salgaonkar, 2006).

Credence Qualities of Healthcare Service

"The health care service is a high involvement and credence type service (Zeithaml et al, 1996). Moreover, due to the absence of the tangibility of the service, one cannot make a thorough evaluation of the service received; and since such an evaluation often seems desirable, customers would tend to evaluate what they can sense (Gronroos, 1978).

That is surrogates or "cues' are used to help them determine the provider's capability" (Shostack, 1977). (Salgaonkar, 2006)

"Health care is a complex service involving a doctor dealing with the very "person" of the patient. A patient, unlike a customer of other services, does not know what he should get and what he is getting from the doctor even after experiencing the service (credence qualities). He does not have the technical ability to judge what exactly he is receiving from the doctor, and as such relies heavily upon other cues, such as aspects of the interaction, and the process dimension of the service delivery to evaluate and form his opinion about the service (Parasuraman et al, 1985). The service encounters between the doctor and the patient thus become very important in the evaluation of the health care service". (Salgaonkar, 2006)

Patient Satisfaction

Health care is now entering an age of "accountable consumerism" in which patients demand service excellence (Vinn, 2000). To meet the expectations of their patients, clinicians will need to continually improve quality and increase patient satisfaction. Issues that are important to patients, aspects that influence patients' satisfaction and decisions to return and their perceptions of quality, have to be identified to focus on improvement. (Drain et al, 2001). Increasingly, the measure of patient satisfaction is viewed as important in outcomes research and quality improvement efforts. (Ganey & Drain, 1998); (Pichert et al, 1998); (Press, 1993); (Press, Ganey,&Malone, 1992).

In addition to increased patient compliance and health outcomes, patient satisfaction has been linked to greater service utilization and risk management (Burroughs et al, 1999). As a result, managed care organizations are placing greater emphasis on patient-perceived outcomes measures, such as satisfaction and functional status (Kaldenberg & Malone, 1997).

Dissatisfied patients are less likely to return to a provider or to seek treatment at all; so patient dissatisfaction can have a devastating effect on a health care provider's retention efforts (Bendall & Powers, 1995).

In a study by Rubin et al., (1993), patient satisfaction levels clearly predicted patients' switching behavior. (Rubin et al, 1993)

Patient satisfaction can be considered with the framework of Donabedian's (1988) three markers of health care quality: structure (e.g. hospital resources and facilities), process (e.g. longer and more informative medical consultations) and outcomes of care (e.g. higher levels of patient adherence to health recommendations and higher levels of health and well-being). (Donabedian, 1988); (McCarthy et al, 2000)

All the studies conducted on patient satisfaction are in face-to-face encounters, whereas this research aims to study patient satisfaction in remote service encounters.

Justification for Research

Patient satisfaction with healthcare has received a great deal of research attention over the past two decades. This proliferation of research can be attributed to the associations that have been found between levels of patient satisfaction and a number of outcome variables. In fact, it has been repeatedly demonstrated that patients who rate themselves as more satisfied tend to be more compliant with treatment recommendations, (Aharony et al, 1993); (Ley, 1982); (Ley, 1988); (Sherbourne et al, 1992); (Winefield et al, 1995), are more apt to return to their provider for future treatment, (Aharony et al, 1993); (Roghman et al, 1979); (Zastowny et al, 1989), and are less likely to file malpractice suits. (Hickson et al, 1994); (Levinson et al, 1997); (Hailey et al, 2000)

Given these rather consistent research findings, one may wonder why patient satisfaction should be further examined. To address this question, it should be noted that patients exhibit certain unique characteristics that may make it difficult, and perhaps erroneous, to assume that previous findings apply to this population in the absence of any research evidence.

A problem arises when customers are asked to evaluate services that are high in credence characteristics, such as medical diagnosis of complex cases, which customers find difficult to evaluate even after delivery is completed. A natural tendency in such situations is for clients or patients to use process factors and tangible cues as proxies to evaluate the service. Process factors include customers' feelings about the providers' personal style and satisfaction levels with those supplementary elements that they are competent to evaluate.

As a result, customers' perceptions of core service may be strongly influenced by their evaluation of process attributes and tangible elements of the service – a halo effect. (Wirtz, 2003)

Although research in the health care area has been conducted in a variety of medical settings, including family practice clinics, hospitals, and oncology wards, this is the very first attempt to conduct research in remote health care centres where the core service of health care is delivered through an impersonal channel of service delivery.

Research Issues

In situations, where the service is a high involvement and high complexity service, the customer requires handholding, reassurance, from the service provider.

Social and interpersonal bonds are developed between consumer and provider, in face-to-face service delivery, which is not possible in remote service delivery as the provider is oblivious to the personal details of the customer, his occupation, his family etc.

Hence out of the five Service Quality dimensions developed by A Parasuraman, *assurance* and *empathy* take a back seat in a remote service encounter.

> *Assurance* is about inspiring trust and confidence. Assurance is defined as employees' knowledge and courtesy and the ability of the firm and its employees to inspire trust and confidence. This dimension is likely to be particularly important

for services that the customer perceives as involving high risk and/or about which they feel uncertain about their ability to evaluate outcomes, for example in medical services.

In remote service encounters, as there is no face-to-face contact between consumer and provider, it is difficult for the provider to inspire trust and confidence, especially when the customer perceives the service as high risk service, due to the high complexity of the service and due to the high involvement of the customer.

Empathy: Treating Customers as Individuals. Empathy is defined as the caring individualized attention the firm provides its customers. The essence of empathy is conveying, through personalized or customized service, that customers are unique and special. Customers want to feel understood by and important to firms that provide service to them.

In non face-to-face situations, it is difficult to give individualized personal attention to the customers, as the core service provider is not physically present in the service factory.

Hence, we see that channel of service delivery is important for customer satisfaction when the service is a high involvement high complexity service.

Research Objectives

[I] *To research the impact of channel on customer satisfaction in high involvement high complexity situations when the service is delivered through impersonal channels.*

[II] *To research the impact of channel on customer satisfaction in high involvement high complexity situations when the service is delivered directly.*

For objective [I] *Telemedicine health care center offers a conducive environment to undertake the research study.*

For objective [II] *a traditional face-to-face health care setting would provide this environment.*

How channel impacts customer satisfaction in high involvement high complexity situations in non face-to-face encounters is not yet researched since these services have been recently introduced in India where this research study is based. There is no research done on the impact of channel on patient satisfaction in health care services.

It is thus very clear that there is a gap in the existing literature as far as the above are concerned, and as such, a study in this direction is essential.

Understanding effect of complexity (in this case disease complexity as perceived by the patient) on customer satisfaction (in this case patient satisfaction) when the core service (i.e. health care which is a high involvement service) is provided through an impersonal

channel of service delivery will be very useful to providers (i.e. doctors) and customers (i.e. patients) in remote health care settings.

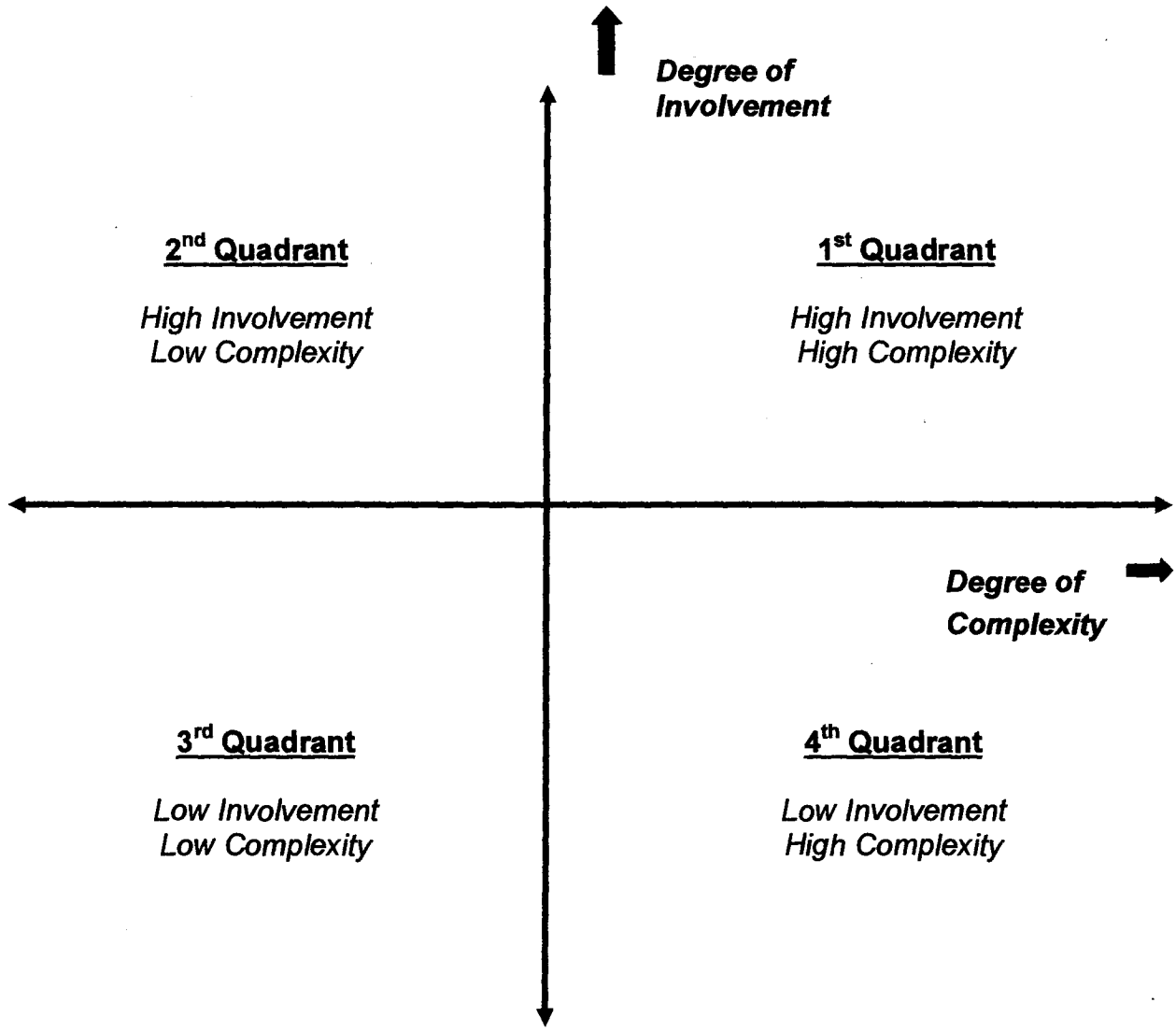
Hence the outcome of this research will contribute to the existing body of knowledge on customer satisfaction in high involvement high complexity services.

Conceptual Framework

Thus given the high involvement and complexity scenario in healthcare service as discussed above, one can conceptualize the following grid.

Consider a 2 dimensional grid. On one dimension there is degree of consumer involvement with a service. On the other dimension there is degree of complexity of the service (as perceived by the consumer). Exhibit 2-2: Involvement-Complexity grid

Exhibit 2-2: Involvement-Complexity grid



Hence the two dimensional grid will have four quadrants:

1. First Quadrant - High Involvement and High Complexity

This quadrant includes services like health care, which are high involvement services, and this will be where most high complexity disease treatments will belong.

2. Second Quadrant - High Involvement and Low Complexity

This quadrant includes again services like health care, which are high involvement services, and this is where most low complexity disease treatments will belong.

3. Third Quadrant - Low Involvement and low Complexity

Services like ironing of clothes, watering of plants, that are low involvement and simple will belong in the third quadrant.

4. Fourth Quadrant - Low Involvement and High Complexity

Services like maintenance of computer systems, servicing of automobiles which are low involvement but highly complex, belong in the fourth quadrant.

This study deals with only the two high involvement quadrants, as healthcare is a high involvement and credence type service. (Zeithaml et al, 1996) Health care is a complex service involving a doctor dealing with the very "person" of the patient. (Parasuraman et al, 1985).

Existing literature does not discuss or reveal any aspects of the above grid of which 2 quadrants (1st and 2nd Quadrant) are of significance to the study, which is being undertaken. Since the area (1st and 2nd Quadrant) has not been researched, there exists, a possibility of theoretical contribution to the literature in services.

Existing literature does not say anything about customer satisfaction and the factors that are related to it causatively in each of these quadrants. As there is no mention of such a classification, there is a research gap. The researcher intends to fill this gap in literature by researching the impact of channel on customer satisfaction in the high involvement high complexity situations when a] the service is delivered through impersonal channels and there is no face-to-face contact between provider and consumer & b] the service is delivered directly when there is face-to-face contact between provider and consumer.

The hypotheses and methodology to explore the above are outlined in the following chapter.

Chapter III: Formulation of Hypotheses, Methodology and Research Procedures

As seen from the previous chapter, there exists a gap in the literature available in the area of patient satisfaction, complexity and channel of service delivery. The aspect of patient satisfaction and channel of service delivery related to health care research has been obtained from literature and is used in the formulation of hypotheses. The aspect of complexity and its effect on patient satisfaction has been culled out through a study using the *critical incident technique* across 40 respondents in the remote health care setting.

Critical Incident Technique (CIT)

In CIT customers provide verbatim stories about satisfying and dissatisfying service encounters they have experienced. Studies using critical incident technique are appropriate to address many different research objectives. Critical incidents are powerful and vivid in eliciting customer requirements, particularly when the research is focused on behavioral dimensions at the transaction level. (Parasuraman et al, 1990); (Zeithamal et al, 2000)

"The principal strength of the CIT is that the customer perspective is used as a basis for identifying detailed information about satisfaction/dissatisfaction (Ruyter and Scholl, 1994). Critical incidents are defined by Bitner et al (Bitner et al, 1990) as "specific interactions between customers and service firm employees that are specially satisfying or specially dissatisfying." In their research they have used only those incidents which customers found memorable because they were particularly satisfying or dissatisfying, as examining such memorable critical incidents was likely to afford insight into the

fundamental factors leading to customers dissatisfactory/satisfactory evaluations. By the same logic the CIT method can be used successfully to identify the various underlying factors that affect patient satisfaction/dissatisfaction" (Salgaonkar, 2006)

"The CIT is adapted by (Bitner et al, 1990) in the marketing context to identify the sources of both satisfactory and dissatisfactory service encounters from the customer's point of view. Service encounter is defined as "the dyadic interaction between a customer and service provider" (Surprenant and Solomon, 1987). This definition focuses on the interpersonal element in the service provider-customer interaction. Similarly (Shostack, 1985) defines the service encounter somewhat more broadly as " a period of time during which a consumer directly interacts with a service." This definition encompasses all aspects of the service firm with which the consumer may interact, including its personnel, its physical facilities and other visible elements"(Salgaonkar, 2006).

"This thesis adopts the definition of "critical incident" and the four criteria, out of which an incident is required to meet at least one to become eligible for the study, as laid down by Bitner et al. (Bitner et al, 1990) The four critical incident criteria are; (1) involving customer – employee interaction, (2) being very satisfying or dissatisfying from the customer's point of view, (3) being a discrete episode, and (4) having sufficient detail to be visualised by the interviewer"(Salgaonkar, 2006).

Unstructured interviews with 40 patients were conducted at remote health care centres. An open-ended questionnaire was employed to collect the data from the patient respondents. The patients were also asked to narrate a critical incident that occurred during the service delivery, which according to them has affected their opinion about the doctor.

"The following questions were asked to all respondents in order to get critical incidents and answers were recorded. These questions are based on the framework of questions used by (Bitner et al, 1990), suitably modified to suit the subject under research. One new question has also been added"(Salgaonkar, 2006).

- "Think of a time/incident when, as a patient, you had a particularly satisfying/dissatisfying interaction with the doctor that has affected your opinion about the doctor.
- When did the incident happen?
- What specific circumstances led up to this situation?
- Exactly what did the doctor say or do?
- What resulted in making you feel that the interaction was satisfying/dissatisfying?
- How has it affected your opinion about the doctor"? (Salgaonkar, 2006)

"By providing verbatim stories about satisfying and dissatisfying service encounters they have experienced, customers reveal a great deal about what they desire in service encounters. The real benefit in using the critical incident technique is to identify customer requirements for individual service encounters"(Salgaonkar, 2006).

Out of the 40 interviews that were conducted, samples of 13 incidents that are representative of the variety of responses are given below.

Sample Incidents

1] I was suffering from severe chest pain, and was desperate for a doctor to check me, but I had no option but to approach the telemedicine centre, and get prescription from a doctor sitting far away from the clinic. The medicines he prescribed did benefit me in the long run, but it did not give me the immediate relief provided by a doctor when he personally examines you.

2] I am suffering from heart problems for the past one year, I did go to the city initially for treatment, but the cost of transportation was draining out the family income hence I have no choice but to frequent a telemedicine centre for my medical follow up. However I am not very comfortable with the doctor prescribing the medicines without even touching me. How can a doctor without even touching me know what is my condition and prescribe the appropriate medicines? I mean there is nothing like the personal touch of a doctor.

3] I am suffering from high blood pressure, with wide fluctuations in my blood pressure at times. I take around five tablets for controlling my pressure daily. Recently my pressure shot up again, causing me great uneasiness and inconvenience. On the suggestion of my neighbour, I went to seek medical help from the telemedicine centre. The doctor prescribed to me some additional medicines, which I was very apprehensive about. Although the tablets did help to control my blood pressure, I still do have fluctuations in the BP. I would

have preferred if the doctor had checked me thoroughly and then given me the prescription which he thought best.

4] I am suffering from diabetes for the past five years. Recently I developed a wound on my leg, which was not healing. I visited many local doctors and tried different local remedies but it only ended up being worse. Yesterday I got fever and so today I went to the telemedicine centre, as I heard that the doctor is very good. But this is something very new for me. How can a patient like me be treated by a doctor who has not even seen my wound?

5] I had some chest pain, at first I ignored it, but as my father had suffered a severe heart attack, my wife insisted that I should visit this centre. This is my first visit to the centre and the doctor has asked me to conduct quite a few tests, which will cost me quite a bit. I hope it will be of use to me, and give me relief from my condition, infact I am thinking of going to the city to be checked by a doctor properly when my son comes back next month.

6] I do not have any faith in this doctor. He might be highly qualified as the people say he is, but tell me how can a doctor just look at you, ask you some questions and then prescribe the medicines that too when you are suffering from a critical disease? This is the first time I have seen a medical examination like this one. But what can I do, I am a poor man and I cannot go every month to the city to be checked.

7] When I heard a cardiologist would be coming to this clinic, I was delighted as my wife was forcing me to take a trip to the city to be checked. I thought that this would save me the

trouble and cost of transportation involved. But when I went to the centre, I was taken by surprise by this doctor sitting in some other state, as I was told; asking me my symptoms and history. Anyway, I will see how things get along. It would have been better if the doctor was here in person.

8] This is the third time I have come to this telemedicine centre. Everytime the doctor has prescribed me certain medicines I have got temporary relief from the severe migraines that I suffer from. However I still do get these terrible headaches and the uneasiness that accompanies it. I often wonder, that if the doctor without checking me can provide temporary relief to me, May be if he had to personally check me I would be permanently cured from these terrible migraines.

9] Yes, the medicines prescribed by the doctor have definitely helped me. I really do not mind if the doctor is sitting far away as long as he takes the time to listen to my problems and is qualified to detect my illness. I have been suffering from terrible pains in my knees I approached almost every local doctor and tried every local medicine but it did not give me any relief. It was so bad that I felt I would never be able to walk again. Out of desperation as a last resort I went to this centre. When I told the doctor my symptoms, he immediately told me my problem and stated that I needed to use some knee support after looking at my X-ray. Today, exactly after one month I can walk decently and the doctor has told me it will still improve further.

10] When I went to the centre I was feeling dizzy and getting hot flashes. I just cannot explain how horrible I was feeling. The doctor asked my wife some questions and found that my pressure was very high. He told me that I am suffering from high blood pressure and that I will have to take the medicines for life. He also told me never to miss the tablets or to stop them abruptly without his permission. Today I am much better and the doctor has even told me that he may lessen my tablets if my pressure remains under control.

11] I hope that the doctor could spend more time with me explaining my condition and calming my fears. I mean I get sleepless nights wondering if the doctor is giving me the right medicines, as I am told I am suffering from high sugar levels in my blood. I am following exactly what the doctor has asked me to do. But I still keep unwell and suffer from anxiety about my health.

12] I do not feel I am visiting a doctor's clinic. There is no such thing like the usual check up, which we usually find in a normal clinic. I am so used to having the doctor being personally there doing everything. But I am getting used to this also, and may be after sometime I will get used to these types of clinics.

13] Earlier we did not have any specialist doctor. Today although he is not personally available, through this telemedicine centre we are able to get his opinion, which to me is very valuable. He does tell us to undertake many tests but he also prescribes medicines that have benefited me greatly. In fact I am trying to convince my husband to come to this centre.

It is seen from the above, while the customers were discussing the service encounters, the issue regarding the complexity of the disease and the delivery of core service through impersonal channel of service delivery is prominent.

The basic reason why remote consultation is given to the patient is because, a highly qualified specialist doctor is absent in the area, and the patient in question requires the attention of a specialist doctor, as he is suffering from something complex, which cannot be diagnosed or treated by a general practitioner.

If highly qualified specialist doctors were available in the area, then the core service of health care would have been delivered directly, and not through an impersonal channel of service delivery.

The patient has to either go to a health care center, where consultations are given remotely through impersonal channel of service delivery or travel to the city to visit the specialist doctor personally. Hence, it is critical that the patient be satisfied with his service encounter at the locally situated telemedicine center.

From the above it is found that disease complexity may have an impact on patient satisfaction, especially when the health care service is provided through an impersonal channel of service delivery, and especially when the customer in this case is a vulnerable consumer (patient).

Formulation of Hypotheses

A closer relationship exists when there is face-to-face interaction between customers and providers. Although the service itself remains important, value is added by people and social processes. Interactions may include negotiations and sharing of insights in both directions. This type of relationship has long existed in many local environments, ranging from community banks to health care centers, where buyer and seller know and trust each other. It is also commonly found in many business-to-business services. Both the firm and the customer are prepared to invest resources (including time) to develop a mutually beneficial relationship. This investment may include time spent sharing and recording information.

Customers many times need a continuing dialog focused on an understanding of their needs. Customers are also motivated by continuity of contact, wanting to deal with a specific person on a regular basis. (Lovelock et al, 1992).

As service companies grow larger and make increasing use of such technologies as interactive web sites and self-service equipment, maintaining meaningful relationships with customers becomes a significant marketing challenge.

Consumer Responses To Service Environments

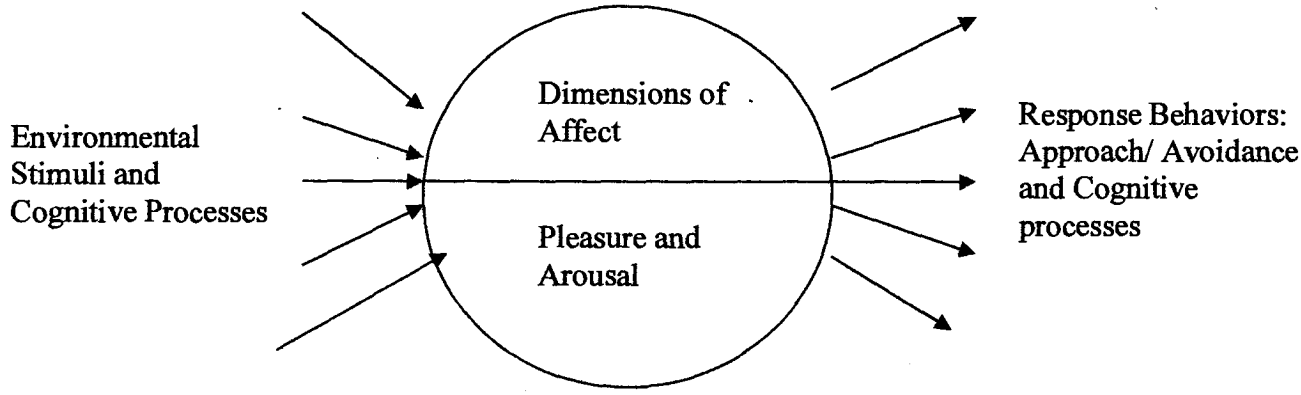
The field of environmental psychology studies how people respond to environments. Services marketing academics have applied the theories from this field to better understand and manage customer responses to service environments. (Lovelock et al, 2004)

Feelings as a Key Driver of Customer Responses to Service Environments - The Mehrabian-Russell Stimulus-Response Model

Exhibit 3-1 below shows a simple yet fundamental model of how people respond to environments. The model, adopted from environmental psychology, holds that the environment and its conscious and unconscious perception and interpretation influence how people feel in that environment. (Donovan and Rossiter, 1982); (Lovelock et al, 2004) People's feelings, in turn, drive their responses to that environment. Feelings are central to the model, which posits that feelings, rather than perceptions or thoughts, drive behavior.

For example, an environment is not avoided simply because there are a lot of people around; rather, one is deterred by the unpleasant feeling of crowding, of people being in the way, of lacking perceived control, and of not being able to get what one wants as quickly as one wishes to. (Lovelock et al, 2004)

Exhibit 3-1: The Mehrabian Russell Stimulus- Response Model



In environmental psychology, the typical outcome variable is approach or avoidance of an environment. In services marketing, one can add a long list of additional outcomes that a firm might want to manage, including how much money people spend while on the firm's premises and how satisfied people are with the service experience after they have left the environment. (Donovan and Rossiter, 1982); (Lovelock et al, 2004)

Thomas Cooper, an expert on mass communication, emphasizes that trust is a critical component of communication. Trust in many cultures involves either touch or direct vision, something that is not achieved with technology. (Zeithaml et al, 2000)

The customer in this case is a patient, who is a vulnerable consumer, (Anderson and Manning, 1990) as he is suffering from a complex disease that needs to be treated. There are no specialist doctors in the geographical vicinity who can treat him, hence he has to come to a Tele medicine center, where he is treated through remote medical consultation. Hence the service delivered is the same, but the service environment is different as an impersonal channel is used for the delivery of the same core service of health care.

The hypotheses are formulated based on this Stimulus- Response Model taken from environmental psychology, where the outcome variable is how satisfied the consumer is with the service experience. The aspect of complexity and its effect on patient satisfaction that has been culled out through the above mentioned critical incident technique has been incorporated in the hypotheses. The hypotheses are formulated based on two types of

service environments - impersonal channel of service delivery and face-to-face service delivery.

Hypotheses

H1: In High Involvement and High Complexity situations, customer satisfaction is impacted by channel of service delivery, i.e. service environment.

H1 a: In High Involvement situations, higher levels of complexity lead to lower levels of customer satisfaction, when service is delivered through impersonal channel of service delivery

H1 b: In High Involvement situations, higher levels of complexity lead to increased levels of customer satisfaction when service is delivered directly that is when there is face-to-face contact between consumer and provider.

H2: In High Involvement and Low Complexity situations; the effect of complexity on customer satisfaction will be negligible

H2 a: In High Involvement and Low Complexity situations; the effect of complexity on customer satisfaction will be negligible, when service is delivered through impersonal channel of service delivery.

H2 b: In High Involvement and Low Complexity situations; the effect of complexity on customer satisfaction will be negligible, when there is face-to-face contact between consumer and provider.

Health care service is a High Involvement and credence type service (Zeithaml et al, 1996).

Health care is a complex service involving a doctor dealing with the very "person" of the patient. (Parasuraman et al, 1985).

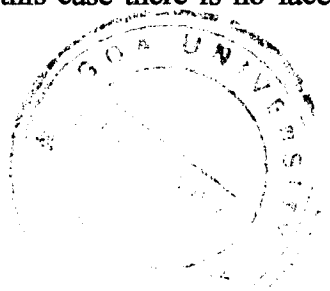
In this situation, Complexity refers to Disease complexity as perceived by the patient, and it is rated on a 5-point likert scale.

Customer is the patient, and hence he/she is a vulnerable consumer. Vulnerable consumers are defined as "those who are at a disadvantage in exchange relationship where that disadvantage is attributable to characteristics that are largely not controllable by them at the time of transaction". (Anderson and Manning, 1990)

There are two types of service delivery environments.

One is the direct channel where there is face-to-face contact, between consumer and provider.

The other is the impersonal channel of service delivery where the core service of health care is delivered using Telecommunications. In this case there is no face-to-face contact, between consumer and provider.



The above hypotheses, which have been formulated, are taken for empirical testing using quantitative research.

Quantitative Research

Quantitative Research clearly is important in assessing and improving service delivery and design. Quantitative research gives managers data from which they can make broad inferences about customer groups. These studies are essential for quantifying customer satisfaction, the importance of service attributes, the extent of service quality gaps, and perceptions of value. (Parasuraman et al, 1990); (Zeithaml et al, 2000)

They also provide the organization with yardsticks to evaluate and track the firm's service performance. Finally, the results from empirical studies often trigger the need to conduct further qualitative research. Empirical data can highlight specific service deficiencies for deeper qualitative probing. (Parasuraman et al, 1990); (Zeithaml et al, 2000)

Research Methods

Post transaction Surveys

In this method, customers are asked a list of questions immediately after a particular transaction about their satisfaction with the transaction and contact personnel with whom they interacted. Because the surveys are administered to the customers, and are timed to occur close to service transactions, these surveys are useful in identifying sources of dissatisfaction and satisfaction. Post transaction Surveys have been used to collect the data for this research. (Zeithaml et al, 2000)

Structured questionnaires make key assumptions about what people are conscious of or can recall about their behavior and what they are willing to explain to researchers about their opinions.

Questionnaire Design

Customer Satisfaction Questionnaire

A customer satisfaction index is a composite of the perceptual satisfaction or service quality measures collected in an organization. (Zeithaml et al, 2000)

Development of Survey Instrument

Health care service quality, while related to other service industries, has unique dimensions. The results of the study by Oswald suggest that consumers and observers use two factors--perceived facilities related quality and perceived human factor-related quality--to gauge the quality of health care services. For example, the cleanliness of the facilities and the responsiveness of the hospital staff are possibly more identifiable and more "tangible" in nature. The study also shows that both facilities-related quality and human factor performance-related quality influence customer satisfaction. Hence both these two service quality dimensions affect customer satisfaction. (Oswald et al, 1998)

Hence, the following Survey Instruments have been used to gather data from the patients

The first survey is the Patient Satisfaction Questionnaire used to measure Patient Satisfaction.

The second and third surveys are questionnaires designed to incorporate the various factors which would evaluate the service quality of the service experience as perceived by the customer which in turn would have an effect on the overall patient satisfaction as measured by the first Patient Satisfaction Questionnaire.

Hence Patient Satisfaction measured by the first questionnaire, is the dependent variable. The second and third questionnaires measure the independent variables, which are the various factors pertaining to the service and which influence patient satisfaction for indirect and direct channel respectively.

[I] *Measure for Patient Satisfaction*

A 1988 Gallop poll showed that customer satisfaction was influenced more by the concern shown by staff members than by the clinical care. After the delivery of acceptable treatment, patients' perceptions of medical quality are greatly affected by the remaining non-clinical issues. (Oswald et al, 1998)

The most powerful predictor for client satisfaction with government services was provider behavior, especially respect and politeness. For patients this aspect was much more important than the technical competence of the provider. (Aldana et al, 2001)

A 10-item questionnaire on Patient Satisfaction was administered to the patients immediately after the service encounter. This indicated how satisfied the patients were with the experience. A single "overall satisfaction" or "overall quality of care" question may not adequately capture the range of experiences a patient has during an encounter or measure that patient's satisfaction with the service and care received. Therefore, overall satisfaction was defined as the average of responses to all questions.

The 10-item Patient Satisfaction Questionnaire (PSQ) adopted for use in the study project was based on a measure of patient satisfaction developed by DiMatteo and Hays for a family practice center. The Questionnaire contained 25 items that made up 4 dimensions related to patient satisfaction (general satisfaction, satisfaction with communication of adequate information, satisfaction with affective style, and satisfaction with technical competence of the provider). (DiMatteo and Hays, 1988); (Hailey et al, 2000)

The questionnaire was then limited to 10 items by Hailey because of the physicians' and patient's time constraints. To insure coverage of each dimension, items were selected from each dimension according to interscale correlations and those items were selected with the highest interscale correlation. 1 item was selected from the general satisfaction dimension, 4 items from the communication dimension, 4 items from the affective style dimension, and 1 item from the technical competence dimension. Hailey modified the wordings of the items but retained their content. (Hailey et al, 2000)

Each item is rated using a 10-point Likert-type scale from 1 to 10, with higher scores reflecting greater satisfaction. Ratings were summed on each item to create a composite index of patient satisfaction, which can range from 10 to 100.

As a reliability estimate, internal consistency has already been calculated of the PSQ by Hailey. Cronbach's alpha was used on the data to test the internal consistency of the Patient Satisfaction Questionnaire. An alpha value of greater than 0.70 is usually taken to indicate adequate internal consistency. Cronbach's alpha was 0.96 which indicated a satisfactory level of internal consistency. (Hailey et al, 2000)

The Patient Satisfaction Questionnaire was administered to the patients after the service encounter where the core service of health care was delivered through impersonal channel of service delivery. The Patient Satisfaction Questionnaire is given below. The Patient Satisfaction Questionnaire was used to measure Patient Satisfaction, since this instrument has already been tested for its reliability and validity.

This Patient Satisfaction Questionnaire was also used for collecting data from patients using direct channel of service delivery where there is face-to-face contact between consumer and provider.

The Patient Satisfaction Questionnaire (PSQ) for Patients' Expressions of their Satisfaction with health care service

For each question, circle the number that best indicates how satisfied you were with:

1. The amount of time the healthcare provider spent with you

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

2. The amount of information that the healthcare provider gave you about your medical condition

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

3. The amount of information the healthcare provider gave you about preventive practices

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

4. The degree of respect with which the healthcare provider treated you

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

5. The relief from worries about your medical condition that the healthcare provider provided

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

6. The amount of time the healthcare provider allotted to hearing what you had to say

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

7. The degree of attention the healthcare provider paid when you talked to him/her

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

8. The degree of kindness and consideration to feelings that the healthcare provider displayed

Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

For the next two questions, circle the number that indicates:

9. How much you would like to have this healthcare provider be your permanent healthcare provider

Not at all 1 2 3 4 5 6 7 8 9 10 Extremely

10. How confident you are in this healthcare provider

Not at all confident 1 2 3 4 5 6 7 8 9 10 Extremely confident

[II] *Questionnaire regarding attributes of Remote health care service i.e. Telemedicine*

Service attributes of health care were culled out from literature and interviews with patients to develop this questionnaire for impersonal channel of service delivery. These service attributes of health care determine perception of service quality.

The Evidence of Service

As services are intangible, customers are searching for evidence of service in every interaction they have with an organization. (Zeithaml et al, 2000)

The three major categories of evidence as experienced by the customer are people, process, and physical evidence. These categories together represent the service and provide the evidence that tangibilizes the offering. The elements comprising the evidence of service are a subset of the new marketing mix elements of services marketing. The new mix elements essentially are the evidence of service in each "moment of truth". (Bitner et al, 1993); (Zeithaml et al, 2000)

All of these evidence elements, or a subset of them, are present in every service encounter a customer has with a service firm and are critically important in managing service encounter quality and creating customer satisfaction. (Zeithaml et al, 2000)

Matching customer needs to the firm's capabilities is vital. Managers must think carefully about how customer needs relate to such operational elements as speed and quality, the times when service is available, the firm's capacity to serve many customers simultaneously, and the physical features and appearance of service facilities. Managers

also need to consider how well their service personnel can meet the expectations of specific types of customers, in terms of both personal style and technical competence.

There are various factors, which affect patient satisfaction. Various provider and patient characteristics and many other factors like situational variables and case characteristics affect patient satisfaction. In order to see the effect of theses characteristics on patient satisfaction when the core service of health care is delivered through impersonal channel of service delivery (Telemedicine), the following attributes are taken into consideration while designing the instrument.

These items come under the 7Ps of services marketing, representing a set of control variables of service organizations, which are used to capture the distinctive nature of services.

The provider characteristics are as follows

1] Location of Telemedicine Centre is measured on a five-point scale depending on the time taken to reach the center from less than an hour to more than a day. This item was included in the questionnaire, as convenient location of the Health care center has been found to have an effect on Patient Satisfaction from literature review. (Uzun et al, 2001). *This comes under the 2nd P (Place and Time) of the Services Marketing Mix.*

2] Cost of Tele-consultation is measured on a five-point scale from very low to extremely high.

3] Cost of Medicines prescribed through Telemedicine treatment is marked on a five-point scale from very low to extremely high

The items 2] & 3] have been included on the basis of Groocock's definition which considers the relationship between customers' requirements and cost. Cost is usually a constraint in the provision of health services. (Nursing Management, 2002)

Both these items come under the 4th P (Price and other User Outlays) of the Services Marketing Mix

4] Physical environment of Telemedicine center in terms of Cleanliness, Air-conditioning, Sterility and Comfort is marked on a five-point scale from Excellent to very poor.

This item has been included to incorporate the theory of Servicescapes. *This comes under the 5th P (Physical Environment) of the Services Marketing Mix.*

Service environments, also called servicescapes, (Bitner, 1992) relate to the style and appearance of the physical surroundings and other experiential elements encountered by customers at service delivery sites.

For organizations delivering high contact services, the design of the physical environment and the way in which tasks are performed by customer contact personnel jointly play a vital role in creating a particular identity and shaping the nature of the customer's experience. Thus the service environment and its accompanying atmosphere impact customer satisfaction.

Physical evidence is particularly important for communicating about credence services, but it is also important for services that are dominated by experience attributes like hospitals. In consumer research, it is known that the design of the servicescape can influence customer choices, expectations, satisfaction, and other behaviors. (Bitner, 1992)

5] Speed of medical response regarding Patient illness through Telemedicine consultation is marked on a five-point scale from same day to more than a month.

This item has been included as the Time factor assumes great importance. *This comes under the 2nd P (Place and Time) of the Services Marketing Mix.*

Many services are delivered in real time while customers are physically present. There are limits as to how long people are willing to spend at the service factory, as customers place a value on their time, and some people are willing to pay more for faster service.
Increasingly busy customers expect service to be available at times when it suits them rather than when it suits the service company.

In general, today's customers are increasingly time sensitive, so that speed is often seen as a key element in good service and as a way to attract new customers. Service marketers need to understand customers' time constraints and priorities, which may vary from one market segment to another, and to look for ways to compete on speed and to minimize waiting times.

6] Time spent in waiting room before Telemedicine Consultation is marked on a five-point scale from less than three hours to more than ten hours. *This comes under the 2nd P (Place and Time) of the Services Marketing Mix.*

Waiting time is an indicator of service quality in that it examines several of Maxwell's (1984) six dimensions of quality, including the effectiveness and efficiency of the outpatient service to patients. Waiting times have constantly been a problem for outpatient clinics. Waiting refers to the (clock) time from scheduled appointment to consultation on the day of an outpatient department visit (National Audit Office, 1992). Difficulties with the latter can include overbooking patients or scheduling appointment priorities on a 'first-come first-served' basis (Hart, 1996); (McCarthy et al, 2000)

Long waiting times in outpatient clinics appear to be a consistent and major source of dissatisfaction (Evans & Wakefield, 1964); (Hart, 1995); (Jones et al, 1987); (McCarthy et al, 2000)

7] Availability of Telemedicine provider during medical emergencies is marked on a five-point scale from all the time to 25% of the time. *This comes under the 2nd P (Place and Time) of the Services Marketing Mix.*

Availability can pose a problem as waiting lists may be maintained by internal referral in the hospital itself and by referrals from accident and emergency departments and General Practitioners (Mason, 1992); (McCarthy et al, 2000)

8] Usefulness of information provided by the Telemedicine Clinic regarding the medical condition of the patient is marked on a five-point scale from extremely useful to not at all useful

This item has been included as it is found from literature that patients who perceive that they have received adequate information regarding diagnosis, prognosis, and treatment options tend to be more satisfied. (Lewis, 1994); (Ong et al, 1995); (Frederickson, 1995); (Greenhow et al, 1998). The failure to communicate information about the condition and treatment options is the most frequent source of patient dissatisfaction. (Hudak and Wright, 2000)

Furthermore, patients tend to be more satisfied when physicians convey information in a manner that is more understandable to them and when the physicians use speech that is consistent with patients' usage. (Rowland-Morin et al, 1990) Patient satisfaction is related to patient perceptions of physicians' interpersonal and communication skills. (Buller et al, 1987); (Philips, 1996) Some evidence suggests that patients tend to be more satisfied when providers treat the medical relationship as a mutual partnership, (Cecil, 1998); (Anderson et al, 1993) when providers show some interest in patients' personal lives, (Dunfield, 1996) and when providers address the patients by their first names, as opposed to titles and last names. (Twemlow et al, 1995)

9] Technical inconveniences faced during Telemedicine treatment is marked on a five-point scale from none to 10 or more. This variable has been included in the questionnaire, as it found from a study by Bethel and Ridder that Technical aspects affect Patient Satisfaction. (Bethel & Ridder, 1994)

10] Experience level of doctors offering Tele-consultation marked on a five-point scale from high to low

11] Reputation of the doctors offering Tele-consultation marked on a five-point scale from high to low

Items 10] and 11] have been included to incorporate the assurance aspect in the service, whether the customer that is the patient has trust and confidence in the service provider. In this case the provider is the doctor who is giving the patient a medical consultation and treating him/her.

The Case characteristics are as follows

12] Health position of the patient at present marked on a five-point scale from very good to very bad.

13] Level of complexity of the disease being treated through Telemedicine i.e. Disease complexity is marked on a five point scale from Least Complex to Extremely Complex

14] Level of Urgency advised by doctor for Telemedicine treatment marked on a five-point scale from requiring immediate treatment to not at all urgent.

15] Number of diagnostic procedures advised after Tele-consultation marked on a five-point scale from none to 10 or more.

The case characteristics mentioned in items 12], 13], 14] and 15] have been included to obtain a holistic view of the medical condition of the patient, and see their effects on satisfaction.

The patient characteristics are as follows

16] & 17] Cost of long distance transport and local transport as perceived by the patient marked on a five-point scale from very low to extremely high. *This comes under the 4th P (Price and other user outlays) of the Services Marketing Mix.*

This item has been included keeping in mind the relationship between customers' requirements and cost developed by Groocock. Cost is usually a constraint in the provision of health services. (Nursing Management, 2002)

18] Level of comfort with Telemedicine treatment procedure marked on a five-point scale from extremely comfortable to not at all comfortable. *This comes under the 6th P (Process) of the Services Marketing Mix.*

19] Familiarity with concept of Telemedicine marked on a five-point scale from Extremely familiar to Not at all familiar.

The items 18] & 19] have been included for the purpose of Behavioral segmentation - Dividing buyers to form groups based on knowledge, attitude, uses, or responses to a service. Patients and their carers are concerned about the nature and comfort of their

environment. All these will differ for different groups of patients with different expectations and cultural backgrounds. (Nursing Management, 2002)

20] Level of Comfort with the new technology used in Telemedicine marked on a five-point scale from extremely comfortable to not at all comfortable. This aspect has been included in the questionnaire as it is found from a study by Bethel and Rider that the technology aspect has an impact on patient satisfaction. (Bethel & Ridder, 1994) *This comes under the 6th P (Process) of the Services Marketing Mix.*

The patient characteristics also include the demographic variables

This is for the purpose of Market Segmentation.

21] Age of patient,

23] Monthly income of patient marked on a five-point scale from above 1 lakh to below 10,000

The variables 21], 22] and 23] have been considered for *Demographic segmentation* to divide the market to form groups on variables such as age, gender and income.

24] Education level of patient from Post Graduate/Professional to primary school has been considered for *Behavioral segmentation* to divide the buyers to form groups based on knowledge.

25] Type of locale patient hails from marked on a five-point scale from village, suburb, Town, city and Metro has been considered for *Geographic segmentation* to divide the market to form different geographic units.

The situational variables are as follows

26] Mode of long distance transport chosen by patient to avail of Telemedicine treatment is marked on a five-point scale from personal car, taxi, bus, train and plane.

27] Mode of local transport chosen by patient to avail of Telemedicine treatment marked on a five-point scale from walking, bus rickshaw, taxi and personal car

The above two variables 26] and 27] of mode of transport have been considered for *Psychographic segmentation* to divide the market to form groups based on social class, life style, or personality characteristics.

28] Frequency of visits to Telemedicine clinic marked on a five-point scale from once or more in a week to not even once a year

29] Time spent in a Tele-consultation marked on a five-point scale from more than an hour to less than 15 minutes.

Increased patient satisfaction has also been associated with longer medical visits; (Lewis, 1994); (Greene et al, 1994); (Smith et al, 1981); with healthcare providers' giving patients an opportunity to express concerns and ask questions (Greene et al, 1994); and when physicians engage in more patient-centered activities, such as providing information and discussing potential treatment options, as opposed to more

physician-centered activities, such as asking questions of and giving directions to the patient. (Dunfield, 1996); (Roter et al, 1987). Providers who use closed questions and who frequently interrupt patients tend to have patients who are less satisfied and less compliant with physicians' advice. (Rabinowitz et al, 1994)

All the above 29 attributes are independent variables and can have an effect on patient satisfaction, as seen in the review of related literature.

Patient perceptions of Telemedicine health care should be assessed with a response scale which is methodologically sound. The Likert type response scale was ultimately chosen with the following basic response anchors : very poor , poor, fair, good and very good. The very poor- very good scale is balanced and parallel, so responses can be quantified and differences analyzed properly. Moreover, the scale addresses the issues of patients' typical reluctance to criticize their health care providers and of artificial score inflation found with the use of other scales. (Krosnick, 1999)

Keeping in mind the hypotheses to be tested, and by taking the various variables identified, a structured closed-ended questionnaire was designed. This questionnaire has been designed to measure the independent variables which affect Patient Satisfaction. There are in all 29 independent variables, each measured by using a 5- point Likert Scale or a multiple-choice question.

Questionnaire for Tele-Medicine Research (Indirect Channel)

Code # : _____

Date:_____ **Day:** M T W T F **Age:** _____ **Gender :** O Male O Female

1. How do you rate your health position at present?
   O *Very Good* O *Good* O *Moderate* O *Bad* O *Very Bad*

2. What is the level of complexity of the disease being treated through telemedicine?
   O *Least Complex* O *Complex* O *Moderately Complex* O *Very Complex* O *Extremely Complex*

3. How urgently did your doctor advice Telemedicine Treatment?
   O *Require immediate treatment* O *Urgent* O *Moderately Urgent* O *Not so Urgent*
   O *Not at all Urgent*

4. How many times do you visit a Telemedicine Clinic?
   O *Once or more in a week* O *Once or twice a month* O *Once in three months* O *Once or twice a year* O *Not even once a year*

5. How much time does it take you to reach the city where the Telemedicine Centre is located?
   O *Less than 1 hour* O *1-3 hrs* O *Half a day* O *1 day* O *More than 1 day*

6. What mode of long distance transport did you use in order to avail of Telemedicine treatment?
   O *Personal car* O *Taxi* O *Bus* O *Train* O *Plane*

7. How do you rate the cost of long distance transport in order to avail of Telemedicine treatment?
   O *Very Low* O *Low* O *Moderate* O *High* O *Extremely High*

8. What mode of local transport did you use in order to avail of Telemedicine treatment?
   O *Walking* O *Bus* O *Rickshaw* O *Taxi* O *Personal car*

9. How do you rate the cost of local transport to avail of Telemedicine treatment?
   O *Very Low* O *Low* O *Moderate* O *High* O *Extremely High*

10. How do you rate the cost of medicines prescribed through Telemedicine treatment?
    O *Very Low* O *Low* O *Moderate* O *High* O *Extremely High*

11. How do you rate the cost of consultation for Telemedicine treatment?
    O *Very Low* O *Low* O *Moderate* O *High* O *Extremely High*

12. How do you rate the Physical Environment of your Telemedicine centre? (An environment, which can indicate "Patient Care" without undergoing the experience (for example like a hotel) in terms of Cleanliness, Air-conditioning, Sterility & Comfort.)
    O *Excellent* O *Very Good* O *Moderate* O *Poor* O *Very Poor*

13. How fast do you get medical feedback regarding your illness through Telemedicine consultation?
    O *On the same day* O *2-7 days* O *8- 15 days* O *15-30 days* O *>30 days*

14. In general, how much time do you spend in the waiting room before your telemedicine consultation?
    O *<= 3hrs* O *4 –5 hrs* O *6 –7 hrs* O *8 –9 hrs* O *>= 10 hrs*

15. In general, how much time do you spend in a telemedicine consultation?
O *More than 1 hour* O *1 hour* O *30 –45 mins* O *15 –30 mins* O *Less than 15 mins*

16. How many diagnostic procedures have you been asked to undertake after your telemedicine consultation
O *None* O *1-3* O *4-6* O *7-9* O *10 or more*

17. How confident are you that your Telemedicine provider will be available to you during medical emergencies?
O *All the time* O *90% of the time* O *75% of the time* O *50% of the time* O *25% of the time*

18. How comfortable are you with the Telemedicine treatment procedure?
O *Extremely Comfortable* O *Reasonably Comfortable* O *Tolerable* O *Uncomfortable*
O *Not at all comfortable*

19. How useful was the information provided by the telemedicine clinic regarding your medical condition?
O *Extremely Useful* O *Useful* O *Moderately Useful* O *Not So Useful* O *Not at all Useful*

20. How familiar are you with the concept of telemedicine?
O *Extremely Familiar* O *Familiar* O *Moderately Familiar* O *Not So Familiar* O *Not at all Familiar*

21. How comfortable are you with the new Technology used in Telemedicine?
O *Extremely Comfortable* O *Reasonably Comfortable* O *Tolerable* O *Uncomfortable*
O *Not at all comfortable*

22. How many times have you faced any kind of technical inconveniences during your Telemedicine treatment?
O *None* O *1-3* O *4-6* O *7-9* O *10 or more*

23. What do you think is the experience level of the doctors who are treating you through telemedicine?
High *5* *4* *3* *2* *1* *Low*

24. What do you think is the reputation of the panel of doctors treating you through Telemedicine?
High *5* *4* *3* *2* *1* *Low*

25. What is your Educational level?
O *Post Graduate/ Professional* O *Graduate* O *SSC/ HSC* O *Non- Matric* O *Primary School*

26. Please indicate which type of locale you come from:
O *Village* O *Suburb* O *Town* O *City* O *Metro*

27. What is your monthly Income?
O *Above 1 Lakh* O *50,000 <= 1,00,000* O *25,000 < 50,000* O *10,000 < 25,000* O *below 10,000*

[III] *Questionnaire regarding attributes of face-to-face health care service*

The above remote health care service questionnaire was used to collect data from patients using the indirect channel. The above questionnaire was then suitably modified to collect data from patients using the direct channel where there is face-to-face contact between consumer and provider. Items pertaining to Telemedicine technology were deleted from the above questionnaire

Thus keeping in mind the hypotheses to be tested, and by taking the various variables identified, another structured closed-ended questionnaire was designed to be used when there is face-to-face contact between consumer and provider.

This questionnaire has been designed to measure the independent variables which affect Patient Satisfaction in face-to-face health care. There are in all 23 independent variables, each measured by using a 5- point Likert Scale or a multiple-choice question.

Questionnaire for Face-to-Face Health care Research (Direct Channel)

Code # : _____

Date:_____ **Day:** M T W T F **Age:** _____ **Gender :** O Male O Female

1. How do you rate your health position at present?
O *Very Good* O *Good* O *Moderate* O *Bad* O *Very Bad*

2. What is the level of complexity of the disease being treated?
O *Least Complex* O *Complex* O *Moderately Complex* O *Very Complex* O *Extremely Complex*

3. How urgently did your doctor advice Treatment?
O *Require immediate treatment* O *Urgent* O *Moderately Urgent* O *Not so Urgent* O *Not at all Urgent*

4. How many times do you visit the Clinic?
O *Once or more in a week* O *Once or twice a month* O *Once in three months* O *Once or twice a year* O *Not even once a year*

5. How much time does it take you to reach the city where the Health care Centre is located?
O *Less than 1 hour* O *1-3 hrs* O *Half a day* O *1 day* O *More than 1 day*

6. What mode of local transport did you use in order to avail of treatment?
O *Walking* O *Bus* O *Rickshaw* O *Taxi* O *Personal car*

7. How do you rate the cost of local transport to avail of medical treatment?
O *Very Low* O *Low* O *Moderate* O *High* O *Extremely High*

8. How do you rate the cost of medicines prescribed?
O *Very Low* O *Low* O *Moderate* O *High* O *Extremely High*

9. How do you rate the cost of medical consultation?
O *Very Low* O *Low* O *Moderate* O *High* O *Extremely High*

10. How do you rate the Physical Environment of your Health care centre? (An environment, which can indicate "Patient Care" without undergoing the experience (for example like a hotel) in terms of Cleanliness, Air-conditioning, Sterility & Comfort.)
O *Excellent* O *Very Good* O *Moderate* O *Poor* O *Very Poor*

11. How fast do you get medical feedback regarding your illness through consultation?
O *On the same day* O *2-7 days* O *8- 15 days* O *15-30 days* O *>30 days*

12. In general, how much time do you spend in the waiting room before your consultation?
O *<= 3hrs* O *4 –5 hrs* O *6 –7 hrs* O *8 –9 hrs* O *>= 10 hrs*

13. In general, how much time do you spend in a consultation?
O *More than 1 hour* O *1 hour* O *30 –45 mins* O *15 –30 mins* O *Less than 15 mins*

14. How many diagnostic procedures have you been asked to undertake after your consultation?
O *None* O *1-3* O *4-6* O *7-9* O *10 or more*

15. How confident are you that your Health care provider will be available to you during medical emergencies?

O *All the time* O *90% of the time* O *75% of the time* O *50% of the time* O *25% of the time*

16. How useful was the information provided by the health care provider regarding your medical condition?

O *Extremely Useful* O *Useful* O *Moderately Useful* O *Not So Useful* O *Not at all Useful*

17. What do you think is the experience level of the doctors who are treating you?

High 5 4 3 2 1 Low

18. What do you think is the reputation of the panel of doctors treating you?

High 5 4 3 2 1 Low

19. What is your Educational level?

O *Post Graduate/ Professional* O *Graduate* O *SSC/ HSC* O *Non- Matric* O *Primary School*

20. Please indicate which type of locale you come from:

O *Village* O *Suburb* O *Town* O *City* O *Metro*

21. What is your monthly Income?

O *Above 1 Lakh* O *50,000 <= 1,00,000* O *25,000 < 50,000* O *10,000 < 25,000* O *below 10,000*

Pre-testing of the Questionnaires

The questionnaires developed were pre-tested with twenty patients mainly to ascertain whether the words and phrases used in the questionnaire convey the same meaning as the researcher wanted to convey and also to check whether there is a smooth flow of questions.

Before initiating the data collection, the survey and questionnaires were submitted to the Health care service center authorities for review and only after receiving an approval from them, the surveys were administered.

Method

Sampling and Data Collection

An integral component of a research design is the sampling plan. Specifically, the sampling plan addresses three questions: whom to survey (the sampling unit), how many to survey (the sample size), and how to select them (the sampling procedure).

Sampling unit

In this research there are two sampling units –

- Patients availing of health care service through impersonal channel of service delivery (telemedicine)
- Patients availing of health care service through direct channel where there is face-to-face contact between patient and healthcare provider.

Sample size

The sample size chosen for each of the two sampling units is ***200***. Hence a total of ***400*** patients were surveyed.

Sampling procedure

A probability sample is chosen. Simple random sampling method is used where every member of the population has a known and equal chance of being selected.

On one hand, the *Patient Satisfaction Questionnaire* and the *Questionnaire for Tele-Medicine Research (Indirect Channel)* were administered to a sample of 200 patients availing of health care service through impersonal channel of service delivery (telemedicine).

On the other hand, the *Patient Satisfaction Questionnaire* and the *Questionnaire for Face-to-Face Health care Research (Direct Channel)* were administered to a sample of 200 patients availing of health care service through direct channel where there is face-to-face contact between patient and healthcare provider.

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.

- The *Questionnaire for Tele-Medicine Research (Indirect Channel)* measures the independent variables pertaining to remote health care service.

- The *Questionnaire for Face-to-Face Health care Research (Direct Channel)* measures the independent variables pertaining to face-to-face health care service.

Every patient was asked if he or she would be willing to participate in a confidential study of patient satisfaction that would in no way affect his or her healthcare.

The procedure involved the patient population but kept the healthcare provider blind about whether a particular patient was a study participant or not. It also caused minimal disruption of clinic routines.

Patients who expressed interest in the study were given a detailed explanation about the study which also stated that, although aggregate data would be provided to healthcare providers at the conclusion of the study, individual data would be confidential.

Patients after listening to the explanation told the researcher whether they were willing to participate. The refusal rate was extremely low (4 patients). At the end of the medical encounter, each patient was interviewed by the researcher, and the questionnaires were completed.

Preliminary Analyses

Statistical Inferential Analyses of data obtained from the above surveys were carried out using the SPSS software package version 11.0. The data from the questionnaires were tabulated, and analyzed using step-wise regression.

For the *Patient Satisfaction Questionnaire*, each of the 10 items was rated using a 10-point Likert-type scale from 1 to 10, with higher scores reflecting greater satisfaction. Ratings are summed on each item to create a composite index of patient satisfaction, which can range from 10 to 100. This composite index of patient satisfaction was used for entering in the regression analysis.

Stepwise Regression

Stepwise regression is a technique for choosing the variables, i.e., terms, to include in a multiple regression model. Forward stepwise regression starts with no model terms. At each step it adds the most statistically significant term (the one with the highest F statistic or lowest p-value) until there are none left.

An important assumption behind the method is that some input variables in a multiple regression do not have an important explanatory effect on the response. If this assumption is true, then it is a convenient simplification to keep only the statistically significant terms in the model.

One common problem in multiple regression analysis is multicollinearity of the input variables. The input variables may be as correlated with each other as they are with the response. If this is the case, the presence of one input variable in the model may mask the effect of another input. Stepwise regression might include different variables depending on the choice of starting model and inclusion strategy.

There are 3 basic assumptions while using Regression

- Normality
- Linearity
- No Multicollinearity

The issue of multicollinearity is checked through VIF scores and tolerance levels and it was found that there was no multicollinearity of the input variables. Normality and linearity are also tested through appropriate statistical techniques.

All these assumptions have been checked in this analysis

There are six scenarios, which are discussed below.

In order to explain the variation in the dependent variable (Patient Satisfaction), based on the variation in all other independent variables, regression analysis was carried out.

The multiple regression technique was used to arrive at the regression model in each scenario.

Tables shown below within each Scenario give the results of regression analysis for that particular scenario.

- Table A - The first table gives predictor variables entered and the dependent variable.
- Table B – The second table gives the regression model summary.
- Table C - The third table gives the results of analysis of variance.
- Table D - The last table gives the details of the coefficients of each predictor variable, the beta -values, the t - values and the significance level.
- The first chart is a histogram and checks for normality.
- The second chart is the Probability plot which checks for linearity.

Beta Weights - These are standardized regression coefficients used to compare the contribution to the explanation of the variance of the dependent variable within the model.

T tests and Significance - These are the tests of significance for each parameter estimate.

The significance levels have to be less than .05 for the parameter to be statistically significant.

Scenario 1 – Impersonal channel of Service delivery (Indirect Channel)

In Scenario 1, the following two questionnaires are tabulated. The sample size is 200 as mentioned earlier.

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Tele-Medicine Research (Indirect Channel)* measures the independent variables pertaining to remote health care service.

Composite scores on the PSQ ranged from 42 to 98 (M = 74.71, SD = 11.26). These scores indicated a high degree of overall patient satisfaction with the providers.

Descriptive Statistics (Indirect channel)

- 200 patient respondents
- 32% of the respondents were in the age group of 41-60, 20% in the age group of 25-40 as shown below in Exhibit 3-2
- 81% of the respondents were male and 19% were female as shown below in Exhibit 3-3
- 34% are SSC/HSC and 28.5% are graduate as shown in Exhibit 3-4
- 76% of the respondents earn less than 10,000 per month as shown below in Exhibit 3-5

Exhibit 3-2: Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<25	35	17.5	17.5	17.5
	25-40	40	20.0	20.0	37.5
	41-60	64	32.0	32.0	69.5
	61-80	37	18.5	18.5	88.0
	>80	24	12.0	12.0	100.0
	Total	200	100.0	100.0	

Exhibit 3-3: Sex

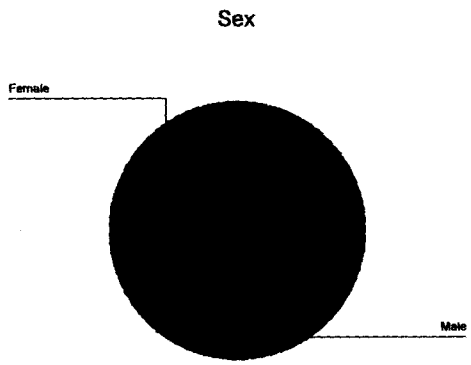
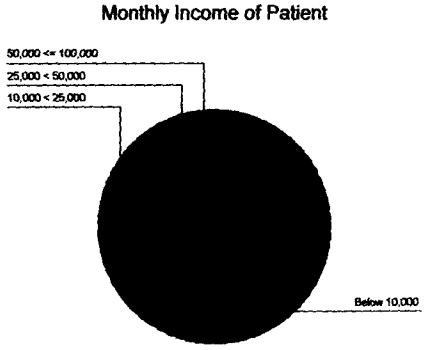


Exhibit 3-4: Educational level of patient

Educational level of Patient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary school	5	2.5	2.5	2.5
	Non Matric	19	9.5	9.5	12.0
	SSC/HSC	69	34.5	34.5	46.5
	Graduate/Diploma	57	28.5	28.5	75.0
	Post Graduate/ Professional	50	25.0	25.0	100.0
	Total	200	100.0	100.0	

Exhibit 3-5: Monthly Income of Patier



Regression Analysis for Scenario 1

Exhibit 3-6: Scenario 1 – Table A – Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Disease Complexity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Experience level of doctor treating you through TM		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Patient Satisfaction Index

From the Exhibit 3-6 Scenario 1 – Table A, it is seen that only two predictor variables have been entered. These are the independent variables.

- Disease Complexity
- Experience level of the doctor treating the patient through Telemedicine

The dependent variable is Patient Satisfaction.

Model Summary

Exhibit 3-7: Scenario 1 – Table B – Model Summary

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.722[a]	.522	.519	7.81113	.522	215.795	1	198	.000
2	.733[b]	.538	.533	7.69598	.016	6.970	1	197	.009

a. Predictors: (Constant), Disease Complexity

b. Predictors: (Constant), Disease Complexity, Experience level of doctor treating you through TM

c. Dependent Variable: Patient Satisfaction Index

It is seen from Exhibit 3-7: Scenario 1 – Table B that the R Square value is 0.538, which means the regression model explains about 54% of the total variance. In other words it means that about 54% of the variation in patient satisfaction is explained by these two independent variables in the model.

Exhibit 3-8: Scenario 1 – Table C – Analysis of Variance

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13166.446	1	13166.446	215.795	.000[a]
	Residual	12080.734	198	61.014		
	Total	25247.180	199			
2	Regression	13579.250	2	6789.625	114.635	.000[b]
	Residual	11667.930	197	59.228		
	Total	25247.180	199			

a. Predictors: (Constant), Disease Complexity

b. Predictors: (Constant), Disease Complexity, Experience level of doctor treating you through TM

c. Dependent Variable: Patient Satisfaction Index

The regression model is statistically significant as may be seen from the analysis of variance table i.e. Exhibit 3-8: Scenario 1 – Table C, which indicates the p-value to be 0.000, which means the model is statistically significant at a confidence level of 99.999%. It shows that the F-test is significant

Exhibit 3-9: Scenario 1 – Table D – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	94.468	1.454		64.972	.000		
	Disease Complexity	-7.359	.501	-.722	-14.690	.000	1.000	1.000
2	(Constant)	67.410	10.349		6.514	.000		
	Disease Complexity	-7.297	.494	-.716	-14.769	.000	.998	1.002
	Experience level of doctor treating you through TM	5.461	2.068	.128	2.640	.009	.998	1.002

a. Dependent Variable: Patient Satisfaction Index

As seen from the Exhibit 3-9: Scenario 1 – Table D – Coefficients, the two significant predictor variables are Disease Complexity with a Beta value –7.297 and Experience level of doctor with a Beta value of 5.461.

Checking for Multi-collinearity

From Exhibit 3-9, it is seen that the Variable Inflation Factor (VIF) is close to one (1.002) and tolerance values are greater than 0.2 (0.998) indicating that there is no multi-collinearity with other variables.

The regression model thus is represented as follows for Scenario 1

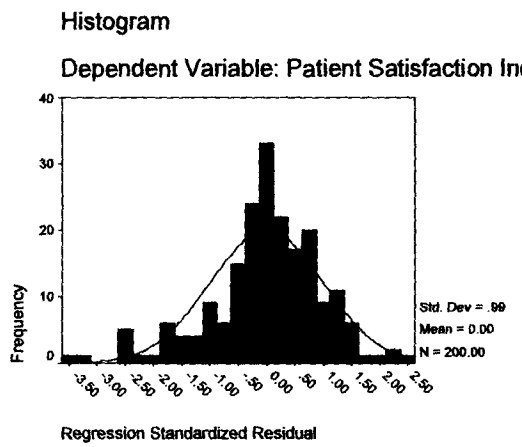
Patient Satisfaction = 67.41 – 7.297 (Disease Complexity)

+ 5.461 (Experience level of doctor)

This equation that is obtained means that patient satisfaction will decrease with the proportionate decrease in the 'Experience level of doctor' and with an increase in the 'complexity of the disease'.

Checking for Normality

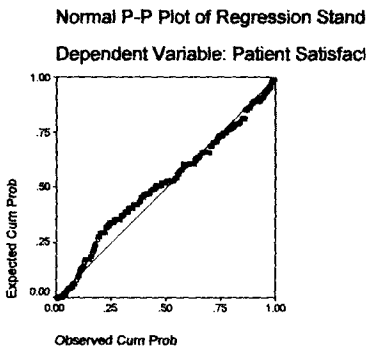
Exhibit 3-10: Scenario 1 - Histogram – Regression Standardized Residual



Error term should be normally distributed. Hence Histogram is drawn and a normal curve is superimposed on the histogram. The histogram in Exhibit 3-10 indicates that the error term is normally distributed

Checking for Linearity

Exhibit 3-11: Scenario 1 - Normal P-P Plot of Regression Standardized Residual



This is to check whether the variables are having a linear relationship or not.

The probability plot in Exhibit 3-11 shows that the variables have a linear relationship

Significant Variables of Patient Satisfaction

(a) Disease Complexity

Disease Complexity is one of the predictor variables. It is a Case characteristic. It has an unstandardized coefficient value of –7.297 and the " t- value" of -14.769 at a p - value of 0.000. The beta coefficient value is –0.716. It means 'Disease Complexity' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Disease Complexity is negatively related to Patient satisfaction. The more complex the disease, the less satisfied the patients are with impersonal channel of service delivery. In fact it has emerged as the most dominant variable affecting satisfaction explaining about 52% of the total variance in satisfaction

(b) Experience level of the doctor treating the patient through Telemedicine

Experience level of the doctor treating the patient through Telemedicine is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 5.461 and the " t- value" of 2.64 at a p - value of 0.009. The beta coefficient value is 0.128. It means 'Experience level of the doctor treating the patient through Telemedicine' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Experience level of the doctor treating the patient is positively related to Patient satisfaction. The more the Experience level of the doctor treating the patient, the more satisfied the patients are with the health care service.

Scenario 2 – Face-to-face Health care service delivery (Direct Channel)

In Scenario 2, the following two questionnaires are tabulated. The sample size is 200 as mentioned earlier.

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Face-to-Face Health care Research (Direct Channel)* measures the independent variables pertaining to face-to-face health care service.

Composite scores on the PSQ ranged from 14 to 100 (M = 73.19, SD = 12.39). These scores indicated a high degree of overall patient satisfaction with the providers.

Descriptive Statistics (Direct channel)

- 200 patient respondents
- 58.5% of the respondents were in the age group of 61-80, 22% in the age group of 41-60 as shown below in Exhibit 3-12
- 65.5% of the respondents were male and 34.5% were female as shown below in Exhibit 3-13
- 30% are Non matric and 24% are SSC/HSC as shown in Exhibit 3-14
- 60% of the respondents earn less than 10,000 per month as shown below in Exhibit 3-15

Exhibit 3-12: Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<25	15	7.5	7.5	7.5
	25-40	7	3.5	3.5	11.0
	41-60	44	22.0	22.0	33.0
	61-80	117	58.5	58.5	91.5
	>80	17	8.5	8.5	100.0
	Total	200	100.0	100.0	

Exhibit 3-13: Sex

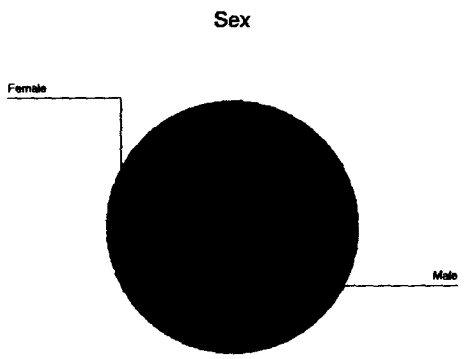
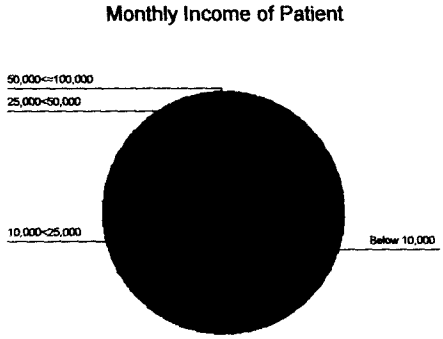


Exhibit 3-14: Educational level of Patient

Educational level of Patient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary School	52	26.0	26.0	26.0
	Non Matric	60	30.0	30.0	56.0
	SSC/HSC	48	24.0	24.0	80.0
	Graduate/Diploma	17	8.5	8.5	88.5
	Post Graduate/ Professional	23	11.5	11.5	100.0
	Total	200	100.0	100.0	

Exhibit 3-15: Monthly Income of Patient



Regression Analysis for Scenario 2

Exhibit 3-16: Scenario 2 – Table A – Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Reputation of doctor treating you		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Speed of Medical Feedback through Consultation		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Confidence that you will avail of health care provider in emergencies		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Time spent in Waiting room		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	Experience level of doctor treating you		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	No of Diagnostic Procedures advised		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Patient Satisfaction Index

From the Exhibit 3-16 Scenario 2 – Table A, it is seen that six predictor variables have been entered. These are the independent variables.

- Reputation of doctor treating the patient
- Speed of medical feedback through consultation
- Confidence that one will avail of health care provider in emergencies
- Time spent in waiting room
- Experience level of the doctor treating the patient
- Number of diagnostic procedures advised

The dependent variable is Patient Satisfaction.

Model Summary

Exhibit 3-17: Scenario 2 – Table B – Model Summary

Model Summary[g]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.708[a]	.501	.499	8.77759	.501	198.949	1	198	.000
2	.788[b]	.621	.617	7.67486	.119	61.985	1	197	.000
3	.820[c]	.672	.667	7.15199	.052	30.858	1	196	.000
4	.826[d]	.683	.677	7.05076	.011	6.669	1	195	.011
5	.833[e]	.695	.687	6.93787	.012	7.397	1	194	.007
6	.837[f]	.701	.692	6.88095	.007	4.223	1	193	.041

a. Predictors: (Constant), Reputation of doctor treating you

b. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation

c. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies

d. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies, Time spent in Waiting room

e. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies, Time spent in Waiting room, Experience level of doctor treating you

f. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies, Time spent in Waiting room, Experience level of doctor treating you, No of Diagnostic Procedures advised

g. Dependent Variable: Patient Satisfaction Index

It is seen from Exhibit 3-17: Scenario 2 – Table B that the R Square value is 0.701, which means the regression model explains about 70% of the total variance. In other words it

means that about 70% of the variation in patient satisfaction is explained by these six independent variables in the model.

Exhibit 3-18: Scenario 2 – Table C – Analysis of Variance

ANOVA[g]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15328.264	1	15328.264	198.949	.000[a]
	Residual	15255.131	198	77.046		
	Total	30583.395	199			
2	Regression	18979.404	2	9489.702	161.106	.000[b]
	Residual	11603.991	197	58.904		
	Total	30583.395	199			
3	Regression	20557.809	3	6852.603	133.968	.000[c]
	Residual	10025.586	196	51.151		
	Total	30583.395	199			
4	Regression	20889.323	4	5222.331	105.049	.000[d]
	Residual	9694.072	195	49.713		
	Total	30583.395	199			
5	Regression	21245.379	5	4249.076	88.276	.000[e]
	Residual	9338.016	194	48.134		
	Total	30583.395	199			
6	Regression	21445.341	6	3574.224	75.489	.000[f]
	Residual	9138.054	193	47.347		
	Total	30583.395	199			

a. Predictors: (Constant), Reputation of doctor treating you

b. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation

c. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies

d. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies, Time spent in Waiting room

e. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies, Time spent in Waiting room, Experience level of doctor treating you

f. Predictors: (Constant), Reputation of doctor treating you, Speed of Medical Feedback through Consultation, Confidence that you will avail of health care provider in emergencies, Time spent in Waiting room, Experience level of doctor treating you, No of Diagnostic Procedures advised

g. Dependent Variable: Patient Satisfaction Index

The regression model is statistically significant as may be seen from the analysis of variance table i.e. Exhibit 3-18: Scenario 2 – Table C, which indicates the p-value to be 0.000, which means the model is statistically significant at a confidence level of 99.999%. It shows that the F-test is significant

Exhibit 3-19: Scenario 2 – Table D – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	28.604	3.222		8.879	.000		
	Reputation of doctor treating you	11.478	.814	.708	14.105	.000	1.000	1.000
2	(Constant)	7.556	3.884		1.946	.053		
	Reputation of doctor treating you	7.534	.870	.465	8.659	.000	.669	1.496
	Speed of Medical Feedback through Consultation	8.210	1.043	.423	7.873	.000	.669	1.496
3	(Constant)	11.045	3.673		3.007	.003		
	Reputation of doctor treating you	5.021	.929	.310	5.407	.000	.510	1.961
	Speed of Medical Feedback through Consultation	6.503	1.019	.335	6.380	.000	.608	1.645
	Confidence that you will avail of health care provider in emergencies	3.866	.696	.315	5.555	.000	.521	1.919
4	(Constant)	15.184	3.960		3.834	.000		
	Reputation of doctor treating you	5.149	.917	.318	5.617	.000	.508	1.967
	Speed of Medical Feedback through Consultation	6.277	1.008	.323	6.224	.000	.603	1.658
	Confidence that you will avail of health care provider in emergencies	3.861	.686	.314	5.627	.000	.521	1.919
	Time spent in Waiting room	-2.143	.830	-.105	-2.582	.011	.991	1.009
5	(Constant)	12.560	4.014		3.129	.002		
	Reputation of doctor treating you	3.857	1.020	.238	3.783	.000	.398	2.513
	Speed of Medical Feedback through Consultation	5.932	1.000	.305	5.930	.000	.594	1.685
	Confidence that you will avail of health care provider in emergencies	3.352	.700	.273	4.786	.000	.484	2.066
	Time spent in Waiting room	-2.325	.819	-.113	-2.837	.005	.985	1.015
	Experience level of doctor treating you	2.790	1.026	.164	2.720	.007	.434	2.306
6	(Constant)	15.184	4.181		3.632	.000		
	Reputation of doctor treating you	4.099	1.018	.253	4.026	.000	.393	2.547
	Speed of Medical Feedback through Consultation	5.790	.995	.298	5.822	.000	.591	1.693
	Confidence that you will avail of health care provider in emergencies	3.304	.695	.269	4.753	.000	.483	2.069
	Time spent in Waiting room	-2.216	.814	-.108	-2.721	.007	.981	1.020
	Experience level of doctor treating you	2.814	1.017	.165	2.766	.006	.434	2.306
	No of Diagnostic Procedures advised	-1.144	.557	-.082	-2.055	.041	.974	1.026

a. Dependent Variable: Patient Satisfaction Index

As seen from the Exhibit 3-19: Scenario 2 – Table D – Coefficients, the six significant predictor variables are as follows

- Reputation of doctor treating the patient with Beta value 4.099
- Speed of medical feedback through consultation with Beta value 5.79
- Confidence that one will avail of health care provider in emergencies with Beta value 3.304
- Time spent in waiting room with Beta value –2.216
- Experience level of the doctor treating the patient with Beta value 2.814
- Number of diagnostic procedures advised with Beta value –1.144

Checking for Multi-collinearity

From Exhibit 3-19, it is seen that the Variable Inflation Factor (VIF) is close to one and tolerance values are greater than 0.2 indicating that there is no multi-collinearity with other variables.

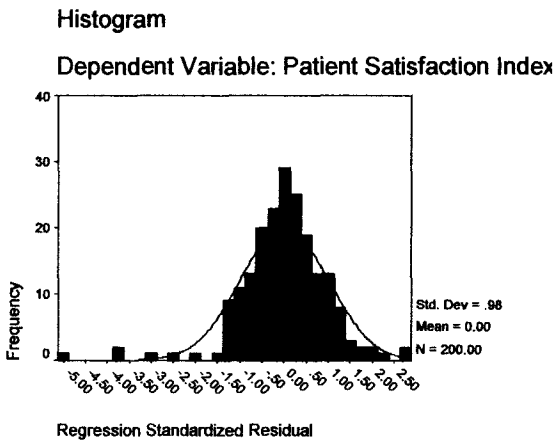
The regression model thus is represented as follows for Scenario 2

Patient Satisfaction = 15.184 + 4.099 (Reputation of doctor)
+ 5.79 (Speed of medical feedback through consultation)
+ 3.304 (Confidence that one will avail of health care provider in emergencies)
– 2.216 (Time spent in waiting room)
+ 2.814 (Experience level of doctor)
– 1.144 (Number of diagnostic procedures advised)

This equation that is obtained means that patient satisfaction will increase with the proportionate increase in the 'Reputation of doctor', 'Speed of medical feedback through consultation', 'Confidence that one will avail of health care provider in emergencies', and 'Experience level of doctor' and patient satisfaction will decrease with an increase in the 'Time spent in waiting room' and 'Number of diagnostic procedures advised'.

Checking for Normality

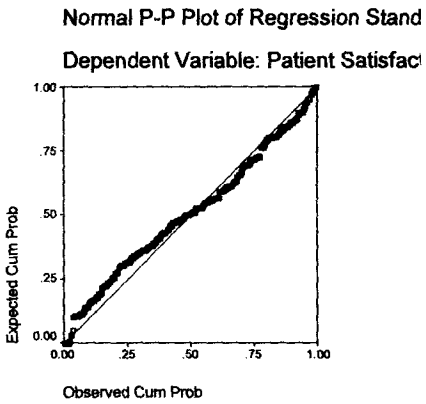
Exhibit 3-20: Scenario 2 - Histogram – Regression Standardized Residual



Error term should be normally distributed. Hence Histogram is drawn and a normal curve is superimposed on the histogram. The histogram in Exhibit 3-20 indicates that the error term is normally distributed

Checking for Linearity

Exhibit 3-21: Scenario 2 - Normal P-P Plot of Regression Standardized Residual



This is to check whether the variables are having a linear relationship or not.

The probability plot in Exhibit 3-21 shows that the variables have a linear relationship

Significant Variables of Patient Satisfaction

(a) Reputation of doctor treating the patient

Reputation of doctor treating the patient is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 4.099 and the " t- value" of 4.026 at a p - value of 0.000. The beta coefficient value is 0.253. It means 'Reputation of doctor treating the patient' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Reputation of doctor treating the patient is positively related to Patient satisfaction. The better the Reputation of doctor treating the patient, the more satisfied the patients are with

the health care service. In fact it has emerged as the most dominant variable affecting satisfaction explaining about 50% of the total variance in satisfaction.

(b) Speed of medical feedback through consultation

Speed of medical feedback through consultation is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 5.790 and the " t-value" of 5.822 at a p - value of 0.000. The beta coefficient value is 0.298. It means 'Speed of medical feedback through consultation' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Speed of medical feedback through consultation is positively related to Patient satisfaction. The faster the Speed of medical feedback through consultation, the more satisfied the patients are with the health care service.

(c) Availability of health care provider in emergencies

Availability of health care provider in emergencies is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 3.304 and the " t-value" of 4.753 at a p - value of 0.000. The beta coefficient value is 0.269. It means 'Availability of health care provider in emergencies' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Availability of health care provider in emergencies is positively related to Patient satisfaction. The better the availability of health care provider in emergencies, the more satisfied the patients are with the health care service.

(d) Experience level of the doctor treating the patient

Experience level of the doctor treating the patient is one of the predictor variables. It is a Provider characteristic. It has an unstandardised coefficient value of 2.814 and the " t-value" of 2.766 at a p - value of 0.006. The beta coefficient value is 0.165. It means 'Experience level of the doctor treating the patient' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Experience level of the doctor treating the patient is positively related to Patient satisfaction. The more the Experience level of the doctor treating the patient, the more satisfied the patients are with the health care service.

(e) Time spent in waiting room

Time spent in waiting room is one of the predictor variables. It has an unstandardised coefficient value of -2.216 and the " t- value" of -2.721 at a p - value of 0.007. The beta coefficient value is -0.108. It means 'Time spent in waiting room' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Time spent in waiting room is negatively related to Patient satisfaction. The more the time spent in waiting room, the less satisfied the patients are with the health care service.

(f) Number of diagnostic procedures advised

Number of diagnostic procedures advised is one of the predictor variables. It has an unstandardised coefficient value of –1.144 and the " t- value" of -2.055 at a p - value of 0.041. The beta coefficient value is -0.082. It means 'Number of diagnostic procedures advised' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Number of diagnostic procedures advised is negatively related to Patient satisfaction. The more the number of diagnostic procedures advised, the less satisfied the patients are with the health care service.

It is thus seen from the regression analysis in Scenario 2 – Direct channel, that the independent variable "Disease complexity' does not feature in the model. The independent variable disease complexity is not statistically significant, and has no effect on the variance in satisfaction.

Scenario 3 – Low Complexity -Impersonal channel of Service delivery (Indirect Channel)

In Scenario 3, the following two questionnaires are tabulated for only those patient respondents who have given a low rating to disease complexity that is 3 and below. (Low complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Tele-Medicine Research (Indirect Channel)* measures the independent variables pertaining to remote health care service.

Regression Analysis for Scenario 3

Exhibit 3-22: Scenario 3 – Table A – Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Disease Complexity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Usefulness of Information provided through TM		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Experience level of doctor treating you through TM		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Patient Satisfaction Index

From the Exhibit 3-22 Scenario 3 – Table A, it is seen that three predictor variables have been entered. These are the independent variables.

- Disease Complexity
- Usefulness of Information provided through Telemedicine
- Experience level of the doctor treating the patient through Telemedicine

The dependent variable is Patient Satisfaction.

Model Summary

Exhibit 3-23: Scenario 3 – Table B – Model Summary

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.559[a]	.312	.308	7.75178	.312	72.085	1	159	.000
2	.576[b]	.331	.323	7.66535	.019	4.606	1	158	.033
3	.592[c]	.350	.338	7.58233	.019	4.479	1	157	.036

a. Predictors: (Constant), Disease Complexity

b. Predictors: (Constant), Disease Complexity, Usefulness of Information provided through TM

c. Predictors: (Constant), Disease Complexity, Usefulness of Information provided through TM, Experience level of doctor treating you through TM

d. Dependent Variable: Patient Satisfaction Index

It is seen from Exhibit 3-23: Scenario 3 – Table B that the R Square value is 0.35, which means the regression model explains about 35% of the total variance. In other words it means that about 35% of the variation in patient satisfaction is explained by these three independent variables in the model.

Exhibit 3-24: Scenario 3 – Table C – Analysis of Variance

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4331.616	1	4331.616	72.085	.000[a]
	Residual	9554.334	159	60.090		
	Total	13885.950	160			
2	Regression	4602.258	2	2301.129	39.163	.000[b]
	Residual	9283.692	158	58.758		
	Total	13885.950	160			
3	Regression	4859.757	3	1619.919	28.177	.000[c]
	Residual	9026.193	157	57.492		
	Total	13885.950	160			

a. Predictors: (Constant), Disease Complexity

b. Predictors: (Constant), Disease Complexity, Usefulness of Information provided through TM

c. Predictors: (Constant), Disease Complexity, Usefulness of Information provided through TM, Experience level of doctor treating you through TM

d. Dependent Variable: Patient Satisfaction Index

The regression model is statistically significant as may be seen from the analysis of variance table i.e. Exhibit 3-24: Scenario 3 – Table C, which indicates the p-value to be 0.000, which means the model is statistically significant at a confidence level of 99.999%. It shows that the F-test is significant

Exhibit 3-25: Scenario 3 – Table D – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	92.899	1.883		49.336	.000		
	Disease Complexity	-6.634	.781	-.559	-8.490	.000	1.000	1.000
2	(Constant)	86.114	3.669		23.472	.000		
	Disease Complexity	-6.655	.773	-.560	-8.612	.000	1.000	1.000
	Usefulness of Information provided through TM	1.864	.869	.140	2.146	.033	1.000	1.000
3	(Constant)	62.182	11.876		5.236	.000		
	Disease Complexity	-6.574	.765	-.553	-8.590	.000	.997	1.003
	Usefulness of Information provided through TM	1.865	.859	.140	2.170	.031	1.000	1.000
	Experience level of doctor treating you through TM	4.821	2.278	.136	2.116	.036	.998	1.002

a. Dependent Variable: Patient Satisfaction Index

As seen from the Exhibit 3-25: Scenario 3 – Table D – Coefficients, the three significant predictor variables are Disease Complexity with a Beta value –6.574, Usefulness of Information provided through telemedicine with a Beta value of 1.865 and Experience level of doctor with a Beta value of 4.821.

Checking for Multi-collinearity

From Exhibit 3-25, it is seen that the Variable Inflation Factor (VIF) is close to one and tolerance values are greater than 0.2 indicating that there is no multi-collinearity with other variables.

The regression model thus is represented as follows for Scenario 3

Patient Satisfaction = 62.182 – 6.574 (Disease Complexity)

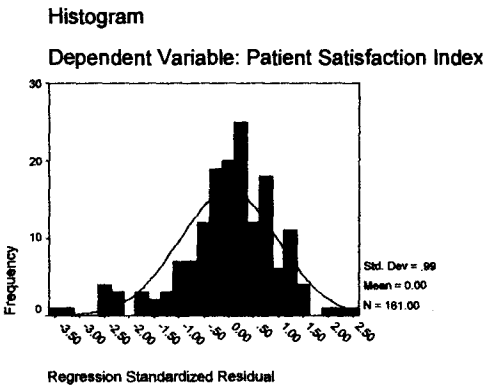
+ 1.865 (Usefulness of Information provided through telemedicine)

+ 4.821 (Experience level of doctor)

This equation that is obtained means that patient satisfaction will increase with the proportionate increase in the 'Experience level of doctor', increase in the Usefulness of Information provided through telemedicine and with a decrease in the 'complexity of the disease'.

Checking for Normality

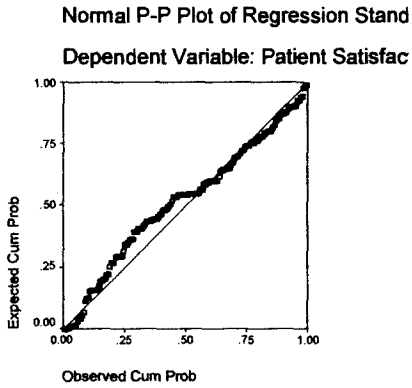
Exhibit 3-26: Scenario 3 - Histogram – Regression Standardized Residual



Error term should be normally distributed. Hence Histogram is drawn and a normal curve is superimposed on the histogram. The histogram in Exhibit 3-26 indicates that the error term is normally distributed

Checking for Linearity

Exhibit 3-27: Scenario 3 - Normal P-P Plot of Regression Standardized Residual



This is to check whether the variables are having a linear relationship or not.

The probability plot in Exhibit 3-27 shows that the variables have a linear relationship

Significant Variables of Patient Satisfaction and Hypothesis Testing for Indirect channel

(a) Disease Complexity

Disease Complexity is one of the predictor variables. It is a Case characteristic. It has an unstandardized coefficient value of –6.574 and the " t- value" of –8.59 at a p - value of 0.000. The beta coefficient value is –0.553. It means 'Disease Complexity' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Disease Complexity is negatively related to Patient satisfaction. The less complex the disease, the more satisfied the patients are with impersonal channel of service delivery.

Hence the following hypothesis

H2 a: *In High Involvement and Low Complexity situations; the effect of complexity on customer satisfaction will be negligible, when service is delivered through impersonal channel of service delivery.*

is rejected in the case of indirect channel. In fact, disease complexity has emerged as the most dominant variable affecting satisfaction explaining about 30.8% of the total variance in satisfaction

(b) Usefulness of Information provided through telemedicine

Usefulness of Information provided through telemedicine is one of the predictor variables. It is a Provider characteristic. It has an unstandardised coefficient value of 1.865 and the " t- value" of 2.17 at a p - value of 0.031. The beta coefficient value is 0.140. It means 'Usefulness of Information provided through telemedicine' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Usefulness of Information provided through telemedicine is positively related to Patient satisfaction. The more Useful the Information provided to the patient, the more satisfied the patients are with the health care service.

(c) Experience level of the doctor treating the patient through Telemedicine

Experience level of the doctor treating the patient through Telemedicine is one of the predictor variables. It is a Provider characteristic. It has an unstandardised coefficient value of 4.821 and the " t- value" of 2.116 at a p - value of 0.036. The beta coefficient value is 0.136. It means 'Experience level of the doctor treating the patient through Telemedicine' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Experience level of the doctor treating the patient is positively related to Patient satisfaction. The more the Experience level of the doctor treating the patient, the more satisfied the patients are with the health care service.

Scenario 4 – Low complexity -Face-to-face Health care service delivery (Direct Channel)

In Scenario 4, the following two questionnaires are tabulated for only those patient respondents who have given a low rating to disease complexity that is 3 and below (Low complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Face-to-Face Health care Research (Direct Channel)* measures the independent variables pertaining to face-to-face health care service.

Regression Analysis for Scenario 4

Exhibit 3-28: Scenario 4 – Table A – Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Speed of Medical Feedback through Consultation		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Reputation of doctor treating you		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Confidence that you will avail of treatment in emergencies		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Patient Satisfaction Index

From the Exhibit 3-28 Scenario 4 – Table A, it is seen that three predictor variables have been entered. These are the independent variables.

- Speed of medical feedback through consultation
- Reputation of doctor treating the patient
- Confidence that one will avail of health care provider in emergencies

The dependent variable is Patient Satisfaction.

Model Summary

Exhibit 3-29: Scenario 4 – Table B – Model Summary

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.694[a]	.482	.477	8.18653	.482	95.816	1	103	.000
2	.786[b]	.618	.611	7.06253	.136	36.394	1	102	.000
3	.815[c]	.664	.654	6.66155	.045	13.649	1	101	.000

a. Predictors: (Constant), Speed of Medical Feedback through Consultation

b. Predictors: (Constant), Speed of Medical Feedback through Consultation, Reputation of doctor treating you

c. Predictors: (Constant), Speed of Medical Feedback through Consultation, Reputation of doctor treating you, Confidence that you will avail of treatment in emergencies

d. Dependent Variable: Patient Satisfaction Index

It is seen from Exhibit 3-29: Scenario 4 – Table B that the R Square value is 0.664, which means the regression model explains about 66% of the total variance. In other words it means that about 66% of the variation in patient satisfaction is explained by these three independent variables in the model.

Exhibit 3-30: Scenario 4 – Table C – Analysis of Variance

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6421.523	1	6421.523	95.816	.000[a]
	Residual	6902.992	103	67.019		
	Total	13324.514	104			
2	Regression	8236.825	2	4118.413	82.568	.000[b]
	Residual	5087.689	102	49.879		
	Total	13324.514	104			
3	Regression	8842.508	3	2947.503	66.421	.000[c]
	Residual	4482.006	101	44.376		
	Total	13324.514	104			

a. Predictors: (Constant), Speed of Medical Feedback through Consultation

b. Predictors: (Constant), Speed of Medical Feedback through Consultation, Reputation of doctor treating you

c. Predictors: (Constant), Speed of Medical Feedback through Consultation, Reputation of doctor treating you, Confidence that you will avail of treatment in emergencies

d. Dependent Variable: Patient Satisfaction Index

The regression model is statistically significant as may be seen from the analysis of variance table i.e. Exhibit 3-30: Scenario 4 – Table C, which indicates the p-value to be 0.000, which means the model is statistically significant at a confidence level of 99.999%. It shows that the F-test is significant

Exhibit 3-31: Scenario 4 – Table D – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	19.630	4.968		3.951	.000		
	Speed of Medical Feedback through Consultation	11.402	1.165	.694	9.789	.000	1.000	1.000
2	(Constant)	11.855	4.476		2.649	.009		
	Speed of Medical Feedback through Consultation	7.445	1.200	.453	6.203	.000	.701	1.426
	Reputation of doctor treating you	6.916	1.146	.441	6.033	.000	.701	1.426
3	(Constant)	13.410	4.242		3.161	.002		
	Speed of Medical Feedback through Consultation	6.358	1.170	.387	5.436	.000	.657	1.522
	Reputation of doctor treating you	5.082	1.190	.324	4.272	.000	.579	1.727
	Confidence that you will avail of treatment in emergencies	2.994	.810	.268	3.694	.000	.632	1.583

a. Dependent Variable: Patient Satisfaction Index

As seen from the Exhibit 3-31: Scenario 4 – Table D – Coefficients, the three significant predictor variables are as follows

- Speed of medical feedback through consultation with Beta value 6.358
- Reputation of doctor treating the patient with Beta value 5.082
- Confidence that one will avail of health care provider in emergencies with Beta value 2.994

Checking for Multi-collinearity

From Exhibit 3-31, it is seen that the Variable Inflation Factor (VIF) is close to one and tolerance values are greater than 0.2 indicating that there is no multi-collinearity with other variables.

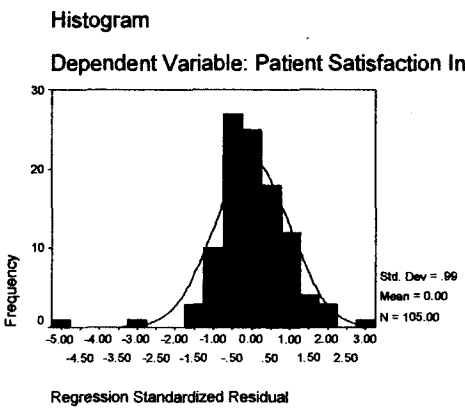
The regression model thus is represented as follows for Scenario 4

Patient Satisfaction = 13.410 + 6.358 (Speed of medical feedback through consultation)
+ 5.082 (Reputation of doctor)
+ 2.994 (Confidence that one will avail of health care provider in emergencies)

This equation that is obtained means that patient satisfaction will increase with the proportionate increase in the 'Speed of medical feedback through consultation', 'Reputation of doctor' and 'Confidence that one will avail of health care provider in emergencies'.

Checking for Normality

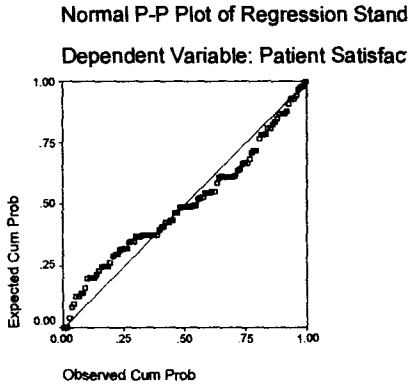
Exhibit 3-32: Scenario 4 - Histogram – Regression Standardized Residual



Error term should be normally distributed. Hence Histogram is drawn and a normal curve is superimposed on the histogram. The histogram in Exhibit 3-32 indicates that the error term is normally distributed

Checking for Linearity

Exhibit 3-33: Scenario 4 - Normal P-P Plot of Regression Standardized Residual



This is to check whether the variables are having a linear relationship or not.

The probability plot in Exhibit 3-33 shows that the variables have a linear relationship

Significant Variables of Patient Satisfaction and Hypothesis Testing for Direct channel

(a) Speed of medical feedback through consultation

Speed of medical feedback through consultation is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 6.358 and the " t-value" of 5.436 at a p - value of 0.000. The beta coefficient value is 0.387. It means 'Speed of medical feedback through consultation' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Speed of medical feedback through consultation is positively related to Patient satisfaction. The faster the Speed of medical feedback through consultation, the more satisfied the patients are with the health care service. In fact it has emerged as the most dominant variable affecting satisfaction explaining about 48% of the total variance in satisfaction.

(b) Reputation of doctor treating the patient

Reputation of doctor treating the patient is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 5.082 and the " t- value" of 4.272 at a p - value of 0.000. The beta coefficient value is 0.324. It means 'Reputation of doctor treating the patient' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Reputation of doctor treating the patient is positively related to Patient satisfaction. The better the Reputation of doctor treating the patient, the more satisfied the patients are with the health care service.

(c) Availability of health care provider in emergencies

Availability of health care provider in emergencies is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 2.994 and the " t-value" of 3.694 at a p - value of 0.000. The beta coefficient value is 0.268. It means 'Availability of health care provider in emergencies' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Availability of health care provider in emergencies is positively related to Patient satisfaction. The better the availability of health care provider in emergencies, the more satisfied the patients are with the health care service.

It is thus seen from the regression analysis in Scenario 4 – Direct channel, that the independent variable "Disease complexity' does not feature in the model. The independent variable disease complexity is not statistically significant, and has no effect on the variance in satisfaction.

Hence the following hypothesis

H2 b: *In High Involvement and Low Complexity situations; the effect of complexity on customer satisfaction will be negligible, when there is face-to-face contact between consumer and provider.*

stands proved correct and the said hypothesis is accepted as complexity does not affect satisfaction when there is face-to-face contact between consumer and provider.

Scenario 5 – High Complexity -Impersonal channel of Service delivery (Indirect Channel)

In Scenario 5, the following two questionnaires are tabulated for only those patient respondents who have given a high rating to disease complexity that is 4 and above. (High complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Tele-Medicine Research (Indirect Channel)* measures the independent variables pertaining to remote health care service.

Regression Analysis for Scenario 5

Exhibit 3-34: Scenario 5 – Table A – Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Disease Complexity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Educational level of Patient		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Patient Satisfaction Index

From the Exhibit 3-34 Scenario 5 – Table A, it is seen that two predictor variables have been entered. These are the independent variables.

- Disease Complexity
- Education level of the patient

The dependent variable is Patient Satisfaction.

Model Summary

Exhibit 3-35: Scenario 5 – Table B – Model Summary

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.611[a]	.373	.356	7.60941	.373	21.995	1	37	.000
2	.663[b]	.439	.408	7.48795	.066	4.245	1	36	.047

a. Predictors: (Constant), Disease Complexity

b. Predictors: (Constant), Disease Complexity, Educational level of Patient

c. Dependent Variable: Patient Satisfaction Index

It is seen from Exhibit 3-35: Scenario 5 – Table B that the R Square value is 0.439, which means the regression model explains about 44% of the total variance. In other words it means that about 44% of the variation in patient satisfaction is explained by these two independent variables in the model.

Exhibit 3-36: Scenario 5 – Table C – Analysis of Variance

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1341.380	1	1341.380	21.995	.000[a]
	Residual	2256.517	37	60.987		
	Total	3597.897	38			
2	Regression	1579.400	2	789.700	14.084	.000[b]
	Residual	2018.498	36	56.069		
	Total	3597.897	38			

a. Predictors: (Constant), Disease Complexity

b. Predictors: (Constant), Disease Complexity, Educational level of Patient

c. Dependent Variable: Patient Satisfaction Index

The regression model is statistically significant as may be seen from the analysis of variance table i.e. Exhibit 3-36: Scenario 5 – Table C, which indicates the p-value to be 0.000, which means the model is statistically significant at a confidence level of 99.999%. It shows that the F-test is significant

Exhibit 3-37: Scenario 5 – Table D – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	115.343	11.432		10.090	.000		
	Disease Complexity	-12.226	2.607	-.611	-4.690	.000	1.000	1.000
2	(Constant)	127.814	12.521		10.208	.000		
	Disease Complexity	-13.161	2.540	-.657	-5.181	.000	.968	1.033
	Educational level of Patient	-2.372	1.151	-.261	-2.060	.047	.968	1.033

a. Dependent Variable: Patient Satisfaction Index

As seen from the Exhibit 3-37: Scenario 5 – Table D – Coefficients, the two significant predictor variables are Disease Complexity with a Beta value –13.161 and Education level of patient with a Beta value of –2.372.

Checking for Multi-collinearity

From Exhibit 3-37, it is seen that the Variable Inflation Factor (VIF) is close to one (1.033) and tolerance values are greater than 0.2 (0.968) indicating that there is no multi-collinearity with other variables.

The regression model thus is represented as follows for Scenario 5

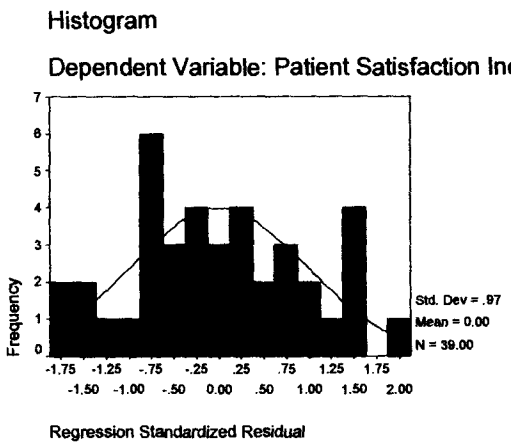
Patient Satisfaction = 127.814 – 13.161 (Disease Complexity)

– 2.372 (Education level of patient)

This equation that is obtained means that patient satisfaction will increase with the proportionate decrease in the 'complexity of the disease' and with a decrease in the 'Education level of patient'.

Checking for Normality

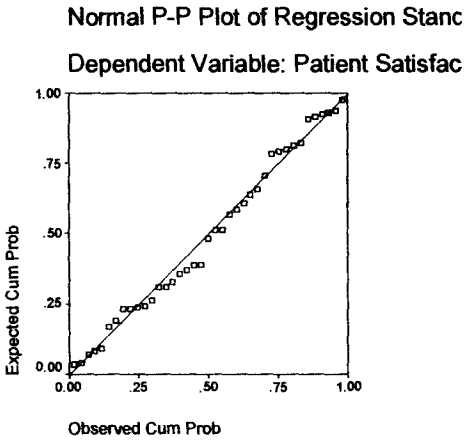
Exhibit 3-38: Scenario 5 - Histogram – Regression Standardized Residual



Error term should be normally distributed. Hence Histogram is drawn and a normal curve is superimposed on the histogram. The histogram in Exhibit 3-38 indicates that the error term is normally distributed

Checking for Linearity

Exhibit 3-39: Scenario 5 - Normal P-P Plot of Regression Standardized Residual



This is to check whether the variables are having a linear relationship or not.

The probability plot in Exhibit 3-39 shows that the variables have a linear relationship

Significant Variables of Patient Satisfaction and Hypothesis Testing for Indirect channel

(a) Disease Complexity

Disease Complexity is one of the predictor variables. It is a Case charcteristic. It has an unstandardized coefficient value of –13.161 and the " t- value" of –5.181 at a p - value of 0.000. The beta coefficient value is –0.657. It means 'Disease Complexity' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Disease Complexity is negatively related to Patient satisfaction. The more complex the disease, the less satisfied the patients are with impersonal channel of service delivery.

Hence the following hypothesis

H1 a: In High Involvement situations, higher levels of complexity lead to lower levels of customer satisfaction, when service is delivered through impersonal channel of service delivery

stands proved correct and the said hypothesis is accepted. In fact, disease complexity has emerged as the most dominant variable affecting satisfaction explaining about 37.3% of the total variance in satisfaction

(b) Education level of the patient being treated

Education level of the patient being treated is one of the predictor variables. It is a Provider characteristic. It has an unstandardised coefficient value of – 2.372 and the " t- value" of – 2.060 at a p - value of 0.047. The beta coefficient value is – 0.261. It means 'Education level of the patient being treated' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Education level of the patient being treated is negatively related to Patient satisfaction. The more the Education level of the patient being treated, the less satisfied the patients are with the health care service.

Scenario 6– High complexity -Face-to-face Health care service delivery (Direct Channel)

In Scenario 6, the following two questionnaires are tabulated for only those patient respondents who have given a high rating to disease complexity that is 4 and above (High complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Face-to-Face Health care Research (Direct Channel)* measures the independent variables pertaining to face-to-face health care service.

Regression Analysis for Scenario 6

Exhibit 3-40: Scenario 4 – Table A – Variables Entered/Removed

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Confidence that you will avail of health care provider in emergencies		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Speed of Medical Feedback through Consultation		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Time spent in Waiting room		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Experience level of doctor treating you		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	Physical Environment of Clinic		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: Patient Satisfaction Index

From the Exhibit 3-40 Scenario 6 – Table A, it is seen that five predictor variables have been entered. These are the independent variables.

- Confidence that one will avail of health care provider in emergencies
- Speed of medical feedback through consultation

- Time spent in waiting room
- Experience level of the doctor treating the patient
- Physical environment of health care centre

The dependent variable is Patient Satisfaction.

Model Summary

Exhibit 3-41: Scenario 6 – Table B – Model Summary

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.624[a]	.390	.383	8.26368	.390	59.435	1	93	.000
2	.681[b]	.464	.452	7.78979	.074	12.659	1	92	.001
3	.712[c]	.507	.491	7.50952	.043	7.995	1	91	.006
4	.739[d]	.546	.526	7.24509	.039	7.764	1	90	.007
5	.753[e]	.568	.543	7.11222	.021	4.394	1	89	.039

a. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies

b. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation

c. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation, Time spent in Waiting room

d. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation, Time spent in Waiting room, Experience level of doctor treating you

e. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation, Time spent in Waiting room, Experience level of doctor treating you, Physical Environment of Clinic

f. Dependent Variable: Patient Satisfaction Index

It is seen from Exhibit 3-41: Scenario 6 – Table B that the R Square value is 0.568, which means the regression model explains about 57% of the total variance. In other words it means that about 57% of the variation in patient satisfaction is explained by these five independent variables in the model.

Exhibit 3-42: Scenario 6 – Table C – Analysis of Variance

ANOVA[f]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4058.718	1	4058.718	59.435	.000[a]
	Residual	6350.819	93	68.288		
	Total	10409.537	94			
2	Regression	4826.901	2	2413.450	39.773	.000[b]
	Residual	5582.636	92	60.681		
	Total	10409.537	94			
3	Regression	5277.786	3	1759.262	31.197	.000[c]
	Residual	5131.751	91	56.393		
	Total	10409.537	94			
4	Regression	5685.311	4	1421.328	27.077	.000[d]
	Residual	4724.226	90	52.491		
	Total	10409.537	94			
5	Regression	5907.586	5	1181.517	23.358	.000[e]
	Residual	4501.951	89	50.584		
	Total	10409.537	94			

a. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies

b. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation

c. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation, Time spent in Waiting room

d. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation, Time spent in Waiting room, Experience level of doctor treating you

e. Predictors: (Constant), Confidence that you will avail of health care provider in emergencies, Speed of Medical Feedback through Consultation, Time spent in Waiting room, Experience level of doctor treating you, Physical Environment of Clinic

f. Dependent Variable: Patient Satisfaction Index

The regression model is statistically significant as may be seen from the analysis of variance table i.e. Exhibit 3-42: Scenario 6 – Table C, which indicates the p-value to be 0.000, which means the model is statistically significant at a confidence level of 99.999%. It shows that the F-test is significant

Exhibit 3-43: Scenario 6 – Table D – Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	45.882	4.423		10.374	.000		
	Confidence that you will avail of health care provider in emergencies	8.301	1.077	.624	7.709	.000	1.000	1.000
2	(Constant)	21.543	8.011		2.689	.009		
	Confidence that you will avail of health care provider in emergencies	6.303	1.160	.474	5.434	.000	.766	1.306
	Speed of Medical Feedback through Consultation	6.931	1.948	.310	3.558	.001	.766	1.306
3	(Constant)	29.166	8.180		3.566	.001		
	Confidence that you will avail of health care provider in emergencies	6.373	1.118	.479	5.698	.000	.765	1.307
	Speed of Medical Feedback through Consultation	6.662	1.880	.298	3.543	.001	.764	1.309
	Time spent in Waiting room	-3.898	1.379	-.208	-2.828	.006	.997	1.003
4	(Constant)	19.308	8.649		2.233	.028		
	Confidence that you will avail of health care provider in emergencies	5.077	1.175	.382	4.321	.000	.645	1.549
	Speed of Medical Feedback through Consultation	6.374	1.817	.286	3.508	.001	.761	1.314
	Time spent in Waiting room	-4.295	1.338	-.230	-3.211	.002	.986	1.014
	Experience level of doctor treating you	3.896	1.398	.225	2.786	.007	.776	1.289
5	(Constant)	10.802	9.410		1.148	.254		
	Confidence that you will avail of health care provider in emergencies	4.968	1.155	.374	4.302	.000	.644	1.553
	Speed of Medical Feedback through Consultation	8.287	1.764	.282	3.524	.001	.761	1.314
	Time spent in Waiting room	-4.216	1.314	-.225	-3.209	.002	.985	1.015
	Experience level of doctor treating you	4.180	1.379	.241	3.030	.003	.769	1.301
	Physical Environment of Clinic	2.361	1.126	.147	2.096	.039	.988	1.012

a. Dependent Variable: Patient Satisfaction Index

As seen from the Exhibit 3-43: Scenario 6 – Table D – Coefficients, the five significant predictor variables are as follows

- Confidence that one will avail of health care provider in emergencies with Beta value 4.968
- Speed of medical feedback through consultation with Beta value 6.287
- Time spent in waiting room with Beta value – 4.216

- Experience level of the doctor treating the patient with Beta value 4.180
- Physical environment of health care centre with Beta value 2.361

Checking for Multi-collinearity

From Exhibit 3-43, it is seen that the Variable Inflation Factor (VIF) is close to one and tolerance values are greater than 0.2 indicating that there is no multi-collinearity with other variables.

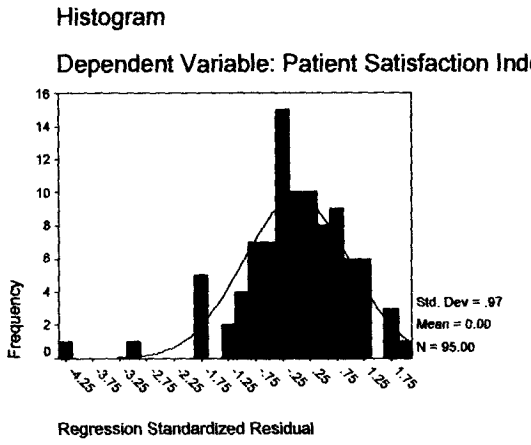
The regression model thus is represented as follows for Scenario 6

Patient Satisfaction = 10.802 + 6.287 (Speed of medical feedback through consultation)
+ 4.968 (Confidence that one will avail of health care provider in emergencies)
– 4.216 (Time spent in waiting room)
+ 4.180 (Experience level of doctor)
+ 2.361 (Physical environment of health care centre)

This equation that is obtained means that patient satisfaction will increase with the proportionate increase in the 'Speed of medical feedback through consultation', 'Confidence that one will avail of health care provider in emergencies', 'Experience level of doctor' and 'Physical environment of health care center' and patient satisfaction will decrease with an increase in the 'Time spent in waiting room'.

Checking for Normality

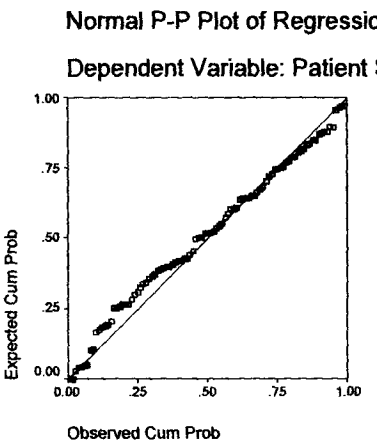
Exhibit 3-44: Scenario 6 - Histogram – Regression Standardized Residual



Error term should be normally distributed. Hence Histogram is drawn and a normal curve is superimposed on the histogram. The histogram in Exhibit 3-44 indicates that the error term is normally distributed

Checking for Linearity

Exhibit 3-45: Scenario 6 - Normal P-P Plot of Regression Standardized Residual



This is to check whether the variables are having a linear relationship or not.

The probability plot in Exhibit 3-45 shows that the variables have a linear relationship

Significant Variables of Patient Satisfaction and Hypothesis Testing for Direct channel

(a) Availability of health care provider in emergencies

Availability of health care provider in emergencies is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 4.968 and the " t-value" of 4.302 at a p - value of 0.000. The beta coefficient value is 0.374. It means 'Availability of health care provider in emergencies' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Availability of health care provider in emergencies is positively related to Patient satisfaction. The better the availability of health care provider in emergencies, the more satisfied the patients are with the health care service. In fact it has emerged as the most dominant variable affecting satisfaction explaining about 38% of the total variance in satisfaction.

(b) Speed of medical feedback through consultation

Speed of medical feedback through consultation is one of the predictor variables. It is a Provider characteristic. It has an unstandardized coefficient value of 6.287 and the " t-value" of 3.524 at a p - value of 0.001. The beta coefficient value is 0.282. It means 'Speed of medical feedback through consultation' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Speed of medical feedback through consultation is positively related to Patient satisfaction. The faster the Speed of medical feedback through consultation, the more satisfied the patients are with the health care service.

(c) Time spent in waiting room

Time spent in waiting room is one of the predictor variables. It has an unstandardised coefficient value of -4.216 and the " t- value" of -3.209 at a p - value of 0.002. The beta coefficient value is -0.225. It means 'Time spent in waiting room' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Time spent in waiting room is negatively related to Patient satisfaction. The more the time spent in waiting room, the less satisfied the patients are with the health care service.

(d) Experience level of the doctor treating the patient

Experience level of the doctor treating the patient is one of the predictor variables. It is a Provider characteristic. It has an unstandardised coefficient value of 4.180 and the " t-value" of 3.030 at a p - value of 0.003. The beta coefficient value is 0.241. It means 'Experience level of the doctor treating the patient' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Experience level of the doctor treating the patient is positively related to Patient satisfaction. The more the Experience level of the doctor treating the patient, the more satisfied the patients are with the health care service.

(d) Physical environment of the health care centre

Physical environment of the health care centre is one of the predictor variables. It is a Provider characteristic. It has an unstandardised coefficient value of 2.361 and the " t-value" of 2.096 at a p - value of 0.039. The beta coefficient value is 0.147. It means 'Physical environment of the health care centre' is a significant determinant of patient satisfaction and has a strong association with satisfaction.

Physical environment of the health care centre is positively related to Patient satisfaction. The better the Physical environment of the health care centre, the more satisfied the patients are with the health care service.

It is thus seen from the regression analysis in Scenario 6 – Direct channel, that the independent variable "Disease complexity' does not feature in the model. The independent variable disease complexity is not statistically significant, and has no effect on the variance in satisfaction.

Hence the following hypothesis is rejected,

H1 b: In High Involvement situations, higher levels of complexity lead to increased levels of customer satisfaction when service is delivered directly that is when there is face-to-face contact between consumer and provider.

as complexity does not affect satisfaction when there is face-to-face contact between consumer and provider.

Discussions pertaining to the above findings and their implications as well as suggested directions for further research are discussed in the next chapter.

Chapter IV: Conclusions and Discussions

This chapter presents the findings and results from the preceding chapter in a summary. First the main conclusions from the quantitative study are summarized and later the findings are discussed. This chapter also discusses the implications and possible future research extensions of this thesis.

Results and Findings of Quantitative Study

Scenario 1 – Impersonal channel of Service delivery (Indirect Channel)

In Scenario 1, the following two questionnaires are tabulated. The sample size is 200 as mentioned earlier.

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.

- The *Questionnaire for Tele-Medicine Research (Indirect Channel)* measures the independent variables pertaining to remote health care service.

Regression Model Summary for Scenario 1

The regression model for Scenario 1 is represented below. (Chapter III, page no 83)

Patient Satisfaction = 67.41 – 7.297 (Disease Complexity)
+ 5.461 (Experience level of doctor)

This equation that is obtained indicates that patient satisfaction will decrease with the proportionate decrease in the 'Experience level of doctor' and with an increase in the 'complexity of the disease'.

Scenario 2 – Face-to-face Health care service delivery (Direct Channel)

In Scenario 2, the following two questionnaires are tabulated. The sample size is 200 as mentioned earlier.

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Face-to-Face Health care Research (Direct Channel)* measures the independent variables pertaining to face-to-face health care service.

Regression Model Summary for Scenario 2

The regression model for Scenario 2 is represented below. (Chapter III, page no 92)

Patient Satisfaction = 15.184 + 4.099 (Reputation of doctor)
+ 5.79 (Speed of medical feedback through consultation)
+ 3.304 (Confidence that one will avail of health care provider in emergencies)
– 2.216 (Time spent in waiting room)
+ 2.814 (Experience level of doctor)
– 1.144 (Number of diagnostic procedures advised)

This equation that is obtained indicates that patient satisfaction will increase with the proportionate increase in the 'Reputation of doctor', 'Speed of medical feedback through consultation', 'Confidence that one will avail service of health care provider in emergencies', and 'Experience level of doctor'. It also indicates that patient satisfaction will decrease with an increase in the 'Time spent in waiting room' and 'Number of diagnostic procedures advised'.

Scenario 3 – Low Complexity -Impersonal channel of Service delivery (Indirect Channel)

In Scenario 3, the following two questionnaires are tabulated for only those patient respondents who have given a low rating to disease complexity that is 3 and below. (Low complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Tele-Medicine Research (Indirect Channel)* measures the independent variables pertaining to remote health care service.

Regression Model Summary for Scenario 3

The regression model for Scenario 3 is represented below. (Chapter III, page no 102)

Patient Satisfaction = 62.182 – 6.574 (Disease Complexity)
+ 1.865 (Usefulness of Information provided through telemedicine)
+ 4.821 (Experience level of doctor)

This equation that is obtained indicates that patient satisfaction will increase with the proportionate increase in the 'Experience level of doctor', increase in the Usefulness of Information provided through telemedicine and with a decrease in the 'complexity of the disease'.

Scenario 4 – Low complexity -Face-to-face Health care service delivery (Direct Channel)

In Scenario 4, the following two questionnaires are tabulated for only those patient respondents who have given a low rating to disease complexity that is 3 and below (Low complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Face-to-Face Health care Research (Direct Channel)* measures the independent variables pertaining to face-to-face health care service.

Regression Model Summary for Scenario 4

The regression model for Scenario 4 is represented below. (Chapter III, page no 112)

Patient Satisfaction = 13.410 + 6.358 (Speed of medical feedback through consultation)
+ 5.082 (Reputation of doctor)
+ 2.994 (Confidence that one will avail of health care provider in emergencies)

This equation that is obtained indicates that patient satisfaction will increase with the proportionate increase in the 'Speed of medical feedback through consultation', 'Reputation of doctor' and 'Confidence that one will avail service of health care provider in emergencies'.

Scenario 5 – High Complexity -Impersonal channel of Service delivery (Indirect Channel)

In Scenario 5, the following two questionnaires are tabulated for only those patient respondents who have given a high rating to disease complexity that is 4 and above. (High complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Tele-Medicine Research (Indirect Channel)* measures the independent variables pertaining to remote health care service.

Regression Model Summary for Scenario 5

The regression model for Scenario 5 is represented below. (Chapter III, page no 119)

Patient Satisfaction = 127.814 – 13.161 (Disease Complexity)
– 2.372 (Education level of patient)

This equation that is obtained means that patient satisfaction will increase with the proportionate decrease in the 'complexity of the disease' and with a decrease in the 'Education level of patient'.

Scenario 6– High complexity -Face-to-face Health care service delivery (Direct Channel)

In Scenario 6, the following two questionnaires are tabulated for only those patient respondents who have given a high rating to disease complexity that is 4 and above (High complexity cases)

- The *Patient Satisfaction Questionnaire* is used for measuring the dependent variable *"Patient Satisfaction"*.
- The *Questionnaire for Face-to-Face Health care Research (Direct Channel)* measures the independent variables pertaining to face-to-face health care service.

Regression Model Summary for Scenario 6

The regression model for Scenario 6 is represented below. (Chapter III, page no 128)

Patient Satisfaction = 10.802 + 6.287 (Speed of medical feedback through consultation)
+ 4.968 (Confidence that one will avail of health care provider in emergencies)
– 4.216 (Time spent in waiting room)
+ 4.180 (Experience level of doctor)
+ 2.361 (Physical environment of health care centre)

This equation that is obtained means that patient satisfaction will increase with the proportionate increase in the 'Speed of medical feedback through consultation', 'Confidence that one will avail of health care provider in emergencies', 'Experience level of doctor' and 'Physical environment of health care center' and patient satisfaction will decrease with an increase in the 'Time spent in waiting room'.

Tabulating the above Regression analysis results we get the following: Exhibit 4-1:

Regression Results

Exhibit 4-1: Regression Results

Scenarios	*Regression Model Summary*
Scenario 1 – Impersonal channel of Service delivery (Indirect Channel) [R Square Value = 0.538]	Patient Satisfaction = 67.41 – 7.297 (Disease Complexity) + 5.461 (Experience level of doctor)
Scenario 2 – Face-to-face Health care service delivery (Direct Channel) [R Square Value = 0.701]	Patient Satisfaction = 15.184 + 4.099 (Reputation of doctor) + 5.79 (Speed of medical feedback through consultation) + 3.304 (Confidence that one will avail of health care provider in emergencies) – 2.216 (Time spent in waiting room) + 2.814 (Experience level of doctor) – 1.144 (Number of diagnostic procedures advised)
Scenario 3 – Low Complexity - Impersonal channel of Service delivery (Indirect Channel) [R Square Value = 0.350]	Patient Satisfaction = 62.182 – 6.574 (Disease Complexity) + 1.865 (Usefulness of Information provided through telemedicine) + 4.821 (Experience level of doctor)
Scenario 4 – Low complexity - Face-to-face Health care service delivery (Direct Channel) [R Square Value = 0.664]	Patient Satisfaction = 13.410 + 6.358 (Speed of medical feedback through consultation) + 5.082 (Reputation of doctor) + 2.994 (Confidence that one will avail of health care provider in emergencies)
Scenario 5 – High Complexity - Impersonal channel of Service delivery (Indirect Channel) [R Square Value = 0.439]	Patient Satisfaction = 127.814 – 13.161 (Disease Complexity) – 2.372 (Education level of patient)
Scenario 6– High complexity - Face-to-face Health care service delivery (Direct Channel) [R Square Value = 0.568]	Patient Satisfaction = 10.802 + 6.287 (Speed of medical feedback through consultation) + 4.968 (Confidence that one will avail of health care provider in emergencies) – 4.216 (Time spent in waiting room) + 4.180 (Experience level of doctor) + 2.361 (Physical environment of health care centre)

From the regression models of the four scenarios, the following findings have emerged.

[I] The relationship between complexity and satisfaction is negative when the channel of delivery is indirect.

[II] There is no relationship between complexity and satisfaction when the channel of delivery is face-to-face (direct).

[III] Complexity is moderating the relationship between predictor variables and satisfaction within face-to-face channel.

[IV] Predictor variables of satisfaction vary between channels.

[V] The significance of the relationship between Experience level of doctor and satisfaction varies between channels.

[VI] The relationship between Usefulness of Information and satisfaction is moderated by complexity when the channel is indirect.

[VII] The relationship between Education level of patient and satisfaction is moderated by complexity when the channel is indirect.

[VIII] The variables "Speed of medical feedback" and "Confidence that health care provider will be available in emergencies" predict satisfaction in both high and low complexity situations in direct channel.

Discussion of Findings of Quantitative Study

The findings which have emerged from the regression models of the six scenarios are discussed below.

[I] *The relationship between complexity and satisfaction is negative in high involvement services when the channel of delivery is indirect.*

Indirect channel

Patient

Satisfaction = 67.41

– 7.297 (Disease Complexity)

+ 5.461 (Experience level of doctor)

Indirect channel - low complexity

Patient

Satisfaction = 62.182

– 6.574 (Disease Complexity)

+ 1.865 (Usefulness of Information provided through telemedicine)

+ 4.821 (Experience level of doctor)

Indirect channel - high complexity

Patient

Satisfaction = 127.814

– 13.161 (Disease Complexity)

– 2.372 (Education level of patient)

Service characteristics that customers find impossible to evaluate confidently even after purchase and consumption are known as credence attributes because the customer is forced

to trust that certain benefits have been delivered, even though it may be difficult to document them. An example would be, patients can't usually evaluate how well, the doctors have treated them. (Zeithaml, 1981)

Services that are high in experience or credence attributes, have a higher element of perceived risk. These services are difficult to evaluate. Risk perceptions reflect customer's judgment of the probability of a negative outcome. First time users are likely to face greater uncertainty.

In surveying consumers, Spake et al. found that respondents associated an increased comfort level with reduced perceived risk. (Spake et al, 2003). Logically, perceived degree of risk increases with an increase in the level of complexity of the disease. *Perceived risk is defined as the uncertainty that consumers face when they cannot foresee the consequences of their purchase decision.* (Schiffman et al, 2006) This definition highlights two relevant dimensions of perceived risk: uncertainty and consequences.

The degree of risk that consumers perceive and their own tolerance for risk taking are factors that influence their purchase strategies. Consumers are influenced by risks that they perceive, whether or not such risks actually exist. Risk that is not perceived – no matter how real or how dangerous – will not influence consumer behavior. (Schiffman et al, 2006)

The major types of risks that consumers perceive when making decisions include functional risk, physical risk, financial risk, social risk, psychological risk and time risk. In health care, physical risk is primary as health care is a high involvement service. Physical risk is risk to self and others the service may pose. (Schiffman et al, 2006)

When the consumer tries to avail of healthcare service, through indirect channel, he is aware of the conscious choice he has made to choose the indirect channel over the alternative direct channel. Thus the consumer who is suffering from a complex disease has a perception of risk associated with the choice of channel chosen in his conscious or subconscious mind. Hence, the consumer availing of healthcare service through indirect channel is always posed with a question as to whether he would have got better health care service in a direct channel.

Thomas Cooper, an expert on mass communication, indicated that trust is a critical component of communication. Trust in many cultures involves either touch or direct vision, something that is not achieved with technology, which is the case in the indirect channel. (Zeithaml et al, 2000) Communication between consumer and service provider in the case of indirect channel is based on technological factors, which may not be the realm of trust that exists in a direct channel.

Thus from the above we see, that service delivery channel impacts consumer satisfaction. Higher disease complexity leads to lesser satisfaction in health care services, which are high involvement services, when indirect channel is used for service delivery.

[II] *There is no relationship between complexity and satisfaction when the channel of delivery is face-to-face (direct) in high involvement services.*

Disease Complexity does not predict consumer satisfaction in health care services, which are high involvement services, when direct channel is used for service delivery.

Reputation of doctor, Speed of Medical feedback through consultation, Confidence that one can avail services of health care provider in emergencies, and Experience level of doctor are variables which score over disease complexity, when it comes to Patient satisfaction in direct channel. Since the above variables are positively correlated to Patient Satisfaction, one can say that direct channel enables the above variables to provide the trust necessary in communication (Thomas Cooper) (Zeithaml et al, 2000), leading to lesser or no impact of disease complexity on Patient Satisfaction.

[III] *Complexity moderates the relationship between predictor variables and satisfaction within face-to-face (direct) channel in high involvement services.*

While we see from previous finding [II] that complexity does not predict satisfaction, from finding [III] we see that complexity moderates the relationship between predictor variables and satisfaction within face-to-face channel in high involvement services.

Scenario 2 – Face-to-face Health care service delivery (Direct Channel)	Patient Satisfaction = 15.184 + 4.099 (Reputation of doctor) + 5.79 (Speed of medical feedback through consultation) + 3.304 (Confidence that one will avail of health care provider in emergencies) – 2.216 (Time spent in waiting room) + 2.814 (Experience level of doctor) – 1.144 (Number of diagnostic procedures advised)
Scenario 4 – Low complexity - Face-to-face Health care service delivery (Direct Channel)	Patient Satisfaction = 13.410 + 6.358 (Speed of medical feedback through consultation) + 5.082 (Reputation of doctor) + 2.994 (Confidence that one will avail of health care provider in emergencies)
Scenario 6– High complexity - Face-to-face Health care service delivery (Direct Channel)	Patient Satisfaction = 10.802 + 6.287 (Speed of medical feedback through consultation) + 4.968 (Confidence that one will avail of health care provider in emergencies) – 4.216 (Time spent in waiting room) + 4.180 (Experience level of doctor) + 2.361 (Physical environment of health care centre)

Apart from the two variables i.e., 'Speed of medical feedback' and 'Confidence that health care provider will be available in emergencies' complexity moderates the relationship between predictor variables and satisfaction.

In the case of low complexity diseases, as there is no urgency, or anxiousness on part of the patient to meet the doctor, time spent in the waiting room does not feature as a predictor variable of satisfaction. Experience of the doctor also does not feature as a predictor variable of satisfaction as element of perceived risk i.e. uncertainty and consequence is less in the case of low complexity diseases. Number of diagnostics procedures advised does not predict satisfaction in case of low complexity diseases, since perception of risk is less in low complexity cases. Reputation of the doctor predicts satisfaction in case of low complexity diseases, as patients associate reputation of the doctor with his/her popularity since the disease is not complex and could be treated without the need for specialized diagnosis. Hence the popularity of the doctor becomes a major factor for choice of health care service provider in the case of low complexity cases.

In the case of high complexity diseases, as there is urgency, or anxiousness on part of the patient to meet the doctor, time spent in the waiting room features as a predictor variable of satisfaction. Experience of the doctor also features as a predictor variable of satisfaction as element of perceived risk i.e. uncertainty and consequence is more in the case of high complexity diseases. Physical environment of health care centre predicts satisfaction in case of high complexity diseases. The design of the physical environment plays a vital role in creating a particular identity and shaping the nature of the customer's experience. The service environment and its accompanying atmosphere impact customer satisfaction.

Physical evidence is particularly important for communicating about credence and professionalism of the service delivery mechanism which imbues trust and confidence in the customer. This is more so in the case of high complexity disease situations in the direct channel.

[IV] *Predictor variables of consumer satisfaction vary between channels in high involvement services.*

A closer relationship exists when there is face-to-face interaction between customers and providers. Although the service itself remains important, value is added by people and social processes. Both the firm and the customer are prepared to invest resources (including time) to develop a mutually beneficial relationship. This investment may include time spent sharing and recording information.

Customers many times need a continuing dialog focused on an understanding of their needs. Customers are also motivated by continuity of contact, wanting to deal with a specific person on a regular basis. (Lovelock et al, 1992)

As service companies grow larger and make increasing use of technologies such as interactive Web sites and self-service equipment, maintaining meaningful relationships with customers becomes a significant marketing challenge.

From the research it is seen that

A] For *direct channel,* Patient Satisfaction is predicted by variables such as

- Reputation of doctor treating the patient
- Speed of medical feedback through consultation
- Confidence that one will avail service of health care provider in emergencies
- Time spent in waiting room
- Experience level of the doctor treating the patient
- Number of diagnostic procedures advised

B] For *indirect channel,* Patient Satisfaction is predicted by variables such as

- Disease Complexity
- Experience level of the doctor treating the patient through Telemedicine

C] For *low complexity* cases in the *Direct channel,* Patient Satisfaction is predicted by variables such as

- Speed of medical feedback through consultation
- Reputation of doctor treating the patient
- Confidence that one will avail of health care provider in emergencies

D] For *low complexity* cases in the *Indirect channel*, Patient Satisfaction is predicted by variables such as

- Disease Complexity
- Usefulness of Information provided through Telemedicine
- Experience level of the doctor treating the patient through Telemedicine

E] For *high complexity* cases in the *Direct channel,* Patient Satisfaction is predicted by variables such as

- Confidence that one will avail of health care provider in emergencies
- Speed of medical feedback through consultation
- Experience level of the doctor treating the patient
- Physical environment of health care center
- Time spent in waiting room

F] For *high complexity* cases in the *Indirect channel*, Patient Satisfaction is predicted by variables such as

- Disease Complexity
- Education level of the patient

The above indicates that service delivery channel impacts consumer satisfaction in health care service, as the predictors of satisfaction are different for different channels. This finding supports *The Mehrabian-Russell Stimulus-Response Model*, adopted from environmental psychology, which holds that the environment and its conscious and unconscious perception and interpretation influence how people feel in that environment. (Donovan and Rossiter, 1982); (Lovelock et al, 2004)

Hence in the health care context, the environment in the service delivery channel and the conscious and unconscious perception and interpretation of the consumers influence their satisfaction level and hence predictors of consumer satisfaction vary between channels of service delivery.

[V] *The significance of the relationship between Experience level of doctor and satisfaction varies between channels.*

The beta coefficient for Experience level of doctor is 5.461 for indirect channel

Patient
Satisfaction = 67.41
– 7.297 (Disease Complexity)
+ 5.461 (Experience level of doctor)

The beta coefficient for Experience level of doctor is 2.814 for direct channel

Patient
Satisfaction = 15.184
+ 4.099 (Reputation of doctor)
+ 5.79 (Speed of medical feedback through consultation)
+ 3.304 (Confidence that one will avail of health care provider in emergencies)
– 2.216 (Time spent in waiting room)
+ 2.814 (Experience level of doctor)
– 1.144 (Number of diagnostic procedures advised)

In the case of indirect channel, the dependence on Experience of the doctor is much higher than in the case of direct channel. In indirect channel, the doctor is unknown to the patient, hence a more experienced doctor would result in higher levels of satisfaction. Whereas in case of direct channel, as the doctor is sitting right in front of the patient, and there is a face-to-face interaction between consumer (patient) and provider (doctor), though experience of the doctor is a predictor of satisfaction, the strength of the dependence on this variable is much less.

[VI] *The relationship between usefulness of information and satisfaction is moderated by complexity when the channel is indirect in high involvement services.*

Indirect channel

Patient

Satisfaction = 67.41

– 7.297 (Disease Complexity)

+ 5.461 (Experience level of doctor)

Indirect channel - low complexity

Patient

Satisfaction = 62.182

– 6.574 (Disease Complexity)

+ 1.865 (Usefulness of Information provided through telemedicine)

+ 4.821 (Experience level of doctor)

In low complexity scenario, the patient can make sense of the information provided to him by the service provider, due to the disease complexity being low, and hence the Usefulness of this Information impacts patient satisfaction positively.

[VII] *The relationship between education level of patient and satisfaction is moderated by complexity when the channel is indirect in high involvement services.*

Indirect channel

Patient

Satisfaction = 67.41

– 7.297 (Disease Complexity)

+ 5.461 (Experience level of doctor)

Indirect channel - high complexity

Patient

Satisfaction = 127.814

– 13.161 (Disease Complexity)

– 2.372 (Education level of patient)

In the high complexity scenario, we see that Education level of patient impacts patient satisfaction negatively. Level of faith in impersonal channel of service delivery in health care is higher amongst patients with lower levels of education, while patients with higher levels of education have less faith in health care delivered through impersonal channel. Educated people will be critical of the process of service delivery in the impersonal channel due to their inquiring nature instilled through the process of education.

[VIII] *The variables 'Speed of medical feedback' and 'Confidence that health care provider will be available in emergencies' predict satisfaction in both high and low complexity situations in direct channel.*

Speed of medical feedback predicts satisfaction in both high and low complexity situations. Since most services are prosumed (produced and consumed at the same time) they are set in real time and are delivered in real time. The physical presence of the customer is vital to this process and as such sensitivity to time becomes important. In general, today's customers are increasingly time sensitive, so that speed of service delivery, medical feedback in this case, is often seen as a key element in good service.

Confidence that health care provider will be available in emergencies predicts satisfaction in both high and low complexity situations. The faith that the health care service provider would be available during emergencies would be a relief for a person seeking health care service and hence confirmation of this faith would be one of the factors leading to satisfaction.

Research Contribution to advancement of Theory

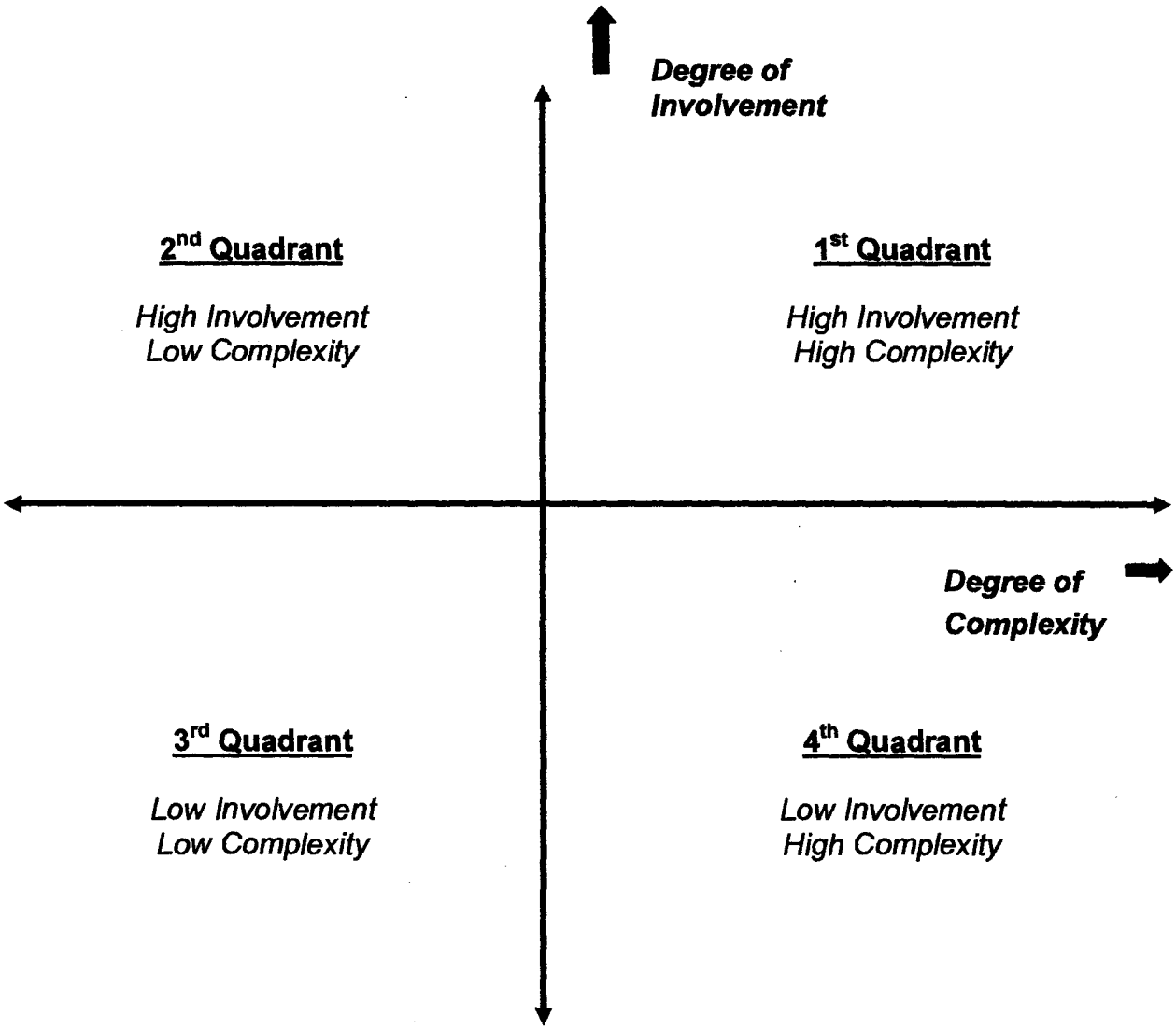
The outcome of this research contributes to the existing body of knowledge on how channel (direct and indirect) impacts customer satisfaction in high involvement and complex services like health care services.

Conceptual Framework

Given the high involvement and complexity scenario in healthcare service, the following grid was conceptualized in the second chapter of the thesis.

Shown below is the 2 dimensional grid. One dimension is the degree of involvement with a service (or stakes) and the other dimension is the degree of complexity of the service (as perceived by the consumer). Exhibit 4-2: Involvement–Complexity grid

Exhibit 4-2: Involvement–Complexity grid



This study deals with only the two high involvement quadrants, as healthcare is a high involvement and credence type service. (Zeithaml et al, 1996) Health care is a complex service involving a doctor dealing with the very "person" of the patient. (Parasuraman et al, 1985).

1. First Quadrant - High Involvement and High Complexity

This quadrant includes services like health care, which are high involvement services, where most high complexity disease treatments will belong.

2. Second Quadrant - High Involvement and Low Complexity

This quadrant includes again services like health care, which are high involvement services, where most low complexity disease treatments will belong.

Existing literature does not discuss or reveal any aspects of the above grid of which 2 quadrants (1st and 2nd Quadrant) are of significance to this study. Since the area (1st and 2nd Quadrant) has not been researched, the findings obtained in this research contribute to the services marketing literature.

Current and past literature does not reveal anything about customer satisfaction and the factors that are related to it causatively in each of these quadrants. As there is no mention of such a classification, there exists a gap in literature and theory, which has been examined and every effort has been made to fill it by researching the impact of channel on consumer satisfaction in high involvement and complex situations when;

a] The service is delivered through impersonal channels and there is no face-to-face contact between provider and consumer; &

b] the service is delivered directly when there is face-to-face contact between provider and consumer.

The hypotheses and methodology to explore the above were outlined in the preceding chapter. The hypotheses were formulated based on the Stimulus- Response Model taken from environmental psychology, where the outcome variable was how satisfied the consumer was with the service experience.

The Mehrabian-Russell Stimulus-Response Model, adopted from environmental psychology, holds that the environment and its conscious and unconscious perception and interpretation influence how people feel in that environment. (Donovan and Rossiter, 1982) In environmental psychology, the typical outcome variable is approach or avoidance of an environment. In services marketing, one can add a long list of additional outcomes that a firm might want to manage, for eg: how satisfied people are with the service experience after they have left the environment. (Donovan and Rossiter, 1982); (Lovelock et al, 2004)

The contribution to the body of knowledge in Services Marketing in this research is through the following:

[I] Involvement–Complexity grid

[II] Analysis of Relationship between Service Delivery Channel, Complexity and Satisfaction

[III] Impact of Service Delivery Channel and Complexity on Consumer Satisfaction

All the three above are explained through the findings of the research enumerated below:

[I] The relationship between complexity and satisfaction is negative when the channel of delivery is indirect in high involvement services.

[II] There is no relationship between complexity and satisfaction when the channel of delivery is face-to-face (direct) in high involvement services.

[III] Complexity moderates the relationship between predictor variables and satisfaction within face-to-face (direct) channel in high involvement services.

[IV] Predictor variables of satisfaction vary between channels in high involvement services in both high and low complexity situations.

Managerial Implications of Study

A service organization must use the research findings in a meaningful way - to drive change or improvement in the way service is delivered.

Any business should try and achieve the full value potential of each customer relationship. In most companies, the gap between the companies current and full value potential performance is enormous. (Grant et al, 1995)

The managerial implications based on this thesis are indicated below according to each finding.

Understanding the customer relationship

A fundamental distinction exists between strategies intended to bring about a single transaction and those designed to create extended relationships with customers. (Coviello et al, 1995)

Research Finding [I]: The relationship between complexity and satisfaction is negative when the channel of delivery is indirect in high involvement services.

It is seen in this research study, that the relationship between complexity and satisfaction is negative when the channel of delivery is indirect in high involvement services.

Indirect channel -(overall)	*Indirect channel - low complexity*	*Indirect channel - high complexity*
Patient Satisfaction = 67.41 **– 7.297 (Disease Complexity)** + 5.461 (Experience level of doctor)	**Patient Satisfaction** = 62.182 **– 6.574 (Disease Complexity)** + 1.865 (Usefulness of Information provided through telemedicine) + 4.821 (Experience level of doctor)	**Patient Satisfaction** = 127.814 **– 13.161 (Disease Complexity)** – 2.372 (Education level of patient)

Disease complexity in indirect channel and the diagnostic expertise is linked through the usage of technology such as videoconferencing etc. These technologies become the backbone of the service delivery mechanism in health care services using indirect channel.

As technological alternatives are explored to create and deliver services, service providers are discovering that not all customers are equally receptive to new technologies. As consumers differ in their acceptance of technology- related goods and services, marketers have become interested in segmenting customers, based on their willingness and ability to use the latest technologies (Lovelock et al, 2004).

Parasuraman (Parasuraman, 2000) shows that certain personal characteristics are associated with customer readiness to accept new technologies. These attributes include innovativeness, a positive view of technology, and a belief that technology offers increased control, flexibility, and efficiency in people's lives. (Lovelock et al, 2004)

Factors that are negatively associated with the adoption of technology include distrust, a perceived lack of control, feelings of being overwhelmed by technology, and skepticism about whether the technology will perform satisfactory. Service providers must consider these factors before implementing new technologies that may negatively affect customers' evaluations of the service experience. (Lovelock et al, 2004)

In case of complex services like health care, the consumer perceives a higher risk when channel of delivery is indirect. To address this issue, health care service providers using indirect channel can use *risk-reduction* strategies such as the following

- *Provide Information about the Service* – Consumers seek information about the service through word of mouth communication (from friends and family and from other people whose opinions they value), from sales people and from general media. Hence the strategy is straightforward and logical because the more information the consumer has about the service, the more predictable the probable consequences and, thus, lower is the perceived risk.

- *Develop a Brand Image* – When consumers have had no experience with a service, they tend to trust a well-known brand name. Consumers often think well-known brands are better and are worth buying for the implied assurance of quality, dependability, performance, and service. (Berry, 2000)

Thus Promotion and Education, which is one of the 7Ps of services marketing mix, can be used. No marketing program can succeed without effective communications. This component plays three vital roles: providing needed information and advice, persuading target customers of the merits of a specific product, and encouraging them to take action at specific times. (Booms et al, 1981)

Suggestions

Another approach could be a campaign to educate customers about ways to use and improve the service they currently receive. Giving customers progress updates as service is improved to address their needs and desires is sensible because it allows the company to get credit for iterative efforts in service delivery.

Benefits of Customers/ Firms relationships

Both parties in the customer/firm relationships can benefit from customer retention.

Benefits for Customers

Assuming they have a choice, customers will remain loyal to a firm when they receive greater value relative to what they expect from competing firms. Perceived value is the consumer's overall assessment of the utility of a product based on perceptions of what is

received and what is given. Value represents a trade-off for the consumer between the "give" and "get" components. Consumers are more likely to stay in a relationship when the gets (quality, satisfaction, specific benefits) exceed the gives (monetary and non monetary costs). (Gwinner et al, 1998) (Zeithamal et al, 2000)

- *Confidence Benefits*

  These benefits comprise feelings of trust or confidence in the provider, along with a sense of reduced anxiety and comfort in knowing what to expect. Across all of the services studied, confidence benefits are the most important to customers. (Gwinner et al, 1998) This is especially true in health care.

  Health care service providers using indirect channels need to develop and build confidence-building measures for the consumers in order to enable them to use and benefit from the services.

- *Special treatment benefits*

  Special treatment includes such things as getting preferential treatment when one has established a relationship with the service provider.

  Since the indirect channel uses the expertise of the health care provider located at a different geographical location the availability of the expertise would be at a premium. Health care service providers could use this aspect to increase their variety in service to enable them to have a better service portfolio added with a

wider profit portfolio. This would have an impact on the pricing, promotional, physical evidence and product/service strategies.

Research Finding [II]: There is no relationship between complexity and satisfaction when the channel of delivery is face-to-face (direct) &

Research Finding [III]: Complexity is moderating the relationship between predictor variables and satisfaction within face-to-face channel.

In a direct channel the presence of the service provider in a face-to-face situation is a strong factor for creating trust and faith resulting in patient satisfaction and hence complexity of the disease does not play a direct role in predicting patient satisfaction but moderates predictors of satisfaction. Hence the service provider needs to be aware of the following:

Scenario 4 – Low complexity - Face-to-face Health care service delivery (Direct Channel)	Patient Satisfaction = 13.410 + 6.358 (Speed of medical feedback through consultation) + 5.082 (Reputation of doctor) + 2.994 (Confidence that one will avail of health care provider in emergencies)
Scenario 6– High complexity - Face-to-face Health care service delivery (Direct Channel)	Patient Satisfaction = 10.802 + 6.287 (Speed of medical feedback through consultation) + 4.968 (Confidence that one will avail of health care provider in emergencies) – 4.216 (Time spent in waiting room) + 4.180 (Experience level of doctor) + 2.361 (Physical environment of health care centre)

It is seen in high complexity situations in the direct channel, waiting time that is time spent in waiting room is negatively related to satisfaction. Hence:

- In consumer wait situations, intervening aspects such as music, entertainment such as television shows etc. can be used effectively to shorten the perceived waiting time and increase customer satisfaction. Music has been found to be effective in relaxing for consumers in wait situations. (Hui et al, 1997) Relaxing music proved effective in lowering stress levels in a hospital's surgery waiting room. (Tansik et al, 1999) Pleasant music has been shown to enhance customer's perception of and attitude toward service personnel. (Dube et al, 2001)

- Another aspect of managerial action would be from the view point of setting prices for various service delivery levels, for example, as patient satisfaction is inversely linked to time spent in waiting room, one can design differential pricing mechanisms based on time taken to serve the customer and prioritizing customers service based on differential prices.

It is seen that in the high complexity situations in the direct channel, Physical environment of health care centre is positively related to satisfaction.

- Physical surroundings are important in impacting customer satisfaction in service delivery situations. It is known that the design of the service environment can influence customer choices, expectations, satisfaction, and

other behaviours. (Bitner, 1992). A visibly appealing physical environment can be created for patients to enable manage customer satisfaction effectively. Greater importance to ambience is essential on the part of managers in high complexity health care situations for better customer satisfaction.

Research Finding [V]: The significance of the relationship between Experience level of doctor and satisfaction varies between channels.

In both direct and indirect channel *Experience level of doctor* is positively related to satisfaction.

- As far as possible, experienced doctors should be empanelled in case of indirect channel as well as in direct channel.

Research Finding [VI]: The relationship between Usefulness of Information and satisfaction is moderated by complexity when the channel is indirect.

In the indirect channel in case of low complexity the *Usefulness of Information* is positively related to satisfaction.

- For instance, patients tend to want as much information as possible from their physicians, even if this information is negative. Conversely, physicians may tend to avoid divulging full information to patients because of assumed negative consequences associated with the knowledge of such information, particularly in the case of cancer patients. Also, some studies suggest that physicians tend not to address any patient psychological needs and do not tend to give patients opportunities to discuss such needs, even when the patient's illness invites such discussions.

  The provider should hence address all information needs, which patients seek from providers regarding their illness.

Research Finding [VII]: The relationship between Education level of patient and satisfaction is moderated by complexity when the channel is indirect.

It is seen that in the indirect channel in high complexity situations, "Education level of patient" is negatively related to satisfaction.

- As patients with higher levels of education tend to be relatively less satisfied in high complexity situations, a transparent and straightforward approach from the health care provider would help in mitigating the negative levels of satisfaction.

Research Finding [VIII]: The variables "Speed of medical feedback" and "Confidence that health care provider will be available in emergencies" predict satisfaction in both high and low complexity situations in direct channel.

It is seen that in the direct channel, "Confidence that health care provider will be available in emergencies" and "Speed of medical feedback through consultation" is positively related to satisfaction.

- A wider health care provider supply range in terms of a larger panel of health care providers is desirable to boost the confidence level of patients regarding availability of services of health care providers.

- Since speed of medical feedback predicts satisfaction, managers involved in health care services need to be aware of the importance of streamlined procedures and systems that help provide quicker medical feedback to patients.

Overall Benefits to Organizations arising out of satisfied customers

The benefits to an organization for maintaining and developing a loyal customer base are numerous. They can be linked directly to the firm's bottom line. (Zeithamal et al, 2000)

There will be an increase in customers and repeat customers, as consumers get to know a firm and are satisfied with the quality of its services relative to that of its competitors, they will tend to give more of their business to the firm. Costs will be lowered and there will be free advertising through word of mouth.

When a product is complex and difficult to evaluate, and there is risk involved in the decision to buy it, as is the case with many services, consumers most often look to others for advice on which provider to consider. (Matilla & Wirtz, 2002) In fact the greater the risk that customers perceive in purchasing a service, the more actively they will seek and rely on word of mouth to guide their decision making. (Bansal & Voyer, 2000)

Satisfied, loyal customers are likely to provide a firm with strong word of mouth endorsements. The importance of *word-of-mouth communication* in shaping expectations of service is well documented in literature. (Davis et al, 1981) Recommendations from other customers are generally viewed as more credible than are firm-initiated promotional

activities and can have a powerful influence on people's decisions to use (or avoid using) a service.(Bansal & Voyer, 2000) (Lovelock et al, 2004)

When services are delivered to people by people, they are difficult to standardize and their outcomes and processes may be inconsistent from provider to provider, from customer to customer and even from one time period to the next. This inherent heterogeneity is an advantage as well as a disadvantage. It is disadvantageous in the sense that service delivery is difficult to control and predict and the resulting differences in service delivery may cause customers to question a firm's reliability as far as service delivery is concerned. On the other hand, it is advantageous in the sense that it presents opportunities to the service provider to customize the service offerings as "real people" deliver them in "real time". There is opportunity for one-to-one customization of the service offering. Heterogeneity pursued in a purposeful manner can be turned into an effective customization strategy.

Limitations of the Study

This study has not been without limitations. The universal limitation of time has also been inherent during this research study. The degree and width of indirect channel has been a limitation which the researcher has tried to reduce to the best of her ability.

Scope for Future Research

The following is the scope for future research.

- Researching Involvement-Complexity grid

  The impact of channel on consumer satisfaction in the 3rd and 4th quadrant of the Involvement-Complexity grid can be researched.

  - Involvement-Complexity grid - Third Quadrant - Low Involvement and low Complexity
  - Involvement-Complexity grid - Fourth Quadrant - Low Involvement and High Complexity

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