

A Review on The Theories of Adoption Telemedicine in Middle East : Toward Building Iraqi Telemedicine

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Abstract:- Telemedicine is the use of modern telecommunications and information technologies for the provision of clinical care to individuals at a distance, and transmission of information to provide that care. Recent advances in information technology and biomedicine increased significantly the technical feasibility, clinical feasibility and affordability enabled collaborative of telemedicine and medical service delivery. Health organizations around the world are becoming more interested in the acquisition and implementation the telemedicine technology to improve or expand existing services and patient care. The ultimate success of telemedicine in an organization requires the adoption of adequate care both technological and managerial issues. This study examined the adoption theories, the key management problem facing many health care organizations which interested in or currently evaluating telemedicine. This research models targeted the technology adoption and empirically evaluated in a study of the investigation involving more public health agencies and criticize the theories. Several research and management implications that emerged from the study results are discussed.

Key-Words: -Telemedicine; Adoption theories ;Healthcare services;E-health;Iraq telemedicine;Middle East healthcare.

1. Introduction

Developing rural areas are using telemedicine at most to connection wellbeing focuses, tertiary focus and referral healing facilities together. A few E-Health applications, for example, telemedicine can be found as a case with diverse achievement degrees [1]. There are two explanations for the wide use of telemedicine as

This stuck the rising of Information and Communication Technologies (ICT), which have animated the latest growth of different telehealth applications. However, the selection of telehealth in health awareness settings is important to carry a steady mode to the substantial size healing facilities [4], [5]. Accordingly, telehealth is principally about making utilization of the progressed telecom innovations to promote better health awareness administrations and to bear a powerful triad of wellbeing data overpowering geographic, time, social, and social deterrents. Moreover, the telemedicine engineering can make to social insurance with lower expenses

expressed by [2], firstly, the absence of options, and furthermore the evident topographical predominance of telemedicine over customary prescription. By and by, disregarding entirely the exclusive requirements of the technology, it is impractical to design its utilization into a certain normal as craved [3]. E-Health includes the cooperation of various forms of innovative administrations

while protecting the quality increment. Scientists like [6] expressed this engineering as 'standard change' with desires to have tremendous effect on all components of the health awareness association. The basic difficulties that face the combination of telehealth systems in social insurance administrations associations epitomizes in budget and mechanical positions. On the other hand, unlike variables, close up the extension of telehealth advances [7]. Case in point, the failure of specialists to react proficiently with telemedicine applications and insufficient change administration. Consequently, human and authoritative components assume an essential and significant part in the accomplishment or

disappointment of the combination of telemedicine[8].

Erstwhile, the applications of online medical services, administrations, for example, e-Health, telehealth, and telemedicine perceive as an auxiliary need [9], [10]. The factors that influence the health awareness, advancement are turning into a powerful factor to force back the economy. In this manner, the necessity for exploration to demonstrate the factors influencing the doctor's state of mind to utilize telemedicine within social insurance parts is needed. Demand, [11] upheld this case by clarifying how developing telemedicine is generally joins the interest on health awareness benefits by individuals is growing up day after an alternate, accordingly medicinal services administration offers the best conceivable and powerful tone. Telemedicine is introduced as a portmanteau of the health awareness framework and ICT that gives predominant learning practices [12]. [13] recognized it as an application of human services practice backed by electronic methodologies and correspondence. The applications of telemedicine were characterized by different scientists (e.g., [14], [15]) as a consolidation of interactive media segments that backings the association and overseeing of medical services information. For example, the utilization of programming by restorative doctors in preparing an unmistakable undertaking, case A dobe devices, advanced imaging, and pieced data based surgery, different frameworks for checking, observation records, and wellbeing entrances [16]. It additionally comprises of various medicinal informatics apparatuses that can be utilized for distinctive learning purposes. Besides, it utilizes the network and different official documents to assist the human services methodology and data conveyance process [17]. Such process additionally perceived as a growing field of restorative informatics, indicating the association and wellbeing administrations conveyance and data by including the Internet and related approaches. All things weighed, the telemedicine term recognizes specialized improvement, and another method of working, prompting, and duty of arranging, worldwide, believing, to enhance

social insurance mainly, territorially, and round the world [18].

The Iraqi government as of late has ended up greatly worried about the use of e-Health with stress on telemedicine administrations. Permitting in the health awareness administrations and the fundamental factors that can effectuate on the working ability regarding the world, mechanical accessibility, and other science related issues.

Before the rise of electronic adapting in the Iraqi social insurance parts, using online apparatuses for overseeing therapeutic exercises are needing of sufficient methods to empower physicians to experience an excellent practice [19]. This directed the inspection and repair of human services to captivate medical staffs with various learning exercises so as to build their capabilities; those uses are totally or somewhat executed through eye to eye preparing projects. [20] assessed the Iraqi learning benchmarks of health care as poor because of the absence of innovation funding. Also, in that respect is an expanding request by different Iraqi health awareness classes to utilize electronic systems as a section of learning restorative projects for physicians as a compelling selection of standard learning apparatuses. This thus led the Iraqi human services segments to tell apart and disperse imaginative electronic learning practices. Henceforth, telemedicine may have some potential to open doors and sounds extremely guaranteeing to elevate doctors to use all the time.

Some fruitful illustrations of data innovation adjustment via health awareness in creating nations incorporates information packing and picture digitization, notwithstanding feature meetings over low-transfer speed line, which empowered wellbeing experts to stay in touch over topographical impediments [21], [22]. Then again, wellbeing chiefs, doctors, and arrangement producers have ended up more concerned with the administrations offered by telemedicine. Therefore, various telemedicine wanders in diverse therapeutic fields, for instance, pathology, radiology, nursing and psychiatry were pushed in various nations, including Western Europe, Australia, Asia and North America

Despite the disappointment or accomplishment of previous telemedicine endeavors, it is apparent that there were a ton of them and they all confronted and attempted to get the same hindrances, which encapsulates in social, social, political and monetary perspectives [23]. Furthermore, different counsels are given to cover basic therapeutic fields, for example, irresistible melodies, neurology, general surgery and psychological medicine. In spite of the fact that, telemedicine is imperative to keep up and to give human service administrations to individuals from everywhere throughout the globe, guaranteeing uniformity rights for every person [24], yet its execution in the Iraqi setting was not accomplished effectively. On that point are numerous variables behind this disappointment, however, predominantly hierarchical components lead the pack as offer association fears disappointment, especially with something consider to be new like telemedicine though numerous ventures identified with its usage were suspended.

2. E-Health based ICT in Iraq

E-Health is an essential illustration of the developing human service innovations, which think about as a ramification of E-learning and it contains a gathering of uses and operations that are utilizing the accessible electronic media as a part of request to convey the e-wellbeing applications as an apparatus for the social insurance experts. [25] clarified the E-Health as an online imply that comprises of developing ICT devices to empower individual accomplish their employment on the web. This aides enhance the health awareness areas and ramp up their abilities to oversee and perform a few administration and observing practices.

The doctors can also deal with the wellbeing records effortlessly from anyplace and at any time [26]. E-Health depends for the most part on the perfect machine equipment and programming in all controls with connection to the IT and ICT to the number of inhabitants in medical services [27]. Utilizing E-Health applications, for example, telemedicine in the therapeutic fields has been recognized as a venture for spurring the staff, incorporating medical attendants keeping in mind the end goal to enhance their capacity in

taking care of different social insurance obligations [28]. The current administrations of E-Health in most Iraqi clinics don't elevate doctors to oversee and keep records of a quiet's wellbeing status. This joins the appropriation of correspondence methods for managing the utilization of engineering to oversee and control one's advancement [29]. Accordingly, the requirement for an effective fusing of E-Health administrations into doctor rehearses in the creating nations is in most need [30].[31] expressed that the current ICT use in Iraqi divisions changes starting with one then onto the next focused around the application of utilizing its apparatuses.

Iraqi establishments expect to completely use the online involvement in diverse parts as reported by [32].[33] has proposed diverse ventures to construct feasible administrations for data and correspondence innovation in instruction segments Iraqi set on nonstop quality change of showing and learning, with a concentrate on the utilization of ICT.

In the Iraqi instruction part,[29] managed a true obstruction as how to react to engineering usage, changes in the earth with vital modernization, through the investigation of ideas and new models. They alluded to the current shortcoming of Iraqi associations to send ICT assets. One of these arrangements is the utilization of online frameworks with a specific end goal to help tackling the integration issues of the Iraqi government foundations. Because of absence of demonstrating the utilization of IT and ICT benefits alongside restricted research on its usage, most Iraqi health awareness parts are confronting temperamental states of utilizing telemedicine which may offer to the innovative or structural angles as talked about prior[34].

A case of this is a lacking number of specialized staff at heading association for clients to get viable backing and direction of accomplished masters [35]. Notwithstanding, the accomplishment in the utilization of apparatuses and electronic instructive offices includes distinctive techniques to be considered regarding the arranging, outline, assessment and execution. This headed the analyst to examine the impacts of

mechanical and hierarchical structure in accordance with the telemedicine use in the Iraqi medicinal services segment

3. Comparative studies

The benefits of telemedicine technology with respect to health care access, quality, and stability are unlikely to comprehend without its integration into medical practices. This makes physicians to be the main users of telemedicine to which they can manage and monitor patients' records [36]. In return, this makes the acceptance of this technology to be a key challenge for the utilization of telemedicine networks. Moreover, the introduction of telemedicine shapes the delimitation between health care institutions and lead to a redefinition of the traditional professional roles. Consequently, sustaining a successful adoption of healthcare depends on several factors associated with technological settings [37], [38], structural characteristics [6], and behaviorall aspects [39], [40].

At the individual level, some studies have investigated the psychological and social determinants of adoption of telemedicine by physicians based on some theoretical understanding. Moreover [41]recommended a various leveled model of acknowledgement of telemedicine incorporate the measurements of the individual, innovative, and authoritative levels. In this model, the variables were associated with the level of organization of peer that may influence on the 'decision to adopt telehealth and on the compatibility of the technology with doctors practice. They measured these variables at the individual level from the viewpoint of doctors.

As such, the researcher in this study has done a little research to understand the key aspects related to adoption of telemedicine and telehealth in different healthcare sectors from an organizational perspective. For example, studies of organizational characteristics associated with the adoption of telehealth in the health care system of Hong Kong was mainly aiming to determine the availability of technological support at home, having a champion for health care after hospitalization, and change management at various levels as facilitators for the integration of telehealth [42].

[43] identified the main factors for promoting a successful implementation of the telehealth network in the Canadian public and private sectors. The authors addressed the role of organizational culture as a primitive element of organizational structure with regards to supporting the use of the technology. This led the authors to report how considering the characteristics and the dynamics of health-care organizations can help shape the implementation of telehealth in order to deliver the organization promises to the citizens. Nevertheless, [44] highlighted other factors in terms of limited central leadership and challenges related to telemedicine services settlement in which it has narrowed the possibility of adopting telemedicine network.

The majority of those authors argued that examining the factors affecting the telemedicine utilization must consider the main components of organizational structure that fits all programs along with the individual's behavior to use or adapt technology. As such, it can be noticed that telemedicine depends on certain conditions and settings in order to be fully utilized in the organization. Therefore, previous studies provided different findings to which the researcher in this study cannot rely on these aspects because they are difficult to generalize. Meanwhile, most previous studies conducted on examining the organizational dimensions for adopting telemedicine were not anchored in explicitly theoretical models. This in turn led to pertaining other health care organizations' characteristics that could possibly influence telemedicine adoption in the Iraqi context.

4. Research Theories

4.1 Trompenaars Cultural Model

[45] developed a model comprises of seven social measurements for the point of elucidating the distinctions in national social associations. It gives an instrument to gauge the conceivable contrasts of national society and how to measure these distinctions. The methodology of blending the contrasts between social measurements can bring

many potential further bolstering the good fortune of associations that mostly worry about their prosperity to use or apply engineering. [44] arranged the measurements of society as takes after:

- a. universalism versus Particularism — this idea is essentially depending on the social part in structuring the connections in the middle of the individual and the law embraced by an association. Creating nations and some created unified with a universalistic society are normally more towards imparting convictions, determined from the hierarchical impact on one's qualities to utilization of adjusting inside the association. Such circumstance may not exist in the Iraqi setting, though the social measurements vary starting with one gathering then onto the next; besides, the particularism society generally puts more attention on fellowships to which specific circumstance is assessed by the doctor in choice making purposes.
- b. Individualism versus Communitarism — this alludes to the way individual typically collaborate with others in a group based settings. In independence society, clients of engineering are more prone to give the oblige obligation so as to accomplish objectives for a positive assignment.
- c. Specific versus Diffuse — this was clarified as the distinctions in people's observation to manage circumstance connected with hierarchical connection. It comprises of individuals imparts and keep up private qualities, though others in the same societies stands more for the advanced social

4.2 Theory of Planned Behavior (TPB)

[46] amplified the TRA to incorporate build of conduct control. The fundamental part of seeing behavioral control (PBC) has been talked about by the creator focused around the TRA principals which that the conduct is constantly under volitional control. The impression of the individual can be seen by "... the vicinity or nonappearance of the important assets (e.g., Money, time, aptitudes, and collaboration, and so forth.) Also opportunities" [47]. Figure 1 cleared that in the

going with diagram. On this theory, the Telecommunications Regulatory Authority, caught on behavioral arrangements and motivational variables that affected the decision to grasp or reject the improvement. It was additionally expected that the more prominent the proposition to perform a specific conduct, it is likely adopter in the way that the execution of practices. In any case, [46] derived that craving alone is not the fundamental drive of behavioral point. In light of the choosing credit to express longing, the capability to assess control must be open (behavioral control). Besides, PBC is the joined subjective affirmation of being able to perform the conduct furthermore the potential adopter's previous encounters and expected hindrances with the philosophy. While the idea driving the Theory of Planned Behavior (TPB) has been all things considered avowed, the master considered that the Theory of Reasoned Action (TRA) would give the more basic utility. The creation of subjective gages; notwithstanding, as a marker of the plan or determination and a general relationship in the midst of TPB and TRA, was held as a harbinger premise for the proposed system. This headed the scientist to adjust TPB to join the doctor's demeanor to utilize telemedicine within the Iraqi setting.

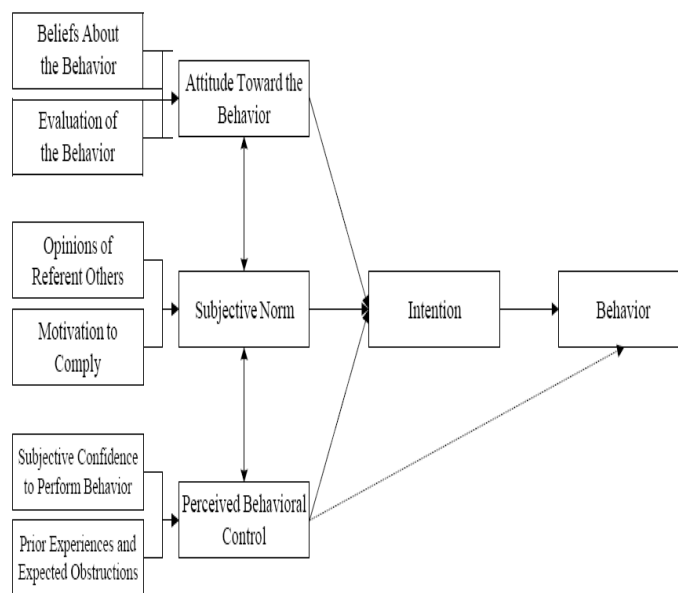


Figure 1 Theory of Planned Behavior (TPB)

Source: [46]

4.3 Organismic Integration Theory

The theory of integration implies that students take part in much behavior that is fascinating or in relation to their needs. As such, the situation that the majority of the students take part in practices at school are persuaded remotely and perceived as an alternative way, which is discrete from the essential work itself, for example, the act of a musical

instrument for the advancement of an expert or to fulfil the educator, and not liable to just delight in the play itself. This theory clarifies the main integration questions, that the students do or don't, maintain the main sort of obtaining, ingestion, and the integration of outside motivational courses of action in the arrangement of self-motivation.

In this study, the researcher argues that physicians tend commonly and automatically to suit the social parts of the surroundings and the integration of some of these qualities and approaches to go about as motivation grow. Such inspiration can be mimicked from the utilization of telemedicine administrations to which individual need to acclimatize the norms, standards and practices for doing undertaking. Inspiration to oblige equations gathering ("do it") and preclusion ("don't do it") exists in light of the fact that persons require clearly to discover better methodologies to grow their capability in the social world and distinguish all occurrences, bestowed qualities and essential goals, and assemble the inclination of the gathering. This was accounted for by a few specialists as the degree that individual contribute and direction the wellbeing regulations of the state (i.e., To achieve "mix of articles") [48]–[50], they are gone up against with more run toward oneself and demonstrate the execution of all the more by and large positive in the correlated field, including the hierarchical association [51].

As per the theory of integration and motivation (instead of characteristic motivation), the theory of integration is therefore found to reduce separation or confusion from using the tool. However, it alludes to associating distinctive sorts of external feelings with differing degrees of self-motivation. Such aspect back to the fact that being autonomous is not enough to be free from external influences[52]. Rather, of the knowledge of independence of students as indicated by individuals that are generally endorsed the worth and critics of the method for carrying on intuition. As physicians carry a different convictions and practices, degrees, there are, four sorts of motivation might be envisioned along a continuous self-motivation to use telemedicine.

The minimum sort of the external motivation that Iraqi hospitals should elude is the outer regulation, which focused on how individuals

may take an interest in activity, keeping in mind the goal to achieve it by keeping them away from the discipline, as opposed to having a distracted [53]. With the external regulation, individuals can esteem the conduct itself. As such, the process can be contributed to the an autonomous outer motivation [54]; In this case, the physicians consents to outside appeals to affirm or self-protection according to others or to hush the risk of self-esteem (to stay away from emotions of blame). The outer regulation and contributed regulation are comparative in the position of causality, in the feeling of duty (i.e., Motivation control). In this manner, the researcher summated that the sorts of using telemedicine from outer motivation speak to the sort of regulation recognized autonomously of one's attitude to such use.

The physicians in the Iraqi hospitals see the world in a regulation ("this is imperative, it is helpful") and enthusiastically changes over to the (inside) self-regulation. Compose a coordinated almost characteristic motivation at the level of self-determination, even if two of the impetus structure shifts fundamentally [55], as does the association incorporated the imperativeness of using tool, while focused around the natural motivation to enthusiasm toward the action and turn out on them. Regulation and coordinated regulation connected with the position of one's attitude to perform or use activity associated with current environmental settings and mental feeling of opportunity [56], and like the decision to use.

5. Theoretical Framework

[57] characterized a hypothetical system as a calculated model of how to conjecture or consistently build a relationship between numerous components that have been acknowledged as vital to the matter of the subject. From the hypothetical structure, the testability of hypotheses could be dead set and the genuineness of the defined hypothesis could be scrutinized. The foundational structure has been protected as defined in Chapter Two.

5.1 Technology Organization Environment Framework

Adopted Technology Organization Environment (TOE) framework developed by [58] to guide the investigation of this study. Technology Organization Environment based on the organizational adopting technologies. The framework has been utilized successfully to clarify adopting of different information technologies, as well as inter-organizational systems [59][60]. Those researches have verified consistent supporting for TOE's abilities to provide a complete perception on innovation technologies, although facilitate the flexibility for identifying and categories exclusive parameters that might be effected in a specific situations [61]. Thus, the main reason for selecting this framework is that this approach has the potential to address issues of this study.

[62] menthioned any framework can be adapted with the need to be enhanced and refined to fit in the context and it applys within a definite period of time. As stated before, researchs of information sharing follow a factor approach, which their authors assumed that the outcomes of technology adoption are determined by a number of variables known as factors identified at a particular time [63]. As showed in Figure 2 TOE recommends that adoption technological innovation is influenced by four contexts – technological, Individual, organizational (*i.e.*, Hospital), and environmental.

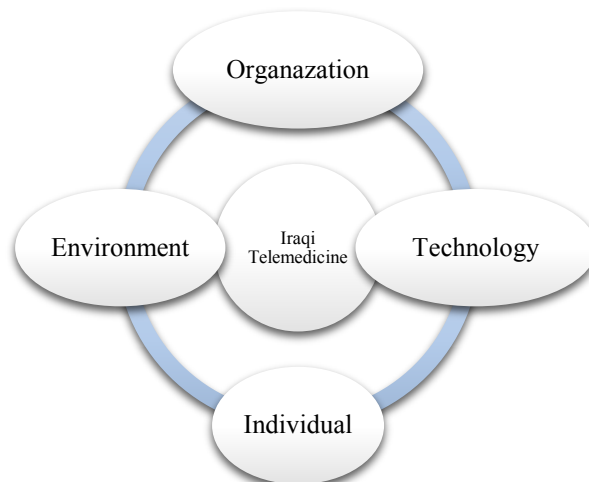


Figure 2: Theoretical framework of information system adoption- adapted from [58].

The *technological context* focuses on the characteristics of the technology that can influence adoption. In this study, the technological context represents a hospital's perceptions regarding the characteristics of telemedicine. Telemedicine contexts refer to the influence factors of information sharing. The organizational context, which is herein referred to as the *agency context*, represents the characteristics of a hospital. Finally, the *environmental context* refers to the characteristics of the external environment in which a hospital operates. Combined, the technological, behavior, organizational, and environmental context are proposed to influence telemedicine by a hospital.

The qualitative method identifies parameters that would constrain and hinder the adoption of telemedicine in Iraq, along with the supportive factors in that particular organization. Using the results, a strategy was developed to demonstrate how the Iraqi health system could be made ready to receive a telemedicine system, together with policies for the use of telemedicine. A comparison with Kuwait, Jordan, and Syria shows that the Iraqi healthcare system is more ready to adopt a telemedicine system with respect to the

individuals, technical infrastructure and governmental support. Finally, an economic analysis was performed in order to investigate the cost effectiveness of the proposed system.

As above mentioned that TOE use to adopt technologies thus it has been adopted to this study besides adding individual characteristic as concerned by literature and physicians interview.

5.2 Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by [64], is one of the early models to lay the base for numerous studies in the area of ICT. TAM proposed a method of measure user acceptance through evaluating user's attitudes, intentions, principles, and actual computer adoption behavior. Group of researchers postulated that behavioral intention to use information technology was mainly associated with usage. TAM is alike to diffusion theory, nevertheless places more emphasis on psychological predispositions and social influences. TAM uses a set of two external variables employed in many technology acceptance contexts (Figure 5.2):

- Perceived usefulness: "The degree to which a person believes that using a particular system would enhance his/her job performance"
- Perceived ease of use: "The degree to which a person believes that using a particular system would be free of effort"

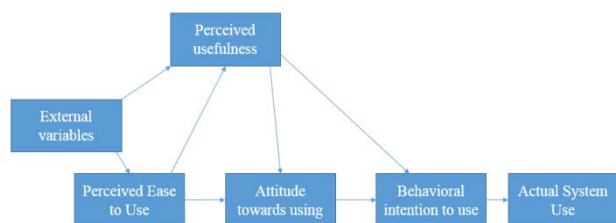


Figure 3: The Technology Acceptance Model (Modified from [64])

In figure 3 "Attitude towards using" can be described as either a positive or negative feeling towards the ICT stemming from "perceived usefulness" and "perceived ease of use". "Behavioral intention to use" is described as a function of "attitude towards using" and "perceived usefulness" and determines the "actual system use".

This model has been found to be simpler to use by researchers, while also being a powerful model for establishing the variables that influence user acceptance of new technology [65].

5.3 Social Exchange Theory

According to the social exchange theory, the result of a respondent's behavior was based with respect to the responsive conduct of other respondents in an inter-organizational relationship [66]. According to [60], social exchange theory supplies the basics in the study of relationships among organizations. IS researcher have initially utilized this theory as a basic to explore and observe the factors that influence inter-organizational relationship from a non-economic perspective (ibid).

The social exchange theory formulates a theoretical background so as to observe and monitor non-profit inter-organizational operations [67]. When the relationship and partnership among different entities do not necessarily have any economic outcome, this theory can be applied with respect to the argument. According to [66], the factors derived from this theory, namely: power, trust, interdependency and conflict, have been observed in dissimilar empirical research in order to analyze different features of inter-organizational relationship and collaboration.

"Trust" and "Power" are recognized as two essential social factors that lead important roles in the process of decision making towards participation in electronic information sharing with respect to inter-organizational information sharing [68]. Inter-organizational trust is explained as a

company's faith that a different company or department will execute the actions that will provide positive results, and simultaneously not undergoing unpredicted actions that could give negative results for the company [69].

According to [70], research proposed that inter-organizational trust can supply affirmative prospect and buoyancy to the other side of the relationship so as to establish the efficiency of the departmental network and achieve common goals. There is disparity between interpersonal trust and inter-organizational trust whereby inter-organizational trust decreases conciliation cost and clashes, and promotes performance in networked collaboration; however interpersonal trust is unable to give such significant effects [71].

"Power" is also a factor that manipulates any kind of inter-organizational, and it is defined as the ability of field to apply control on a different field to act in a predicted circumstance [72]. It is considered that based on its own needs, low power side of the relationship can be highly manipulated by the other powerful. The role of power in inter-organizational relationships has been studied with regards to the interdependency among organizations. According to [73], in order to achieve an aim and ambition, dependency between organizations in a networked collaboration environment must be preserved.

Most of the studies do not point out the limit that power is able to manipulate inter-organizational relationships and they explained that anyhow an organization should have considered a number of activities; power could not be the reason to the action's happening. However, [72] criticize power studies, stating that these studies do not address the extent to which power can force an organization to engage in a certain activity in which it would not otherwise do so. They further claim that, "if an organization would have taken a certain activity anyway, power was not the cause for the action's occurrence. For instance the action may

have taken because of perceived benefits to the organization" (p. 10-11).

They strongly suggest that inter-organizational systems research should take issues such as benefits/costs into account. Their assertion proves the suitability of synthesizing the aforementioned theory bases to investigate the antecedents of information sharing between state and local agencies or government agencies themselves.

5.4 Diffusion of Innovation (DOI)

DOI is a theory of how, why, and at what rate new ideas and technology spread through cultures, operating at the individual and firm level. DOI theory sees innovations as being communicated through certain channels over time and within a particular social system [74]. Individuals are seen as possessing different degrees of willingness to adopt innovations, and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed over time [74]. Breaking this normal distribution into segments leads to the segregation of individuals into the following five categories of individual innovativeness (from earliest to latest adopters): innovators, early adopters, early majority, late majority, laggards [74]. The innovation process in organizations is much more complex. It generally involves a number of individuals, perhaps including both supporters and opponents of the new idea, each of whom plays a role in the innovation-decision.

Based on DOI theory at firm level [74], innovativeness is related to such independent variables as individual (leader) characteristics, internal organizational structural characteristics, and external characteristics of the organization. (a) Individual characteristics describe the leader attitude toward change. (b) Internal characteristics of organizational structure includes observations,

according to [75] whereby: “centralization is the degree to which power and control in a system are concentrated in the hands of a relatively few individuals”; “complexity is the degree to which an organization’s members possess a relatively high level of knowledge and expertise”; “formalization is the degree to which an organization emphasizes its members’ following rules and procedures”; “interconnectedness is the degree to which the units in a social system are linked by interpersonal networks”; “organizational slack is the degree to which uncommitted resources are available to an organization”; “size is the number of employees of the organization”. (c) External characteristics of organizational refer to system openness.

Since the early applications of DOI to IS research, the theory has been applied and adapted in various ways. According to [75], the DOI theory perceives that new technologies are used depending on specific channels and social norm. The users have varying degrees of willingness to use the technology, and, with the passing of time, the users normally adopt the technology [74]. [76] adapted the characteristics of Rogers' model and came up with the Diffusion of Innovation (DOI) theory which has the ability to measure adaptation of information technology innovations. According to [77] the DOI has six constructs relying on Rogers' five characteristics: relative advantage, compatibility, complexity, and observability and trial ability. Moore and Benbasat's contribution in this theory was in providing additional constructs such as image, voluntariness, results demonstrability and visibility.

The additional constructs have great influence in improving the original instruments. The adoption of cloud computing in recent research need more extensive reviews in these theories and models in order to understand the constructs' original definition, validation, elaboration, and the authors' contribution by these constructs. Thus, the reviewed models and theories have given enormous insight into the proposed factor in this research and

also assisted the authors to identify the constructs' definitions.

6. Quantitative methods

The definition of a quantitative research is " the representation of numbers and management of studies or examinations with the intention of explaining and elucidate the observable fact that the examination or study reveal [78], [79] .According to [80], it is prevalently utilized in researches related to natural sciences, and is advocated to be utilized in the field of social sciences research with the ensuing aspects: (1) due to its quantifiability and reliability, the data can be generalized; and (2) due to its design that ensures objectivity, it is perceived as the most suitable means for appraising and reviewing comparative results in relations to the baseline data.

Nevertheless the empirical numerical qualities in the quantitative approach has the shortcoming of its inability to decipher and elucidate human conducts in the real world. According to [81], additional limitations in quantitative research is its dependency on the experimental value and statistical management, which should filter and separate all additional non-experimental variables. Among the accepted tool of quantitative methodologies is the survey questionnaire approach.

According to [82], 60% of the methods utilized were implemented quantitatively, and 41% of the techniques utilized were surveys, and these insights were discovered through the reviews done on through a study in eight major IS publications, that reviewed 1893 articles published between 1991 and 2001. This

study will utilize survey questionnaires to determine the Iraqi Telemedicine framework aspects.

6.1 Surveys (questionnaires)

Generally, the aim of the survey questionnaire is to obtain data from a sample of the whole target population being studied in a standardised and systematic way [83]. Many studies have used surveys to collect data, as the results of the survey can be generalised if based on the sampling frame. Furthermore, surveying is considered to be a highly structured technique, so it is easy to apply to any research ground [84][85]. Moreover, the survey is often conducted to describe the behavior and attitudes of the sample under test. The questionnaire has proven its usefulness in IS research for collecting data from the intended perspectives [83], [85]. The strength of this technique lies in having a design that matches the study objectives.

6.2 Qualitative methods

According to [86], the qualitative method is described as "the examination that is not numerical and involves the analysis of observations, for the aim of ascertaining the fundamental significance and relationships patterns. Furthermore, [80] expounds that the principal objective of the qualitative approach is to engage and involve audience participation by members of the real world through the study and analysis of conditions and definite milieu.

6.3 Qualitative interviews

This method is a common used method of data collection in healthcare studies interview [84], besides it is mostly widespread in field of IS [83]. Though many healthcare services research is achieved by using quantitative approach, lately many published studies have shown the increment usage of qualitative approach [84].

There is a study that reviewed nine interdisciplinary journals regarding managed research from 1998 to 2008 found that the average use of qualitative methods in research was 330 articles per year; almost half (47%) of the qualitative methods used were interviews [87].

In one study that used a qualitative method to study the organizational consequences of telemedicine [88], the author chose this approach due to its ability to interpret the perspectives of the participants. Another study used semi-structured interviews to assess the perceptions of the participants involved in introducing telemedicine technology to their clinical practice [89]. The use of the qualitative method has increased the knowledge base of health research, as this method has the ability to collect plenty of information from the participants [90]. Moreover, the qualitative method is able to identify unforeseen problems and benefits and to determine the outcomes of the programmers from different perspectives [84]. Therefore, this study will use this method to collect the appropriate and to find out the data required, based on the research objectives.

7. Reexamination of Relevant Literature

In this study, the specialist catches up audit of articles for associate survey of the later appropriation of telemedicine engineering. The reason for this exploration was partitioned into two sections. In the first place, the examination discovered that there are comparative studies, which have been distributed since the begin of the introductory audit of the writing. Besides, the analyst tried to demonstrate that the routines, research variables, and the aftereffects of different studies have analyzed systems, research variables, and the consequences of this dissection in the setting of a specific individual expert. The study demonstrated that there were numerous investigates that are utilizing the online database Proquest. The

review incorporated the disclosure of the beginning conditions utilized in the starting survey of the writing.

There were twenty-six different pursuit, which gave back 421 consolidated results; just a little part of them are exceptional and were viewed as significant. Table 2.1 gives a rundown of all the inquiries and sorting loaded with materials that have been returned, and there were two finished quests of the resort. The principle pursuit utilizing the expressions "Doctor", "reception," and "data engineering" and second hunt utilizing the expressions "Doctor ", "selection", and "telemedicine" was utilized as a part of this study. Each one hunt gave back 200 and 103 separate articles. In this way, the hunt accounted down Excess and immateriality in inquiry operations.

Table 1 Literature Searches and Results

Search	Term 1	Term 2	Count
1	Telehealth	Adoption	128
2	Telehealth	Technology Adoption	11
3	Telehealth	Organization theory	3
4	Telehealth	TPB	9
5	Telehealth		0
6	Telehealth	Technological	1
7	Telehealth	Structural	22
8	Telehealth	Patient Record Privacy	0
9	Telehealth	Physician attitude	7
10	Telehealth	Behavioral differences	3
11	Telemedicine	Adoption	56
12	Telemedicine	Technology Adoption	9
13	Telemedicine	Electronic medical records	2
14	Telemedicine	Culture	6

15	Telemedicine	Software and hardware	0
16	Telemedicine	Subjective Norms	1
17	Telemedicine	Patient Privacy	5
18	Telemedicine	Patient Record Privacy	0
19	Telemedicine	Perceived Usefulness	4
20	Telemedicine	Perceived Ease of Use	1
21	TOE	Perceived cost	10
22	TOE	Physician attitude	20
23	TOE	Behavior differences	62
24	TAM	Perceived cost	8
25	TAM	Patient Privacy	1
26	TAM	Subjective Norms	52

The specialist has deliberately inspected these perspectives in Table 1 and prompted, pick five articles that identified with the destinations in this study despite none of these articles are speaking to a schema for deciding doctor state of mind towards the utilization of telemedicine. These articles managed the conceivable obstructions identified with innovation reception of telemedicine.

The survey moreover made new variables not considered in this particular examination, on the other hand, of proportional authenticity and may be variables for future consideration. These articles, with everything taken into account watched out for the going with potential limits to the telemedicine innovation allotment: cost, tenacious protection, subjective principles, ease of use, handy, accessibility, political and social segments, machine suitability to oneself, and time organization. A rundown of their most recent disclosures served to supplement the theoretical foundations for a moment back investigated in this written work review. Possibly, telemedicine innovation gives doctors thorough patient record data. That data,

until further recognize, is for the most part specific to a practice or a mending focus foundation.

The destination of this study, then again is to shape a totally interoperable system whereby doctors, social insurance offices, and telemedicine over the Iraqi doctor's facilities can store, get to, redesign, and oversee patient records. This right to increase passage is joined as one with sensitivity to keeping up patient protection. While the researcher's appeal gave back 27 results for the statement "tolerant insurance" which headed, particularly to evaluate the effects of security on telemedicine dissipating.[91] present and inspect the issue postured for patient assurance.

The protection viewpoints needed to comfort patients and telemedicine customers pretty much as limit the capacity to uncover patient record data between concerned gatherings. In Iraq, it transforms into a complex concordance between keeping up the profit of telemedicine administrations and patient protection. In this manner, [92] assume that patient protection goes about as a vital part that have lessened closeness by 33 percent as contrasted with past studies. In this way, the protection issues have constrained the framework utilize and sway telemedicine scattering by 25 to 40 percent. This study does not; regardless, address solitary doctor appointment. It doesn't answer to what degree the understanding of telemedicine protection may impact doctor apportionment of telemedicine.

[92] research the effect of telemedicine appropriation focused around the key components of its use. They perceive the incoherence of the moderate allotment of telemedicine innovation in spite of the potential for improved correspondence between doctors. They use a quantitative methodology to research the relationship between present telemedicine gathering and doctor determination desires. Their revelations were contemplated to the procedure of social practices which comprises of telemedicine allocation. They adequately measured at a basic augmentation when all is said in done doctor gathering arrangement with each one unit augment good to go level telemedicine appropriation. Besides, they assume that guaranteeing assignments serve as pointers of generalists' determination desires. Then again,

generalists' apportionments did not affect individual generalists' telemedicine reception. They presumed that the key combining of subjective models in the pattern of casual groups that do with the reality sway doctor gathering of telemedicine innovation.

Then again, [93] study did not; regardless, measure different variables that may affect telemedicine selection. Such angle may fuse the customizable telemedicine utilize, expense, and nonattendance of strong inspiring powers for specialists. Through case examination of little doctor polishes in four states was led by [93] to measure the impacts of the unlucky deficiency of strong persuasion to use telemedicine. Of course, their revelations suggest that cost and social related impulses alone can't revive telemedicine determination rates. They perceive the noteworthiness of a structure that addresses the specific needs of angles that is operational for both doctors and their staff. The researcher acknowledges that such case examination parallels the expense, ease of use, and authoritative structure. A variable considered and dismembered by [93] approaches to measure of seeing usability and saw handiness of doctor's restorative accomplices. They recommend that the creating richness of experience by restorative partners will upgrade documentation and subsequently decipher into stretched telemedicine innovation appointments.

A key differentiation between this study and different past one is the imperatives of programming and equipment's ability in running telemedicine administrations. While the [93] study tries to investigate simply the moderate rate of embracing telemedicine, the examination of telemedicine allotment focused around the components that may impact IT reception were not secured. Consequently, the examination by [59] was added to this examination the political and social parts of IT execution. They explored the parts that instigated a fizzled IT use in commonplace social protection parts. They examined the political and social issues to be the central reason behind changing affiliation's technique to use or modify development. On a more wide sense the set of variables in association with the obliged understanding of the uniqueness between district of an IT pattern and its nonappearance of certified utilization are yet to be investigated. Their model suppositions that

framework quality, information quality and IT help impact thinking to utilize, ensured utilized, lastly work fulfillment. Basically together do true blue utilization and errand fulfillment interpret into IT skeleton net profits. Furthermore, their study wires equivalent measures, for instance, security and staff cravings to change. Once more, they researched telemedicine allocation accomplishment and exploration the influencing variables for doctor gathering of telemedicine. Moreover, they highlighted the prerequisite for an "action examination" model for upgrading the reception of IT related administrations in the rebuilding field. These revelations help researchers to recall the multifaceted philosophy of IT use, which beyond question can figures the present and future blockades to viable telemedicine innovation adjustment.

[94]apparent unquestionably the frustration of their doctors with telemedicine innovation despite admirable educational efforts made to upgrade their impression of comfort and helpfulness. Dependably, specialists felt that telemedicine designing did not give the far reaching documentation that correspondence gave. Shrewd exercises and day-long advance prepared sessions moved beyond with and still specialists battled with the new modality of the telemedicine mapping. In short, specialists did not comprehend the benefits that the telemedicine structure would give. While imperviousness to change was the fundamental part of doctors, the measures of their clear convenience and comfort with the instrument were accounted for to be low. It is obvious that embracing instruments for the client's accommodation and learning worth expect a key part in the viable execution of telemedicine engineering. Moreover, [95] implies the part that social angles play in IT allotment. It is charming to note that the social perspectives, according to [94], realized significant piece of the IT use in the human services segments. Then again, the minimum thought of IT dismemberment among doctors played in the generation of telemedicine innovation [96]. The conclusions drawn from this point by point investigation avow a rate of the measures used by the investigative and present an intriguing thought for measuring the effect of telemedicine adjustment by Iraqi health awareness areas.

8. Related studies

These days, it is well realized that numerous urban and rustic regions in creating nations still need access to quality health awareness. Such need is exceptionally normal in those ranges with the landing of the unequal dissemination of social insurance offices. Hence, it is accepted that using the applications of telemedicine administrations in these ranges can profit extraordinarily the social insurance frameworks. Notwithstanding, it has been watched that these nations frequently confront the usage of human services frameworks. The way that the utilization of e- therapeutic administrations skeletons can provoke loss of time and fiscal holdings, may be considered. According to [97], the accomplishment or the frustration of the use of electronic wellbeing mindfulness depends on upon a couple of components. For the accomplishment of the use of an e - social insurance framework, the chairman ought to break down the variables, for example, social and political association before execution. Moreover, society ought to be included in any usage to accomplish achievable. The danger of disappointment can't be tended to through the appraisal of these variables. This makes it crucial for those executing the electronic social insurance frameworks have the vital apparatuses, as well as all the more essential, to comprehend whether the association and the encompassing group is prepared to enhance such a framework.

Elements influencing the execution of electronic human services frameworks need to be precisely assessed to evade any misfortunes. Computes that inside, especially on the utilization of the system is arranged and join readied to recognize the change, investment, and establishment and an excitement to use these skeletons. These components similarly make up what is implied as dynamic and e-Health System Readiness Index.

[64], referred to that the establishment of e-wellbeing is an essential gadget to enhance human administrations, organizations, and wellbeing mindfulness movement and disseminating of guideline and social protection. The utilization of an electronic human administrations schema can

aggravate existing structures, especially when there is an impenetrable to change among stakeholders, regardless of the way that it is astoundingly useful. This safety can be from people, association or organization itself. This is the reason it is essential to get ready for the foundation to grasp the framework is assessed before the usage of e-Health himself to stay away from the danger of disappointment. One of the other main considerations that focus the achievement or disappointment of the health awareness framework when actualized is (EHR) framework or electronic wellbeing records. This is on the grounds that the EHR framework is a huge piece of the electronic social insurance framework. As a result of this that this section concentrates on e-Health Readiness Assessment Methodology (EHRAM), which examines the paramount variables that need to be assessed for the effective usage of e-wellbeing frameworks. This evaluation might advise the chiefs of wellbeing offices on the most ideal approaches to address the different issues that may ruin the usage of electronic social insurance frameworks. EHRAM schema incorporates e-Health Readiness Assessment (EHRAF), the assessment process, information mining systems and investigation and mechanized hardware to execute EHRAM.

[98], the get ready for a graduate to function obviously, is presently obscure. Current progressing studies went for securing the relationship between the ability to work and different variables, for example, the connection to work, work fulfillment and the craving to stay in the working environment. In a study that was in the state of Victoria, Australia, there were 96 graduate attendants from two healing facilities, the lion's share of medical caretakers favored work fulfillment above all else. The makers included data collection through surveys and quantitative estimation of the benefit of clinical, regulatory and social adroitness. The eventual outcomes of the study reveal that the accessibility for graduate work depends on upon the potential.

[66] investigated the advancement of utilizing e-wellbeing in creating nations. The creator proposed a model comprises of five components. These components incorporate the setting of destitution, the substance of the wellbeing data gave to

wellbeing laborers and how they can be moved from paper being focused around a computerized arrangement, a remote association, wellbeing offices that help the exchange of information and wellbeing data administration as a section level framework for wellbeing data, abilities, and backing for group advancement. These components have been conveyed as data to empower the choice making of individual and group in the best of wellbeing issues and other advanced fields.

[99] talked about a high capability of e-wellbeing in the field of correspondence intervened by machines and other advanced advances. They likewise treated the current confirmation on the utilization of electronic interchanges to enhance the wellbeing results of behavioral learner. Notwithstanding this, they assessed the confirmation concerning the utilization of e-wellbeing. The analysts found that the impact of e-wellbeing on medical attendants correspondence was exceptionally helpful in their learning.

[100] reported the fancied capacity and the idea of e-wellbeing availability focused around other medicinal data innovation by watching the changes in conveying health awareness, and a comprehensive model of wellbeing data. Also, the creator acknowledged distinctive examination zones, including Europe, Australia, and the United States for the usage of e-wellbeing, and infers that a few angles identified with execution expenses, difficulties and outcomes discovered to be connected with the move to a far reaching electronic wellbeing framework.

[101] found that surveying the status to utilize framework by association relies on upon the eagerness of professionals and in the usage of electronic health awareness frameworks. They developed this comprehension focused around information gathered from nearby groups; the information intends to educate how it can convey a great health awareness programs. They likewise evaluated distinctive specialists' conclusions about the achievement of e-wellbeing usage inside the group. The fundamental territories incorporate the clinical circumstance of the group, group administration and a readiness to acknowledge the change, the accessibility of stores, specialized help, framework, practical business, united information

and the accessibility of the vital instruments. Moreover, the momentum examination incorporates considers that have been examined, for example, fittings and give specialized backing in the structure. On the other hand, it is imperative to bring up that the study centered all the more on the designation of budgetary assets, rather than the key ranges that requirement for assessment.

8.1 TELEMEDICINE IN DEVELOPING COUNTRIES

Developed countries who have implemented telemedicine have benefited from its application. Despite the problems in these systems, they have functioned effectively. By contrast, developing countries have poor infrastructures, limited healthcare services, and a significant shortage of doctors and medical staff. Developing countries should learn from the experience of developed countries to promote technological development in the field of healthcare.

The lack of knowledge about the use of technology and the Internet among doctors and patients are among the impediments to the spread of

telemedicine among developing countries. In spite of the rising number of internet users in developing countries, industrial countries still have more users in comparison [102]. Furthermore, developing countries are faced with economic deficits and limited resources, which prevent them from developing a telemedicine project [103]. The limited technology and internet use in developing countries make people apprehensive of adopting new technology. As a result, decision makers and possible sponsors fail to fully understand the potential benefits from the system, leading to a shortage in funding. Given the importance of decision makers in the development of telemedicine, information dissemination targeted to such players is essential. Thus, healthcare providers and decision makers can offer seminars and conferences on the advantages of telemedicine and its applications to drum up government support. The table 2 shows the factors that studied in Middle East countries by some research.

Table 2 the factors that studied in Middle East countries

	KUWAIT	SAUDI	JORDAN	SYRIA	PALASTINE
Policy	√	√	√		√
Upper Level Leadership	√				√
Compatibility	√	√			√
IT Capability	√		√	√	√
Technical support	√	√	√	√	√
Connectivity		√			√
Top management support	√	√	√	√	√
Cost	√	√	√	√	√
Privacy	√	√			√

Culture	√	√	√	√	√
Attitudes toward telemedicine	√	√	√	√	√
Benefits of telemedicine	√	√	√	√	√

Developing countries must promote telemedicine through campaigns and conferences for people to appreciate the services that telemedicine can offer. In addition, relevant courses can be offered to educate people and the youth may be introduced early to computers and technology in order to develop proficiency. In this manner, students become more familiar with this technology and open-minded to any technology-related innovations in the future. Overall, developing countries have many problems that prevent them from deploying telemedicine and its applications, whereas developed countries have overcome most of these problems, allowing them to utilize telemedicine effectively.

used the grounded theory to find out the factors while in Syria and Jordan used the theory-drive to create the conceptual framework, moreover Kuwait used the technology acceptance model. It is clear that the design of Telemedicine framework improves the medical practice in developing countries. But the greatest barrier as perceived by healthcare providers for not adopting telemedicine system was lack of knowledge about the telemedicine and its applications benefits table 2.2 shows the Comparison in Middle East countries.

Table 2.2 a comparison between Iraq, Saudi Arabia, Jordan, and Syria in regards to their readiness to adopt telemedicine.

The summary of this analysis can be conclude as in Saudi teleconsultation the author

Comparison	Iraq	Saudi Arabia	Jordan	Syria
ICT infrastructure	Poor	High	High	Poor
Awareness of Telemedicine	Majority are Not aware	Majority are aware	Majority are aware	Majority are Not aware
Attitude toward telemedicine	resistant to change	Able to change	Able to change	resistant to change
Funding	Available	Available	Not Available	Not Available

Government support	Available	Available	Available but awaiting for sponsors	complicated for governmental sector
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9. Conclusion

The analyst of this research gave an exact examination of former exploration directed on the use of IT apparatuses in the medicinal services connection. The part included angles identified with mechanical setting, albeit imperative, may not sufficiently clarify or foresee innovation selection at the hierarchical level. Thusly, the scientist audited extra settings, for instance, the execution of e-Health apparatuses out in the open and private associations and its connection to the authoritative setting. Different perspectives identified with the telemedicine use in associations with errand contemplations. The section additionally gives a few experiences about the advancement reception in health awareness settings, singling out the essentials of individual, hierarchical, and context oriented variables by the authoritative, innovative, and ecological connections. Because of the developing critics of telemedicine and the shockingly restricted dialog about its enter administration issues in the Iraqi setting, the analyst in this study explored the authoritative appropriation of telemedicine engineering utilizing a hypothesis identified by association, society, and TPB. In this section, the scientist clarified in detail the principle segments of the exploration show alongside the adjusted variables, which built focused around the tended to issues and difficulties in the Iraqi healing centers.

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