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Barriers and challenges in adopting Saudi telemedicine network: The perceptions of decision makers of healthcare facilities in Saudi Arabia

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Summary Despite emerging evidence about the benefits of telemedicine, there are still many barriers and challenges to its adoption. Its adoption is often cited as a failed project because 75% of them are abandoned or 'failed outright' and this percentage increases to 90% in developing countries. The literature has clarified that there is neither one-size-fit-all framework nor best-practice solution for all ICT innovations or for all countries. Barriers and challenges in adopting and implementing one ICT innovation in a given country/organisation may not be similar — not for the same ICT innovation in another country/organisation nor for another ICT innovation in the same country/organisation.

To the best of our knowledge, no comprehensive scientific study has investigated these challenges and barriers in all Healthcare Facilities (HCFs) across the Kingdom of Saudi Arabia (KSA). This research, which is undertaken based on the Saudi

Abbreviations: HCFs, Healthcare Facilities; STN, Saudi Telemedicine Network; KSA, Kingdom of Saudi Arabia; TOE, Technology—Organisation—Environment; UTAUT, Unified Theory of Acceptance and Use of Technology; MOH, Saudi Ministry of Health; PHCs, Primary Healthcare Centres; OTN, Ontario Telemedicine Network; CPG, Clinical Practice Guidelines; ETSSM, the Evaluating Telemedicine Systems Success Model.

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Telemedicine Network roadmap and in collaboration with the Saudi Ministry of Health (MOH), is aimed at identifying the principle predictive challenges and barriers in the context of the KSA, and understanding the perspective of the decision makers of each HCF type, sector, and location. Three theories are used to underpin this research: the Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology—Organisation—Environment (TOE) theoretical framework, and the Evaluating Telemedicine Systems Success Model (ETSSM). This study applies a three-sequential-phase approach by using three mixed methods (i.e., literature review, interviews, and questionnaires) in order to utilise the source triangulation and the data comparison analysis technique. The findings of this study show that the top three influential barriers to adopt and implement telemedicine by the HCF decision makers are: (i) the availability of adequate sustainable financial support to implement, operate, and maintain the telemedicine system, (ii) ensuring conformity of telemedicine services with core mission, vision, needs and constraints of the HCF, and (iii) the reimbursement for telemedicine services.

Introduction

The KSA healthcare system currently faces many difficult challenges and the MOH is under tremendous pressure from its government to develop a high-quality healthcare system and improve healthcare services to all residents, particularly in rural/remote areas [1—3]. In 2010, the MOH conducted a study into the adoption of telemedicine stating that telemedicine promises can alleviate many challenges of the KSA healthcare system [4]. In 2011, the MOH launched the first national project for telemedicine, referred to as the Saudi Telemedicine Network (STN), covering all Healthcare Facilities (HCF) [4]. The MOH cooperated with Canada Health Infoway and Ontario Telemedicine Network to provide guidance in developing a telemedicine roadmap for KSA, the STN roadmap, which was issued in 2013 [4].

Despite emerging evidence about the benefits of telemedicine, there are still many barriers and challenges to its adoption which is often cited as a failed project as 75% of them are abandoned or 'failed outright'; this percentage has increased to 90% in developing countries [5—10]. There is neither one-size-fit-all framework nor best-practice solution for all ICT innovations or for all countries [8,10—16]. The barriers and challenges in adopting and implementing one ICT innovation in a given country or organisation may not be similar neither for the same ICT innovation in another country/organisation nor for another ICT innovation in the same country or organisation [8,10—16]. Most countries/organisations are likely to face some common barriers and challenges in adopting a specific ICT innovation (e.g., telemedicine) with a significant degree of variation. However, each country/organisation will have its own unique sets of barriers and challenges related to its context and environment (e.g., macro-economic, culture, structure, social and political situation, potential users (e.g., acceptance, attitude), strategy and plan (e.g., standards, processes), and ICT innovation needs (e.g., equipment, infrastructure, speed, user-friendliness) [4,8,10,11,17—20]. Some of the barriers and challenges that may limit one ICT innovation in a given country/organisation may no longer exist, may partly diminish, or may become an opportunity for another ICT innovation, or countries/organisations [11,17]. Thus, the ultimate success of adopting and implementing telemedicine in a given country or organisation is ensured if these barriers and challenges are adequately addressed [21].

Each HCF site in KSA is likely to have different sets of barriers and challenges in adopting and implementing telemedicine (i.e., enabling their HCFs sites to join the STN) as there are different types of HCFs participating in the KSA healthcare system (e.g., Primary Healthcare Centres (PHCs), hospitals, medical cities, etc.). In addition, these different HCFs types belong to different sectors (e.g., MOH sector, military sector, private sector, etc.) and are located in urban area or rural/remote area [22,23]. Therefore, each HCF may have its own motivations and expectations, different business drivers, needs, Clinical Practice Guidelines (CPG), funding incentives and different priorities and agendas [4,8,10,18,19,24].