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DIGITAL ENTREPRENEURSHIP IN MENTAL HEALTH CARE: A QUALITATIVE ANALYSIS OF BENEFITS AND CHALLENGES IN SAUDI ARABIA

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Abstract
Digital entrepreneurship has emerged as a transformative force in the mental healthcare sector, offering innovative solutions to critical challenges such as stigma, accessibility, and service availability. This qualitative study explores the impact of digital entrepreneurship on mental health services in Saudi Arabia by examining the perceptions and insights of mental health professionals and entrepreneurs. In-depth interviews were conducted with psychiatrists (n=3), psychologists (n=3), and mental health advocates from civil society organizations (n=3). Thematic analysis revealed four significant themes: perceived benefits of digital media in providing mental healthcare, challenges of mental healthcare services through digital media, the use of digital media to strengthen mental health services, and proposals to improve and develop digital media to enhance mental health. The findings highlight the potential of digital platforms to increase mental health privacy, contribute to mental health literacy, and ensure better service availability and accessibility. However, challenges such as patient credibility, the treatment team's competence, treatment cost, limited insurance coverage, and poor internet connectivity were identified. The study emphasizes the critical role of digital entrepreneurs in promoting social innovation and enhancing connectivity in mental health services. Recommendations include designing and implementing new digital mental health services strategies, innovating systematic methods for family involvement, and adhering to professional ethics and therapeutic guidelines. The integration of digital technology into the mental health system in Saudi Arabia has the potential to provide accessible, available, and affordable care, guiding researchers to gather further evidence to enhance practices and contribute to the development of a comprehensive and sustainable mental healthcare system.

Keywords: Digital entrepreneurship, Mental health care, Saudi Arabia, Accessibility, Service availability, Digital platforms, Qualitative analysis

1. INTRODUCTION

The rise in the advancement of digital technologies has transformed several industries worldwide, and the mental healthcare field is also being transformed. Digital entrepreneurship has become a strong force within the healthcare sector in recent years, offering innovative solutions to critical challenges, such as stigma, accessibility, and service availability. In the Kingdom of Saudi Arabia, where there have been social and traditional barriers to mental health awareness and services, digital platforms provide an appropriate avenue for bridging gaps in mental healthcare access. Digital entrepreneurship in this field harnesses tools, such as mobile applications, teletherapy platforms, and AI-driven mental health resources, allowing patients and practitioners to connect in previously impossible ways.

Although digital solutions provide several opportunities, they also encounter new challenges, including privacy, patient credibility, and the need for technological literacy among users and providers. The purpose of this study is to examine the dual effect of digital entrepreneurship in mental healthcare in Saudi Arabia by exploring its expected benefits and inherent challenges. This study provides insights into the evolving role of digital entrepreneurship in enhancing mental well-being services in Saudi Arabia through a qualitative analysis of insights from entrepreneurs, mental health professionals, and advocates. This research will be the foundation for optimizing the utilization of digital platforms to support mental health initiatives in the region.

1.1 Research Question

How does digital entrepreneurship impact the accessibility, quality, and efficacy of mental healthcare services in Saudi Arabia, considering both the benefits and challenges of digital platforms?

This research examines the dual impact of digital entrepreneurship on mental health services in Saudi Arabia. This study investigated the positive role of digital platforms in enhancing mental health privacy. In addition, the study

addresses critical challenges, including patient credibility, digital literacy, and Internet connectivity, which may impact the quality of digital mental health interventions.

2 LITERATURE REVIEW

2.1 Introduction

Technology has empowered a new age of entrepreneurship, as entrepreneurs find digital tools that will allow new ventures to exploit commercial opportunities worldwide. Digital entrepreneurship is highly topical, as technological advances and developments in infrastructure create several opportunities for entrepreneurs.

Digital entrepreneurship is transforming existing businesses and creating new ventures by developing novel digital technologies and novel usage of such technologies [1]. It involves utilizing digital tools, such as web-based applications and information, to offer services and goods to consumers. The digital entrepreneurship-based businesses entail IT and traditional business knowledge, translating to entrepreneurs requiring technical and business-related knowledge and skills, a dual mastery that is not easily acquired. This implies that digital entrepreneurs can be classified as research-based or imitation entrepreneurs, who use digital media to pursue other, wider entrepreneurial opportunities [2], [3].

2.2 Characteristics

The features of digital entrepreneurship, transformation, and their relationships are complex and critical in understanding this digital age. This understanding is perceived as a critical pillar of economic growth, job creation, and innovation. However, several issues regarding digital entrepreneurship and transformation are predominant, hindering digital entrepreneurs from optimizing the advantages that digital entrepreneurship contributes to business value [4].

Digital entrepreneurship plays a crucial role in social innovation. It directly influences innovation, given that the platform relies on technological tools. Technological innovation has been rapid and dynamic, with various tools being developed daily. Digital technology drives social innovation, making it a critical component in social development [5]. Technological security, job displacement, and environmental sustainability are some challenges in digital innovation. This study focuses on how technological innovation and entrepreneurship can be aligned to influence social innovation. Creating value from technological innovations is considered a fundamental driver for supporting community growth and development. Social innovation involves the development of technological ideas that make business processes effective and efficient. Technology enables entrepreneurs to venture into business-utilizing technologies [6]. There are many technological opportunities, and venturing into these opportunities is essential for social innovation. However, failure is a serious issue that affects social innovation as it sends a negative signal [7]. Failed digital entrepreneurs send negative messages to upcoming entrepreneurs, which may discourage them from venturing into business. However, there is more to this when examining the frequency of failure and the factors contributing to failure. This helps entrepreneurs develop mechanisms to overcome challenges and succeed in their business.

Digital entrepreneurs help solve many social challenges related to innovation that affect communities. Digital entrepreneurs bridge the gap due to the lack of access to social services, due to distance [8]. Through digital tools, entrepreneurs can provide solutions for communities. Societies can access healthcare, banking, communication, and education services through digital platforms courtesy of digital entrepreneurs. This increase in access to services through technology shows the Diffusion of Innovation Theory. This theory explains how innovations in digital spaces have spread over time. Digital entrepreneurs play a critical role in driving the diffusion of social innovation to help in social development [9]. The theory plays a critical role in social innovation. Social problems are diverse, and the use of digital entrepreneurship as an avenue to resolve these issues is necessary.

The Social Network Theory examines the structure of social relationships. Digital entrepreneurs can use this theory to develop digital solutions to enhance social relations [10]. Digital entrepreneurs operate within a network of stakeholders, investors, and mentors. These networks provide access to resources, accelerate development, and provide society with tools for communication and networking. Using this theory, digital entrepreneurs can focus on this area of social networks and develop tools that enhance the effectiveness and efficiency of a network's functionality [11]. Innovation is necessary because societies rely on networks to communicate and share resources and opportunities. Social networks theory further highlights the benefits of social network density in facilitating innovation flow and resource distributions [12]. The density of social networks is essential, as digital entrepreneurs can utilize this information to determine which area needs social networks more and invest in that area. Social innovation is the driving factor that helps societies develop [13]. Development originates from social solutions that use digital tools. Digital entrepreneurs can change their business landscape by developing social innovations to overcome social issues like pandemics.

Digital solutions have a direct effect on social communication. Young entrepreneurs use digital solutions, like social media platforms, to communicate [14]. Communication is a powerful tool in business as it enhances communication

between clients and businesses [15]. Further, it shares that digital entrepreneurs utilize different digital tools to facilitate communication and access to information. Communication can be a direct, one-on-one exchange of information between buyers and sellers. It can also be a buyer who uses technology to search for information regarding a given brand. This demonstrates how digital entrepreneurs use technology to communicate and complement social innovation. Digital entrepreneurs' curiosity pushes them to develop different tools that eventually contribute to social innovation [16] . This finding indicates that digital entrepreneurship plays a crucial role in social innovation.

2.3 Digital Mental Health

- **Comparison with Other Sectors** We now explicitly examine digital entrepreneurship in the field of mental health, drawing comparisons with sectors such as banking and education by highlighting:

- The regulatory burden associated with mental health applications is significant, as these applications are frequently required to adhere to medical-device regulations or clinical trial mandates, in contrast to many platforms in the banking or educational technology sectors [17].
- Therapeutic applications necessitate the demonstration of clinical efficacy, such as through randomized controlled trials, rather than relying solely on usability or engagement metrics that are prevalent in other industries.
- In the context of mental health, ethical considerations such as data privacy, informed consent, and the protection of vulnerable individuals are of utmost importance. In contrast, banking applications primarily emphasize financial security.

- **Definition of "Evidence-Based"** We define "evidence-based" interventions as those substantiated by at least one peer-reviewed randomized controlled trial. Additionally, we summarize two recent meta-analyses that quantify their effectiveness: a moderate effect size ($g = 0.76$) for app-delivered CBT on depressive symptoms [18]. A comparable effect for smartphone-based interventions across anxiety and depression ($g = 0.61$) [19] .
- **Current State of Research:** We present an overview of significant systematic reviews and meta-analyses. Research priorities in the field of digital mental health emphasize the importance of clinical validation and long-term follow-up [20]. A consensus was issued with recommendations on user engagement and clinical integration, proposing a tiered accreditation model for mental health apps [21] . The "Digital Health Credibility Framework" outlines six conditions (e.g., transparency of algorithms, data security benchmarks) that legitimate mental health interventions must meet [22].

Analytical Note: Why Lifestyle Apps Are Preferred to Therapeutic Tools

The Preference for Lifestyle Applications Over Therapeutic Tools. This analysis explores why numerous entrepreneurs prioritize "well-being" or lifestyle applications rather than fully therapeutic tools. Reduced entry barriers: Lifestyle applications circumvent medical device classification and costly clinical trials. Accelerated time-to-market: Entrepreneurs can rapidly iterate without requiring Institutional Review Board (IRB) approval or clinical partnerships. Monetization models, such as freemium or subscription models, are increasingly accepted for self-help content. However, it is important to consider scholarship that cautions against this trend, as it may expose users to untested interventions, potentially leading to false reassurance or delayed clinical care [23], thereby compromising overall effectiveness.

2.4 Co-Design in Digital Mental Health

Recent advancements in digital mental health highlight the necessity for participatory design approaches that extend beyond conventional user-centered methods. Co-design is an articulated process involving the "creativity of designers and people not trained in design working together in the design development process," [24] thereby transforming users from passive recipients into active co-creators. A systematic analysis of 93 popular mental health apps revealed a striking gap in real-world user engagement—median daily active use was only 4%, with peer-support apps showing higher engagement (17%) compared to others. This highlights that co-design, especially involving end users in app development, could improve relevance, usability, and sustained uptake in digital mental health interventions [25] . Consequently, integrating co-design into digital mental health interventions can yield more user-relevant, sustainable, and scalable solutions.

2.5 Advancements in Mental Health

Through digital tools, entrepreneurs can provide solutions for communities. In the evolving healthcare landscape, integrating digital technologies has revolutionized shifts in business and opportunities. Digital technology has formed the foundation for revolutionizing healthcare services to enhance their reach and effectiveness.

Mental health disorders are the leading cause of disability worldwide, with over one-third of the world's population affected by mental health conditions in their lifetime [26]. Mental health is an area where technology has changed. Millions of startups have come forward with digital solutions that make it easy to access mental health services and provide them to millions of people. The convergence of mental health and digital solutions allows entrepreneurs to undertake business.

Digital health technologies have boosted advancements in mental health care using high-powered computing and electronic data collection methods. Implementing these technologies reduces healthcare costs, improves population health workforce engagement, and increases quality of care. Digital health can revolutionize how practitioners deliver

mental healthcare [27]. In recent decades, the remote monitoring and management of healthcare records have evolved. Despite these challenges, digital health technologies have significantly impacted the healthcare sector. For example, it is vital to incorporate critical concepts such as crash reports and computerizing error logs in electronic monitoring systems.

Digital health entrepreneurship can advance mental health care by improving population health, increasing the quality of care, reducing costs, and increasing workforce engagement [28].

Digital health interventions such as web-based consultations and Internet cognitive-behavioral therapy are effective and safe for preventing and managing mental health problems in individuals with chronic conditions [29]. Mobile health tools can facilitate early diagnosis and personalized treatment strategies in mental health; however, user engagement and evidence-based cases are crucial for successful integration into clinical practice [30]. Digital mental health interventions can be effective for adolescents and young people with mental health problems. However, more rigorous evidence-based studies are needed for widespread adoption and scale-up in low-resource settings [31].

Digital mental health technologies can enhance early identification of conditions and expedite disease treatment and management while empowering patients to make better-informed health decisions.**Error! Bookmark not defined.** Mental health can be a resource and strength in entrepreneurship, but more research is needed to address unsolved issues and explore new pathways for future research [32].

2.6 Challenges

Entrepreneurs face challenges that may hinder business processes despite business opportunities. Nevertheless, entrepreneurs have traits that allow them to overcome challenges and explore opportunities presented in this sector, such as mental health. Collaborative working between clinicians, researchers, industry, and service users is crucial for developing engaging, acceptable, evidence-based, scalable, and sustainable e-therapies for mental health disorders [33].**Error! Bookmark not defined.**

The integration of mental health digital interventions has experienced several challenges despite efforts to improve mental well-being and health among populations. The challenges include putting together real-time assessments and interventions. It seems there is a scarcity of clinical examples in mental health, despite Just-in-time adaptive interventions showing great potential [33]. Challenges in the development and implementation of studies were also evident. These include ethics and potential harms, accessibility and co-designs, specialized groups, and reporting guidelines. In this case, the methods, standardization of outcomes, and conceptual frameworks need to be considered. Challenges in the techniques used to analyze and gather new data need to be addressed. For example, when using machine learning approaches, digital phenotyping, or trans diagnostics. Standardized approaches have not been uniformly applied to determine how advanced analytical methods can reduce the complexity of passive and active phenotyping data to ensure effective clinical models [34]. Additionally, challenges have been encountered in real-world clinical settings. This includes training and education policies in healthcare systems, organizations, and clinical decision-making. Finally, there are challenges in designing interventions, which include preventive interventions for people with mental illness and the choice of a placebo. For digital technology to achieve its potential in transforming how we detect, treat, and prevent mental disorders, there is a clear need for continued research involving various stakeholders and rigorous studies that show that these technologies can successfully drive measurable improvements in mental health outcomes (Globally, individuals living with mental disorders are more likely to have access to a mobile phone than mental health care. In this commentary, we highlight opportunities for expanding access to and use of digital technologies to advance research and intervention in mental health, with emphasis on the potential impact in lower resource settings).

2.7 Research Gap

Based on the literature review, more focus should be placed on how digital entrepreneurs can work with community members to develop digital solutions and promote social innovation in mental health. Digital entrepreneurs run social innovation programs. There is a need to examine this and develop a mechanism through which the community can work directly and indirectly with digital entrepreneurs. Social network theory and diffusion of innovation theory can help achieve this goal. Therefore, this study aims to understand the role of digital entrepreneurship in improving psychological and mental health services and to study the positives, challenges, and essential improvement points for developing the psychological and mental health services sector.

3. METHODS

3.1 Design

This qualitative study, designed in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) [35], aimed to investigate the role of mental healthcare services provided through digital media in Saudi Arabia. Recent advancements within the national digital health ecosystem strongly support the relevance of focusing on Saudi Arabia. The Saudi Ministry of Health has developed an advanced telemedicine infrastructure that includes video-based telemental health services, called telepsychiatry, a type of telemedicine that uses video-based

communication tools to conduct remote mental health consultations. It is seen as a component of the specialised care services provided within the larger context of the Kingdom's healthcare digital transformation. By connecting patients with psychiatric specialists in various locations, telepsychiatry helps to bridge geographic barriers and maintain mental healthcare continuity, especially in rural and isolated settings [36]. In addition, the Seha Virtual Hospital initiative has successfully integrated over 170 hospitals through telehealth services, facilitating the provision of specialized psychiatric consultations remotely [37]. Moreover, the National Center for Mental Health Promotion, in collaboration with the Qareboon application, provides anonymous text-based counseling services. This initiative aims to reduce the stigma associated with face-to-face mental healthcare and encourages early help-seeking behaviors in a culturally sensitive manner [38].These initiatives align with the Ministry of Health's Digital Health Strategy, which outlines national targets such as integrating over 11 million electronic health records and expanding e-consultation features through the Sehhaty application [39].These developments demonstrate Saudi Arabia's ongoing commitment to enhancing mental healthcare through digital transformation and justify the focus of this study on the Saudi context.

3.1.1 Co-Design Framework for Digital Intervention Development

We employ the "Integrated Co-Design Model" as our foundational framework, which extends the concept of co-design across three distinct phases: (1) Design for Co Design, which involves initial stakeholder mapping and the planning of participatory activities; (2) Blended Co-Design, which integrates synchronous (online workshops) and asynchronous (online feedback) methods; and (3) Sustained Co-Design, which ensures ongoing stakeholder collaboration beyond the initial delivery (IJ Design) [40]. This comprehensive model enabled us to maintain engagement, accommodate diverse collaboration preferences, and iteratively refine our digital intervention prototype.

Building upon the Integrated Co-Design concept, the taxonomy of digital mental health interventions served as a direct source of inspiration for the creation of our semi-structured interview guide, which enables focused conversations that correspond with each solution category.

3.1.2 Taxonomy-Guided Interview Design and Thematic Anchoring

Precise Taxonomy of Digital Mental Health Solutions Building upon the taxonomy of Behavioral Intervention Technologies as outlined [41] and the World Health Organization's classification of digital health interventions [42], we delineate six distinct categories: Synchronous teletherapy (live video-based sessions) [43], Unguided mobile/self-help applications (mood tracking, mindfulness [44], Web-based interactive cognitive behavioral therapy (CBT) modules [45], Virtual reality (VR) exposure tools [46], Experience sampling/diary tools [47], and Chatbot-driven or AI-guided interventions [48]. We employed Braun and Clarke's six-phase framework for ~~thematic analysis~~ [49] to code responses according to solution type, facilitating the identification of both overarching themes and category-specific insights. Notably, synchronous teletherapy is the most widely used and officially regulated modality among the six categories of digital mental health therapies that our study references, according to Saudi Arabia's National Telehealth Guidelines. Our choice to highlight it as a key topic covered in the interviews was influenced by this factor.

3.2 Study Population

The study involved MH service providers [psychiatrists (n = 3), psychologists (n = 3)], and eminent MH advocates from civil society organizations [entrepreneurs (n = 3)].

The professional Experience of the participants reflected a diverse yet highly specialized sample. The participants had an average of 12.4 years of professional Experience (SD = 4.9; range = 5–20 years), demonstrating a seasoned sample with deep domain knowledge. This sampling approach aligns with established recommendations for purposive sampling in qualitative research [50] and was guided by the "information power" concept to justify the adequacy of the sample [51].

All participants reported having hands-on Experience with at least two categories of interventions defined by the Behavioral Intervention Technology taxonomy [52] . These included video-based teletherapy and mobile self-help applications. This breadth of prior Experience ensured that participants' insights were informed by practical engagement with various digital mental health solutions.

Thematic saturation was achieved after nine interviews, which is consistent with empirical guidelines suggesting 12 ± 3 interviews for homogeneous groups [53]. Additionally, this sample's high "information power"—resulting from the focused aim of the study, rich dialogue, and detailed participant profiles—further justified the sample size without compromising analytic depth [54].

This ensures full transparency and allows readers to assess the appropriateness of the sample. These additions provide a clear, reference-backed justification for the participant characteristics and confirm that the sample size is suitable for addressing the qualitative objectives of this study.

Data was collected online using the Zoom platform. The online sessions began with an explanation of the research objectives and the process of obtaining informed consent. Some participants consented to recording and transcribing the interviews before data collection commenced. Table 1 illustrates the qualitative methods and sample sizes associated with each stakeholder type.

Table 1. Qualitative method and sample size				
Methods	Stakeholders	Types of organization		Total number(n-)
		governmental organization	private organization	
IDI (in-depth interview)	Mental health service providers (Psychiatrists)	1	2	3
	Mental health service providers (Psychologists)	1	2	3
	Mental health entrepreneurs		3	3

3.3 Ethical Considerations

Of the Interviews. Any questions asked are not sensitive or private questions of the stakeholder groups.

3.4 Data Collection Method

The researchers created semi-structured interview guidelines based on the pre-established classification of digital mental health interventions described in Section 3.1.2. The questions were designed to explore participants' views on the role of digital technology in mental healthcare services in Saudi Arabia. For this study, "digital technology" encompassed any communication medium utilizing various encoded machine-readable data formats, including software, digital photographs, videos, web pages, websites, and social media, which are all governed by the rules and directives concerning digital health practices issued by the Saudi Ministry of Health. These regulations and guidelines cover topics such as informed consent, privacy standards, and the documentation of the provider-patient relationship as described in the National Health Information Center's (NHIC) Telehealth Application Guidelines.

The lead author conducted all interviews and discussions, each lasting 50 to 60 minutes. Data saturation was achieved when no new information emerged from the interviews.

3.5 Data Management

The primary author transcribed and translated the recorded interviews into English. The lead author thoroughly reviewed all documents to ensure the quality and consistency of the research data.

The lead author transcribed and translated the recorded interview discussions into English. The lead author conducted a comprehensive review of all the documents to ensure the quality and consistency of the research data.

3.6 Data Analysis

An inductive thematic analysis approach was used to analyze the data. The authors first acquainted themselves with the interview data by reading transcripts. Next, the transcripts were coded manually. The initial thematic codes emerged through an iterative procedure involving several meeting sessions among the authors. The coded data were separated into a data matrix built into Microsoft Word to create the coding frameworks. Coded data were transferred into a datasheet and organized under themes and sub-themes informed by the research objectives. Every level of data analysis was discussed with the primary researcher and the co-author.

4. RESULTS

Most participants from all stakeholder groups were male. Most stakeholders had 10–27 years of Experience providing MH and related services. The key informants of the psychiatrists were mainly male. Four significant themes have emerged (Table 2).

(i) Perceived benefits of digital media in providing MH care, (ii) challenges of MH care services through digital media, and(iii) proposals to improve and develop digital media to enhance MH.

Table 2. Three significant themes

Perceived benefits of digital media in providing MH care	Increasing mental health privacy
	Contributing to increasing the mental health literacy of the population
	Ensuring better service availability and accessibility
	Easy access to accurate information allows for the making of high-quality decisions in a short time.
Challenges of providing mental health care services through digital media	Patient Credibility
	Efficiency of the treatment team
	Difficulty in supporting the social aspect of the patient's family during psychotherapy through applications
	The cost of treatment and the lack of or limited insurance coverage for therapy through platforms
	Poor communication and technology

Recommendations about the critical role of digital media in strengthening mental health services	Using methods that enhance data reliability and verify client credibility through AI technologies and other regulations increases the effectiveness of digital applications in mental health treatment.
	Systematic and reliable family engagement through digital applications and the design of necessary supportive services for them contribute to supporting the patient's recovery and increasing the effectiveness of digital applications in mental health treatment.
	Train the practicing treatment team on electronic applications and introduce them to the most critical features and services available to maximize benefits. This ensures no part of the session time is spent searching and learning about the digital workflow.
	Legislation and regulations for the use of digital technologies in mental health must be flexible and adaptive, considering the nature of the mental health sector, particularly in the rehabilitation of people with an addiction in all aspects, such as patient-specific regulations, disease, family, healthcare practitioners, entrepreneurs in the industry, and the community.

Source: by the researchers

These were supported by 15 subthemes, as summarized in Fig. 1. (Fig 1. Perceived benefits, challenges, and roles in mental health care services)

4.1 Perceived benefits of digital media in providing MH care

The perceived benefits of digital media in providing MH care for both MH service providers (n = 6) and digital entrepreneurs (n = 3) reflected the perceived benefits of digital media in providing MH care across various domains. This is discussed below.

"The presence of many mental health professionals like psychiatrists and psychologists in advertisements and social media influences patients to seek mental healthcare." Psychiatrist 1

4.1.1 Increasing mental health privacy

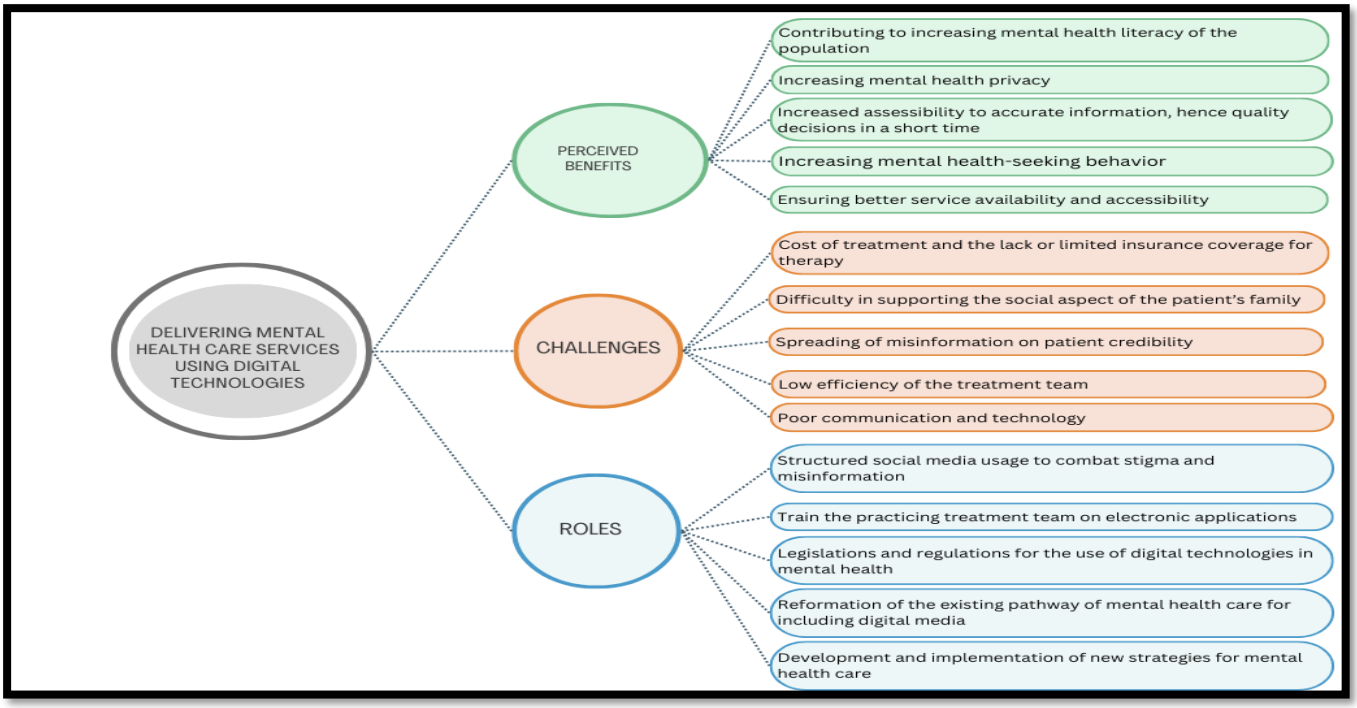
One of the most important benefits of using digital platforms is the high privacy of the patients. For example, according to professional l (psychiatrists and psychologists),

A. Type of disorder: Some disorders require great confidentiality, such as sexual disorders and people infected with HIV/AIDS.

B. The nature of the patient's personality and the extent to which it controls their acceptance of psychological treatment. Stigma still prevails among some clients who accept psychological therapy for fear of their social status or society's view of them as seeking mental health services.

4.1.2 Contributing to increasing the mental health literacy of the population

Most service providers (n=4/6) and entrepreneurs (n=2/3) stated that digital mental health services share various mental health-related information and content on websites, webpages, and social media, facilitating widespread



dissemination and awareness. In this regard, one government sector participant said, “You (community members) can quickly get mental health information from the official online platforms of the Ministry of Health, such as the National Center for Mental Health Promotion, and you can easily become aware of your mental health status by visiting the website or calling without the need for a physical visit.” Psychiatrist 1,2 - Psychiatrist 2

One digital entrepreneur noted that: “they had struck a deal to acquire a digital library in mental health and link it to their digital mental health platform to provide accessible digital content to raise community awareness of mental health. ”Entrepreneur 1

4.1.3 Ensuring better service availability and accessibility

According to the stakeholders, digital MH care plays a significant role in providing better MH care service availability and accessibility

All psychologists (n = 3) acknowledged the greater accessibility and availability of MH services by using online platforms; this was especially beneficial for people in remote locations in KSA. Citizens outside the country can readily access digital MH care services. One psychologist stated,’ Anyone outside (main cities) can get online MH services anywhere. Even people from abroad can access KS’s online services. An MH expert desires someone who can understand them without any linguistic and cultural barriers and financial concerns.” – Psychologist 1.

The psychiatrist also agreed that digital psychological services should be used for special groups such as the elderly, prisoners, and people with disabilities who must stay at home.

One of the entrepreneurs said that even if a provider is unavailable when needed, service users can receive instant help through their MH apps. “People may obtain our services immediately by using our mobile application, and we provide them with the answer to their queries.” - Entrepreneur 1

As professionals, using digital platforms does not entail increasing the costs of renting physical spaces to ensure the therapeutic setting of counseling sessions, which indirectly increases the cost of therapy for us and our clients. Moreover, we set specific schedules for our clients; however, because we are holding the sessions online, clients can join at the right time without being affected by the challenges due to traffic and distance, which causes delays in our schedules. Thus, working via digital platforms helps save time, effort, and costs for both therapists and entrepreneurs. Psychologist, - Psychiatrist, Entrepreneur.

4.1.4 Easy access to accurate information, thus making high-quality decisions in a short time

Digital platforms provide more accurate tools and techniques that control decision-making, increase the opportunity to compare data, and obtain accurate statistics objectively. It also widens the circle of outputs and cognitive information sharing between therapists in various entities. Psychologist, - Psychiatrist, Entrepreneur.

The contemporary world has witnessed the emergence of digital media and its crucial tools in the global determination to foster mental health, specifically by promoting psychological awareness. Additionally, the media fosters mental health by providing information and data that can be used for insightful skills and knowledge used in research to manage health issues. Research has depicted the immense and crucial roles of digital platforms by providing a fundamental gateway in understanding mental health issues and a subsequent roadmap in healthcare for the victims. Widely use of digital platforms such as mobile devices, intentionally meant to reach people suffering from anxiety and depression, results in mental health awareness since they deliver content that entails scientifically proven psychological education [55]. Thus, since mobile devices have increasingly reached nearly everyone’s hands, using them for mental health awareness and caring steps is efficient.

The crucial role of these platforms in conveying information to the targeted people has been recognized by the WHO. In 2021 [56], the organization acknowledged the role of digital media in conveying information and creating awareness on mental health issues, especially in areas with little or no psychological counselling and care centers. The platforms are crucial in preventing or treating the menace in its early stages. In the Kingdom of Saudi Arabia (KSA) context, the digital platforms were labelled as crucial instruments in awareness creation among mental health patients while enhancing lively and more productive engagement in addressing victims’ well-being. This situation depicts the importance of the platforms even at the bottom of the hierarchy of society.

Nevertheless, the crucial roles played by the platforms in mental health self-assessment have limits. The platforms do not exclusively provide conclusive clinical diagnoses. They provide awareness and a gateway for the victims to seek professional evaluation. Most mental health self-assessment apps do not have effective psychometric validation but only serve as preliminary screening equipment [57]. Thus, the findings match with the American Psychological Association (APA), which emphasizes that digital assessments are only considered aiding devices that will not replace clinical diagnostic techniques.

4.2 Challenges of providing mental health care services through digital media

Most stakeholders (n = 9) shared the perceived challenges of the MH care services offered through digital media.

4.2.1 Patient Credibility

The term “Patient credibility” refers to the trustworthiness and validity of the data users provide to a digital mental health (DMH) application, particularly concerning self-reported symptoms, engagement logs, and demographic or biometric information. Ensuring the credibility of these inputs is essential, as inaccurate or fabricated data can result

in erroneous treatment decisions or flawed analytics. Below are key AI-driven approaches (often combined with regulation and audit requirements) to verify client credibility:

- Biometric identity verification serves to confirm that the individual accessing the application is indeed the registered user, thereby mitigating the risks of account sharing or impersonation. Common techniques employed include facial recognition, voiceprint matching, and fingerprint scanning during the login process. For example, a mobile application utilizing facial recognition demonstrated high verification accuracy in pediatric patient testing, suggesting its potential applicability in healthcare settings [58].
- Anomaly detection through digital phenotyping involves the use of machine learning models to analyze both active data, such as self-report surveys, and passive data, including GPS, accelerometer, and phone usage, collected from smartphones. These models establish a baseline of behavior for each user. Statistical anomaly detection is then employed to identify days or entries that deviate significantly from this baseline, thereby alerting the system to potential input errors or deceptive behavior. Such models have demonstrated the capability to predict changes in symptoms related to mood and anxiety disorders with an area under the curve (AUC) of up to 0.80, several weeks in advance [59], [60].-
- Passive sensor triangulation entails the cross-verification of self-reported data with passive sensor data, thereby enabling artificial intelligence to detect inconsistencies. For instance, should a user report high levels of physical activity while accelerometer and GPS data suggest inactivity, a credibility alert would be initiated. This triangulation constitutes a fundamental component of digital phenotyping methodologies utilized in clinical research.
- Automated linguistic analyses in Natural Language Processing (NLP) can effectively identify indicators of low engagement or fabricated responses, such as excessive repetition, unusual sentiment shifts, or reduced linguistic complexity. Systematic reviews of machine learning approaches to deception detection report accuracy rates exceeding 90% for multimodal models that integrate language and behavior [61].
- AI-powered logging systems are designed to produce cryptographically secure audit trails of all user inputs and system interactions. In conjunction with digital health regulations, such as the Saudi Ministry of Health guidelines on data integrity, these logs facilitate the detection of unauthorized data alterations during compliance audits.

“Patient credibility” involves verifying user identity through biometric methods and validating user-reported information against expected patterns via anomaly detection, sensor triangulation, and natural language processing (NLP) checks. In conjunction with regulatory audit mechanisms, these AI-driven approaches ensure that digital mental health (DMH) interventions are grounded in reliable and authentic user data, thereby optimizing the safety and efficacy of treatment.

It is not easy to verify whether the client using the service through the app is the same person or someone else. In addition, assessment of body language is challenging. Given that the nature of diagnosing mental illnesses relies more on reading symptoms than signs, unlike physical illnesses, where vital signs are prioritized, this challenge is inherent not only in app-based therapy but also in psychological treatment. However, it becomes more pronounced in app-based settings because of the inability to read body language cues (Psychologists, Psychiatrists).

Furthermore, some disorders are difficult to diagnose without an in-clinic consultation for the same reason, which is the inability to read body language indicators, such as attention-seeking disorders, factitious disorders, and somatoform disorder symptoms (Psychologist1+2, Psychiatrist1). Self-expression is also less influential in remote therapy. For instance, if the therapist asks the patient, “Are you okay?” The patient may respond affirmatively, which could be a logical answer. However, in an in-person session, I could confirm their body language, hand movements, and posture, thereby reducing the likelihood of misinterpretation because of the lack of a clear visual of the patient that conveys all body language readings (Psychologist1).

All experts (Psychologists and psychiatrists) agreed that there are negative impacts from the unreliability of the client and the false or misleading data they provide, affecting the quality of therapy. If a patient supplies inaccurate data, the therapist may struggle to correctly understand their condition or provide appropriate treatment, potentially leading to incorrect diagnoses or ineffective treatment recommendations. This could exacerbate the patient’s condition, delay access to proper care, result in exemptions from professional responsibilities, or undeserved government support.

There are several motivations for patients to provide false data, such as:

4.2.1.1 Privacy Concerns

- “Due to anxiety about privacy, patients may worry about the risks associated with sharing accurate information. Privacy concerns can lead to incomplete or misleading data, jeopardizing treatment effectiveness. If patients are fearful, they may withhold the necessary information for accurate diagnosis and treatment ”.(Psychologist 1+2). ,(Psychiatrist 1+3)

4.2.1.2 Bias or Manipulation in Responses

- “Patients may provide false data to steer the therapist’s perception in a particular direction or achieve personal goals, such as obtaining a prescription or avoiding a specific diagnosis. Such manipulations can undermine the therapeutic process, resulting in incompatible treatment plans and less effective therapies, as the treatment may not address the patient’s real issues. This can also lead to exemptions from professional responsibilities or result in

receiving government support, such as social security or comprehensive rehabilitation". (Psychologist 2) ,(Psychiatrist 3)

4.2.1.3 Incomplete Understanding of Assessment Questions

"Misunderstanding questions or assessment forms can result in false data. If patients do not fully grasp what is being asked for any reason, such as the cultural or environmental differences between the patient and therapist, their responses may be inaccurate. This can distort the assessment of symptoms and needs, leading to incorrect treatment plans and methods". (psychologists).

4.2.2 The competence of the treatment team

Ensuring that a well-qualified mental health treatment team can adhere to global therapeutic standards is a crucial challenge, as patients cannot significantly benefit from digital therapy applications without a competent team, leading to poor outcomes and overall well-being. Key challenges related to the treatment team include the following.

- Team Expertise and Knowledge of Global Therapeutic and Diagnostic Developments: The team must be able to identify the root cause of mental health issues, given the diverse factors influencing them, such as the patient's personality type (hysterical, borderline, narcissistic, etc.) and the patient's personal and social environment. (Psychologists, Psychiatrists).
- Conflict of Interest: Regulating the number of cases and the time allocated for each patient is necessary to prevent conflicts of interest, ensuring that increasing the number of patients does not compromise the allotted time per patient per global therapeutic policies and standards. (Psychologist 1+2).
- Weak Performance Measures and Evaluation of the Treatment Team: There are precise standards for determining whether a therapist is competent. Sometimes, patients may be influenced by social media, choosing therapists based on their number of followers or online activities rather than professional merit. (Psychologists) ,(Psychiatrists)

The initial therapeutic skills are still relevant in both ancient and digital modalities. However, technologically mediated care comes up with other health issues requiring thorough analysis and consideration. From the literature, it is explained that practitioners in some instances do not have specific technological know-how to traverse and comprehend virtual platforms. Also, managing and operating therapeutic apps and tracing the victims' results digitally are challenges for them [62] . An important research useful in incorporating updated evidence is Catuara-Solarz et al [63]. They carried out a randomized controlled trial regarding the foundation of a mental health app. The study depicted that patients' results or outcomes when in sleep, anxiety, and resilience are largely influenced by how the therapists effectively guided interaction with digital content. This finding strongly streamlines the argument that therapists' capability in digital mental health comprises not only medical or clinical knowledge but also digital conceptualization level and platform-specific interaction techniques.

- Likewise, Vollert et al.'s [64] study depicts that the successful intervention of insomnia significantly depends on clinician oversight on the degree and accuracy of using and interpreting data produced by the app. From these instances, it is evident that digital mental health care demands an expanded and comprehensive skill set, which exceeds the general psychotherapy.
- Moreover, previous systematic reviews by Torous et al [65] stress loopholes in training and digital incorporation across the healthcare personnel and their daily operations. These loopholes signify major hurdles to effectively implementing and delivering healthcare services. Subsequently, the section has been revised to clearly depict our points in the digital mental health context and support them with domain-specific evidence.

4.2.3 Cost of Treatment and Limited or Lack of Insurance Coverage for Digital Platforms

The cost of treatment, lack of insurance coverage, and limited coverage of mental and psychological care through digital platforms are critical issues that affect access to care.

- High Costs: "The cost of therapy via digital platforms can be high, making it inaccessible to many individuals, especially those facing financial pressures". (Psychologist 1),(Psychiatrist 2)
- Lack of Insurance Coverage: "Not all health insurance plans cover mental health treatment through digital applications, meaning patients may need to bear the total cost of treatment. In cases where digital therapy is included in some insurance plans, coverage may be limited, requiring patients to pay a significant portion of the costs". (Entrepreneurs)
- Impact on Treatment Choices: "Costs and lack of coverage affect patients' treatment options, forcing them to choose between effective, suitable therapy and cheaper, less effective alternatives".(Psychologist 2+3) (Psychiatrist 2)
- Psychological impact: "Concerns about costs can worsen mental health symptoms, as patients may feel stressed or unable to access necessary care promptly, exacerbating their condition". (Psychologists),(Psychiatrists)

4.2.4 Families Unrecovered from Supporting Mental Health Patients

The challenge of supporting the social aspects of a patient's family during mental health treatment via digital applications is significant. All mental health experts emphasize that an unrecovered family can significantly affect a

recovering patient, potentially hindering their progress and affecting their mental health. A recovered mental health patient returning to an unrecovered family can experience several effects, such as:

- **Decline in Emotional Support**: If the family is under psychological stress, they may struggle to provide the necessary emotional support to the recovering patient, leading to feelings of isolation. (Psychologists) ,(Psychiatrists)
- **Increased Tension**: Tense and stressful home environments can negatively impact the recovery of patients and increase their feelings of anxiety or depression. (Psychologist1), (Psychiatris3)
- **Symptom recurrence**: Family-related stress and pressure can lead to relapse or the reappearance of symptoms in recovering patients. (Psychologist 2).
- **Changes in Family Dynamics**: Lack of recovery within the family can lead to shifts in roles and responsibilities, adding pressure to the recovering patient. (Psychologist 1+3). (Psychiatrist2)
- **Social Impacts**: Stigma or social isolation resulting from a mental health issue within the family may limit the recovery of patients' opportunities for positive social interaction. (Psychologist1).

Overall, unrecovered families must seek support and treatment to ensure the well-being of all family members, including the recovering patients.

It is clear from analysing these family-related issues in the context of digital mental health that the absence of psychological healing within the family affects patients individually and also represents larger design flaws in digital health interventions. This finding is consistent with an increasing amount of data indicating that the efficacy of digital therapeutic ecosystems is compromised when families are excluded. This viewpoint is supported by the following clarifications based on evidence:

- A thorough scoping review carried out by Welsh et al [66]depicts a serious absence of digital media specifically created for "family completion". This research stressed that the exclusion of family members in the design and subsequent implementation of digital platforms, including personalization, engagement, and privacy challenges, will still be unsettled. Therefore, the phenomenon undermines platform effectiveness.
- Digital health interventions were reviewed by Münchenberg et al [67]for informal caregivers of persons suffering from first-episode psychosis. Their findings illuminated that digital equipment that offers targeted support to families leads to better psychological well-being and the capacity for caregiving. This finding suggests that family engagement isn't peripheral but central to successful digital interventions for mental health.
- The COPe-support randomized clinical trial by Sin et al [68] examined a digital intervention among the family caregivers of individuals suffering from psychosis. Although the major result was not statistically significant in regulating the condition, high-engagement users showed improved or better well-being. The research becomes a solid foundation that depicts the effectiveness of the digital platforms on family caregivers when psycheducation and peer support are incorporated into the platforms.

The research proves that disregarding the incorporation of family in digital mental health care design is a major oversight. For successful therapeutic outcomes, it is recommended that future digital mental health platforms encompass structured tools for assessing, supporting, and engaging families as active stakeholders in recovery.

4.2.5 Poor Internet Connectivity, Lack of Technological Knowledge, or Limited Awareness of Therapy Applications

Poor Internet connectivity, limited knowledge of technology use, and lack of awareness of digital therapy applications are critical barriers to accessing mental health services via digital platforms. The detailed breakdown is as follows.

- **Poor Internet Connectivity**: Weak Internet can disrupt or interrupt therapy sessions, reducing the effectiveness of digital treatment. This can also lead to user frustration, causing patients to disengage from these applications. (Entrepreneurs)
- **Lack of Technological Knowledge**: Many individuals, especially older people or those with limited technological education, face difficulties using mental health applications or understanding how they work. This lack of technical knowledge can create anxiety about using these applications, thus limiting access to digital mental health services. Some individuals may even avoid trying applications because of fear of technical errors or an inability to navigate the platform. (Psychologist 2+3)
- **Limited Awareness of Digital Therapy Applications**: Limited awareness of digital mental health applications and their benefits restricts adoption. Many individuals may not realize that these applications are available or may lack information about how they work and their effectiveness in providing mental health support. This lack of awareness can mean that individuals do not consider digital therapy an option, even when traditional services are unavailable or difficult to access. Additionally, there may be skepticism or caution due to doubts about the effectiveness of digital therapy compared to face-to-face treatment.(Psychologist2, Entrepreneur2+3)

4.3 The Critical Role of Digital Applications in Enhancing Mental Health Services

Designing and Implementing New Strategies for Digital Mental Health Services

- Utilizing methods that enhance data reliability and verify client credibility through artificial intelligence technologies and other regulations increases the effectiveness of digital applications in mental health treatment.

- Innovating systematic and reliable methods and policies for family involvement via digital applications: Developing necessary support services that contribute to patient recovery and increasing the effectiveness of digital applications in mental health treatment.
- Train the treatment team to use electronic applications and familiarize them with critical features and services to maximize benefits and avoid wasting time searching and learning about digital work mechanisms.
- Ensuring flexibility in the legislation and regulations related to using digital technologies in mental health should be adaptive and continuously evolving based on the nature of the mental health sector, especially in the rehabilitation of people with addiction, considering various aspects such as (patient-specific legislation, disease, family, healthcare provider, sector entrepreneurs, and community). Additionally, insurance companies should improve insurance coverage for psychological and mental treatment through digital platforms, making access to these services more accessible.
- Adhering to professional ethics and therapeutic guidelines: This includes maintaining a minimum treatment duration without reduction for financial exploitation, regulating the use of applications during the first visit, setting standards for their use, and avoiding complete reliance on them for diagnosis. The latest global methods were used to evaluate the treatment team's performance indicators.

5. DISCUSSION

This study's findings provide significant insights into the role of digital entrepreneurship in the mental health sector in Saudi Arabia, highlighting the benefits and challenges of digital mental health services. Digital platforms have demonstrated a notable ability to enhance accessibility, confidentiality, and awareness among individuals seeking mental health support. These benefits are critical in regions with limited access to mental health resources, as digital solutions can bridge geographic and social barriers, making mental health services more accessible and adaptable to individual needs.

Incorporating business owners and mental health specialists (psychiatrists and psychologists) into the co-design process enhances digital mental health solutions' contextual relevance, strengthening their financial sustainability and regulatory compliance. The involvement of governments facilitates regulatory harmonisation and supports the development of long-term adoption frameworks, whereas the early engagement of entrepreneurs promotes market readiness and innovation in business models [69]. These benefits of multistakeholder engagement align with the outcomes of participatory design approaches, which have been shown to yield more innovative, contextually grounded, and sustainable digital health solutions through equitable and diversified stakeholder involvement [70].

Strengths of Digital Entrepreneurship in Mental Health

Digital entrepreneurship has facilitated integrating mental health services within easily accessible online platforms, thus ensuring better service availability and increased privacy. Participants emphasized increased mental health literacy, as digital platforms provide accurate and accessible information, empowering users to make informed health decisions [71]. Moreover, digital platforms reduce the need for physical space, making mental health support available even in remote or underserved areas. This aligns with the Diffusion of Innovation Theory, which suggests that technology adoption can increase the reach and impact of health services by addressing accessibility and social challenges.

Challenges in Digital Entrepreneurship in Mental Health

Digital entrepreneurship faces several challenges in the mental health field, including technological ones. Mohammed-Nasir et al. (2023) [72] point out that rapid technological changes make it difficult to develop stable digital solutions, as technology may become outdated before solutions are fully developed. Additionally, mental health professionals are reluctant to adopt technology, which slows the adoption of digital solutions, as Dieguez and Melo (2023) noted [73]. Moreover, data security issues pose a significant challenge, as digital solutions are prone to cyber-attacks that compromise user privacy [80].**Error! Bookmark not defined.** Finally, Thapa and Iakovleva (2023) [74] highlighted the importance of responsible innovation, noting that some entrepreneurs might exploit these applications to collect data for unethical purposes.

Role of Digital Entrepreneurs in Social Innovation and Enhancing Connectivity

Digital entrepreneurs are crucial in promoting social innovation in mental health by developing applications to address unique social and health needs. According to the Social Network Theory, digital entrepreneurs can create connections with community members and stakeholders to foster a support network that expands the reach and impact of mental health services. These connections help create socially innovative solutions tailored to the community's specific needs, thus strengthening the mental health care system [10], [11].**Error! Bookmark not defined.-Error! Bookmark not defined.** This theory also emphasizes the importance of social network density in facilitating innovation flow and resource distribution, which can help digital entrepreneurs identify areas needing digital networks and invest resources there.**Error! Bookmark not defined.**

Opportunities in Digital Entrepreneurship in Mental Health

Digital entrepreneurship presents multiple opportunities in the mental health sector, including improving the communication between service providers and mental health managers. Entrepreneurs can leverage this opportunity to develop digital solutions to enhance effective interactions in this field [75]. Similarly, Baig et al. (2022) [76] indicated opportunities to benefit from new business models, especially with technological advancements that contribute to improved diagnosis and treatment. According to Kulkov et al. (2023) [77], the healthcare sector's adaptation to digital innovations creates opportunities to add value, such as using digital sensors to expedite diagnosis and improve treatment management.

6. **Recommendations to Enhance Digital Mental Health Services**

This study emphasizes the need for strategies to strengthen digital mental health services. The recommendations include the following:

- **Enhancing Data Reliability**: Utilizing artificial intelligence to verify client information and improve the reliability of remote mental health services.
- **Training treatment teams**: Provide specialized training to mental health professionals on digital platforms to maximize the effectiveness of virtual mental health sessions.
- **Flexible and Supportive Policies**: Developing flexible regulations that support digital mental health treatments, especially for vulnerable groups and specialized care, such as addiction rehabilitation.
- **Family Involvement**: Introducing structured methods to involve families in the digital treatment process, as family support is essential for mental health recovery.
- **Anti-Stigma Campaigns**: Using digital platforms to combat stigma and misinformation surrounding mental health issues to encourage help-seeking behavior.

Practical and Research Implications

- Integration with Established Frameworks. We now examine the Evidence Standards Framework for Digital Health Technologies [78], which categorizes interventions based on risk and evidence requirements, guiding entrepreneurs on the necessity of randomized controlled trials (RCTs) or real-world data. We reference the Consensus on app accreditation tiers, highlighting criteria such as data security, clinical integration, and user engagement that entrepreneurs should adopt [79]. We incorporate the Digital Health Credibility Framework, which outlines six benchmarks, including algorithmic transparency and adverse event monitoring, that validate therapeutic apps. We align with the APA Telepsychology Guidelines, which mandate secure platforms, informed consent procedures, and clinician competency standards for teletherapy.
- Practical Implications for Entrepreneurs and Clinicians Risk Stratification: In accordance with NICE guidelines, it is advisable for entrepreneurs to assess the risk level of their products at an early stage and to plan the appropriate evidence generation strategy, such as determining whether pilot studies or full randomized controlled trials (RCTs) are necessary. Accreditation Preparation: Consistent with the recommendations, it is recommended that products be designed from the outset to meet the requirements of "Tier 2" (clinical content) and "Tier 3" (health outcomes). Credibility Monitoring: Implementing the six-benchmark framework proposed is essential for ensuring continuous quality improvement and maintaining user safety.
- Research Implications Consistent with Sample Scope Given our qualitative sample (n=9), we recommend conducting confirmatory surveys to quantify the adoption of these frameworks among a broader population of digital entrepreneurs and clinicians. We propose implementation studies to evaluate the real-world impact of adhering to these standards on user engagement and clinical outcomes, as advocated. Longitudinal research should examine how adherence to accreditation criteria affects market adoption [80], reimbursement decisions, and patient safety over time.

Strengths and Limitations

The primary strength of this study lies in its exploration of the role of digital entrepreneurship within the mental health sector in Saudi Arabia, which provides valuable insights into a largely under-researched area. This study reduced subjective bias by incorporating perspectives from various stakeholders, including digital entrepreneurs, mental health professionals, and community members. It offered a more comprehensive view of the potential impact of digital solutions on mental health. Additionally, the study's focus on specific cultural and socioeconomic factors in Saudi Arabia enhances the relevance of its findings as it accounts for the unique challenges and opportunities within this context.

However, this study had several limitations. First, the study's qualitative design limits the generalizability of its findings to broader populations, as the insights are drawn from a relatively small sample size within a specific region. Second, the rapid evolution of digital technology presents a challenge, as the innovations and tools discussed in the study may quickly become outdated, affecting the applicability of the findings over time. Finally, response bias is possible, as participants may have provided socially desirable responses because of the perceived importance of digital solutions.

7. CONCLUSION

Considering the growing global need for mental health services and the ongoing challenges imposed by current circumstances, the shift to digital mental health care represents a promising solution to meet these needs flexibly and effectively. In Saudi Arabia, this study showed that digital applications are vital in enhancing mental health awareness and providing accessible psychological support, particularly in resource-limited areas. These findings also lay the foundation for further longitudinal studies to evaluate the effectiveness of digital solutions and expand research to include diverse groups and different geographic regions, contributing to the development of a comprehensive and sustainable mental healthcare system.

We can summarize the study highlights in these points:

- Digital entrepreneurship has emerged as a transformative force in the mental healthcare sector in Saudi Arabia.
- Digital platforms increase mental health privacy, contribute to health literacy, and ensure better service availability and accessibility.
- Challenges of digital mental health services include patient credibility, competence of the treatment team, cost, limited insurance coverage, and poor internet connectivity.
- Digital entrepreneurs are critical in promoting social innovation and enhancing connectivity in mental health services.
- Recommendations include designing new digital mental health service strategies, innovating methods for family involvement, and adhering to professional ethics and therapeutic guidelines.
- Integrating digital technology into the mental health system in Saudi Arabia has the potential to provide accessible, available, and affordable care.
- The findings will guide researchers in gathering further evidence to enhance practices and contribute to developing a comprehensive mental healthcare system.

8. Relevance for Clinical Practice

In settings supported by the latest digital technologies, such as Saudi Arabia, integrating digital technology into the mental health system can provide accessible, available, and affordable care throughout the country. Mental health professionals can adopt digital technology daily to deliver mental health interventions and promote awareness. The findings support that mental health care delivered through digital technologies can be integrated alongside traditional mental health services in Saudi Arabia to achieve optimal benefits and will guide researchers to gather further evidence to enhance their practices.

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