

-RESEARCH ARTICLE-

## USAGE AND USABILITY OF HEALTH MOBILE APPLICATIONS DURING COVID-19 IN SAUDI ARABIA- A CASE OF TAWAKKALNA AND SEHATY APPLICATION

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**—Abstract—**

The purpose of this study was to evaluate the usability and usage statistics of the Tawakkalna and Sehaty programs. The study employed a cross-sectional methodology to collect statistics on usability and utilization. A random sample was used to collect data, and an online survey was given to the research population. A Likert scale with a range of 1 (strongly disagree) to 5 (strongly agree) was utilized. The results indicated that 147 individuals participated in the survey. More than half were female (85.1%), and more than half were citizens (66%). Tawakkalna was installed on the mobile devices of 97.9% of the population, while 89.4% had Sehaty installed. 38.3% utilize Tawakkalna twice daily, 34.0% utilize it once daily, whereas 61.7% utilize the Sehaty application monthly. The acceptance of Tawakkalna's usability and the interface is 61.7%, while Sehaty's is 57.0%. Information on Tawakkalna is helpful, updated, and accurate to 55.3%, 66%, and 61.7%, respectively. 36.2% of respondents indicated that it is tough to recover from any error, while 34% indicated that it is simple to recover in Tawakkalna. 87.2% of the population utilized Tawakkalna's health services. In the instance of Sehaty, the usefulness, frequency of notification updates, rate of recovery, and accuracy of information are 40.4%, 38.3%, 38.3%, and 48.9%, respectively. Tawakkalna was developed in response to the COVID-19 pandemic, while 89.4% of the population has been vaccinated with Sehaty. It serves multiple purposes, including health, educational, and tourism application aspects. Before the pandemic, a Sehaty application was utilized to give immunizations. The Mean and Standard Deviation indicate that, except for its usefulness, the Tawakkalna has superior experience in all respects. People use Sehaty to schedule covid-19 immunization sessions.

**Keywords:** COVID-19; mobile applications; educational applications; health applications; Hajj and Umrah

**1. INTRODUCTION**

Innovative and creative solutions were developed to tackle the risk of existing pandemics like COVID-19. Many countries have produced mobile applications for this purpose. Since 1998, the World Health Organization (WHO) has acknowledged the significance

of using mobile health applications to enhance public health and revolutionize how health services are delivered (Binkheder et al., 2021). The Saudi Arabian national e-health effort has also acknowledged the significance of e-health by recognizing e-health as an enabler of quality and secure healthcare systems (Alharbi et al., 2021). This is one way that the project has acknowledged the significance of e-health. During the COVID-19 pandemic and in reaction to the public health crisis, numerous governments used technologies that were essential in the fight against the COVID-19 pandemic. These technologies were used to make e-health apps, like mobile integrated health care programs that can be used from home, Health apps, apps that use artificial intelligence (AI) and machine learning to make decisions, robotic technologies, social networking apps, contact-tracing apps, AI-enabled decentralized apps, and health and fitness apps (AlAli et al., 2022).

In conjunction with several specialized institutions, the government of Saudi Arabia has released six mobile health applications, all of which saw significant use during the epidemic (Binkheder et al., 2021). These mobile health applications were the official apps that offered free services to the general population. Three required apps were utilized for conducting COVID-19 testing, isolating patients, and giving electronic licenses for movement, gathering, and working (Alharbi et al., 2021). Three of the Health apps were developed specifically in response to the pandemic that occurred in the year 2020: "Tetamman" (translated to English as "rest assured") was launched in April 2020 (AlAli et al., 2022); "Tawakkalna" (translated to English as "we trust"), established in May 2020; and "Tabaud" (translated to English as "social distancing") was launched in June 2020 (Alharbi et al., 2021). The remaining three mHealth However, certain research studies have revealed usability hurdles among users of mHealth apps during the COVID-19 epidemic. These barriers include a lack of knowledge, awareness, and trust, as well as lower levels of user satisfaction (Binkheder et al., 2021). Because of this, gaining an understanding of the perspectives, experiences, and acceptance of those who use mHealth apps during the COVID-19 pandemic is essential for strengthening the meaningfulness of those apps that have been introduced (Alharbi et al., 2021).

This paper is important because it explores the factors that affect users' satisfaction when using official applications to prevent themselves and others. These new applications are developed to protect people's health against current and future pandemics. They contribute positively to public safety, economic life, and community well-being. The paper aims to know the usability and usage statistics of the Tawakkalna and Sehaty applications.

## 2. LITERATURE REVIEW

The development and spread of COVID-19, a virus responsible for severe acute respiratory syndrome, triggered a global public health crisis (Singhal, 2020). COVID-19 was first found in Wuhan, China, prompting authorities to seal the city off to prevent illness transmission. However, COVID-19 cases were spotted in numerous other countries within a few weeks, and the virus became a global threat by early 2020 (Xiang

et al., 2020). As a result, on March 11, 2020, the World Health Organization (WHO) declared the outbreak a pandemic (Spina et al., 2020). In response to the broad spread of COVID-19, government officials have implemented various measures to prevent or slow down the development of the pandemic (WHO, 2020).

COVID-19 treatment options are only complimentary (Huang et al., 2020); preventing community transmission is the optimal strategy. Before any reported cases, Saudi Arabia began early prevention steps (Alshareef et al., 2021). After the 2012 Middle East Respiratory Syndrome (MERS) outbreak, Saudi Arabia became a leader in identifying public health objectives during a disease outbreak (Algaissi et al., 2020). It adopted one of the strictest measures to curb the COVID-19 epidemic locally and globally by closing international borders, the Haramain in Mecca and Madina, shopping centers, gyms, public recreational facilities, government offices, and educational institutions. It also prevented mass meetings enforcing the WHO and Saudi Ministry of Health (MoH) public health measures with severe penalties for violations (Mahmud et al., 2020). The early introduction of preventive measures enabled Saudi Arabia to delay the spread of the virus and allowed Saudi Arabia to keep its health services sufficient to handle the situation (Ministry of Health Saudi Arabia, 2022a).

As of May 27, 2020, it began to lessen lockdown measures, focusing on social distancing. On June 20, 2020, COVID-19 curfews and lockdowns were lifted. Educational institutions and government agencies, on the other hand, continued to function online. Global attention is being drawn to Saudi Arabia's efforts to halt the spread of COVID-19. With only 1000 selected pilgrims from citizens and foreigners already living in the country participating in the Hajj in July 2020, the pilgrimage went ahead. Saudi Arabia took the initiative to vaccinate its residents irrespective of nationality by December 17, 2020 (News, 2022a). In 2021, Hajj permission was allowed to 60,000 pilgrims from within the country (News, 2022b). It has been announced that in 2022, the Hajj capacity will be increased to 1 million (News, 2022c).

COVID-19 has emerged as the world's most serious threat, posing a direct threat to human life while negatively impacting the economy, public safety, and religious traditions. With the absence of suitable rules for dealing with the abrupt and unexpected outbreak, the situation became worse. Traditional healthcare services are digitized, and users are provided with healthcare services via mobile apps through the internet. All new updates related to people's health and infection will be provided through these apps.

Health apps played a very important role in public health management during the COVID-19 pandemic. It shows their impact and value in society (Wu et al., 2021). Many governments have launched mobile applications to mitigate the risk of the current pandemic. These apps are also expected to be crucial, especially during the new virus pandemic. Therefore, many studies showed the critical functional value of using health apps for COVID-19 (Hilty et al., 2020; Wu et al., 2021). People have appreciated the visibility of these apps. The majority of people around the globe have learned many things besides their life safety from these apps.

When the COVID-19 pandemic spreads, it devastates public health services, adding huge pressure on public health facilities, and the government remains at high levels shortly (Ming et al., 2020). The health apps allow patients to obtain health information and receive medical care easily, reducing patient visits to the hospital and thus lessening population mobility in areas of high risk (Kondylakis et al., 2020; Wu et al., 2021). This helps the majority of people to be protected against any infections. Mobile health apps successfully encourage information exchange, storage, and delivery. They help the patients to check and manage diseases (Izahar et al., 2017; Ming et al., 2020). They can be used for training (Ros et al., 2020; Timmers et al., 2020), information sharing (Yamamoto et al., 2020; Zamberg et al., 2020), risk assessment (Yamamoto et al., 2020), symptom self-management (Timmers et al., 2020), contact tracking (Yamamoto et al., 2020), family monitoring (Hassen et al., 2020), and decisionmaking (Kondylakis et al., 2020) at the time of COVID-19 pandemic.

Numerous advancements have been made in digital healthcare in Saudi Arabia, and specific strategic plans have been implemented to develop healthcare using digital technologies (Vision, 2021, 2021b). In addition, changes in insurance plans announced by the Saudi Council for Cooperative Health Insurance Vision (2021b) accelerated the implementation of telemedicine services even during a pandemic. The impact of telemedicine services has been published (Ekeland et al., 2010), with particular studies focusing on user satisfaction during a pandemic (Alshareef et al., 2021). Still, little of it is known about the simplicity and usefulness of telemedicine apps (Narasimha et al., 2017).

By modifying the elements that affect an app's effectiveness in fostering health practices, authorities could ensure that users have a highly satisfying experience while effectively managing crowds. App usability is the most important parameter which can be modified to alter effectiveness levels. However, little is known about such interaction for Tawakkalna and Sehaty applications. Nonetheless, this interaction has not been assessed so far. We hypothesized that a good interface would positively influence app usability (Hypothesis 1, H1). This is also applicable to the constructs, data recovering features (Hypothesis 2, H2), and the regular updates on the applications (Hypothesis 3, H3), as illustrated in Figure 1.

The main hypothesis of this research:

*H1: Perceivedness of Apps' good interfaces correlates positively with the users' satisfaction.*

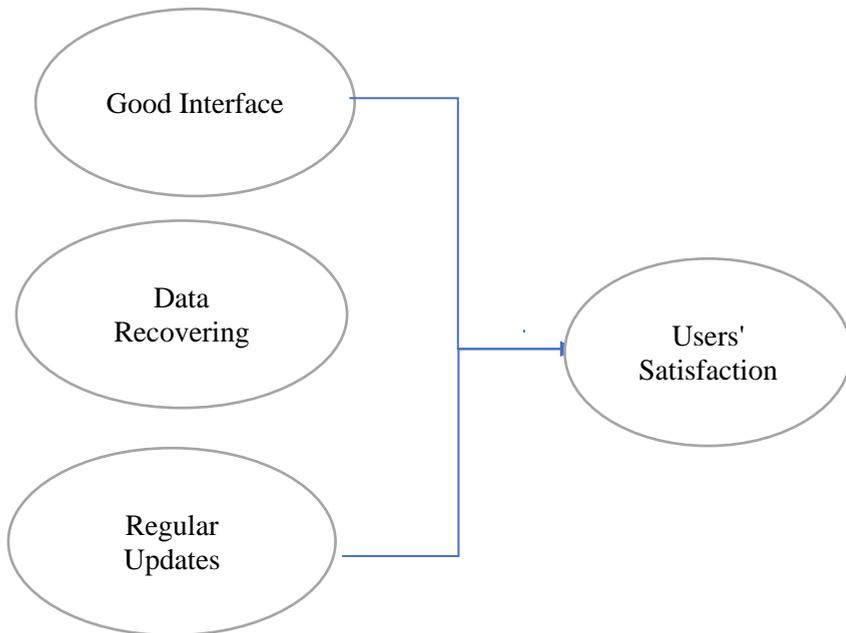
*H2: Perceivedness of Apps' easiness to recovering data correlates positively with users' satisfaction.*

*H3: Perceivedness of regular App updates correlates positively with users' satisfaction.*

### 3. METHODS

#### 3.1 Study Design and Procedure

The study used a cross-sectional self-administered anonymous online questionnaire to access the usability and usage statistics of the Tawakalna and Sehaty applications. We distributed the questionnaire through WhatsApp, and the study was done between January and April 2022. The study team developed a structured questionnaire. Survey items were compiled 'to express participants' perceptions of app usability and effectiveness. Data collection was performed in a designated timeframe. The data collected was kept confidential.



**Figure 1:** Conceptual Research Model

#### 3.2 Tawakkalna Application

Tawakkalna is a mobile application to prevent and manage Covid-19 infection in Saudi Arabia, developed by the government in 2020. Initially, the application was introduced to stay informed about the number of Covid-19 cases. Another intriguing feature of Tawakkalna is that citizens can apply for permits. Saudis can leave the country for emergencies with these permits. Tawakkalna also includes a section on protecting yourself if you enter an area with an unusually high number of active outbreaks. If the GPS on your smartphone detects that you are approaching such an area, the app will alert you to the danger. Within a few months of its development, its features were populated and used to track the vaccination status of the citizens/residents. Even better, with the assistance of the National Information Center, the Saudi Arabian government will

continue to update the app's features. Tawakkalna has become ingrained in our daily lives as a means of containing the pandemic. Individuals are not permitted to enter any private or public space without first confirming their immunity status on Tawakkalna. The Tawakkalna app has improved significantly since its inception as a COVID-19 aid to its current version.

The Tawakkalna App services during the early stages and lockdown (SDAIA, 2021) were given as follows:

*"Exploring Violations: The service enables users to investigate their curfew violations.*

*Violations of Another Person Service: This service helps citizens and residents that cannot register or not access Tawakkalna to view their violation tickets on someone else Tawakkalna account. To view a violation ticket, you must have the person's ID, date of birth, and a ticket number.*

*Request movement permits electronically: for necessary supplies during the curfew period through the application to process applications automatically.*

*Requesting movement permits electronically: Orders are automatically processed for necessary supplies within the neighborhood during the complete curfew period via the application.*

*Showing work permits electronically: to ease the movement of employees from both public and private sectors excluded from the curfew - hospital workers, pharmacy workers, catering companies, and other vital entities - from and to their workplaces by enabling entities to submit their workers' permits online via Tawakkalna.*

*Frequently answering health-related questions to help the Ministry of Health follow up on cases.*

*The user can also report suspected Covid-19 cases to help individuals receive medical assistance and thus to stop the spread of the virus.*

*It shows the user's "QR" code for the security man: to speed up the checking and traffic process for citizens and residents.*

*Reviewing the latest health news and updates related to the spread of COVID-19 and ways to prevent it.*

*The ability to request an additional movement permit for the private driver.*

*It displays the user's medical appointments.*

*Jogging permit for 1 hour per day (within the district)*

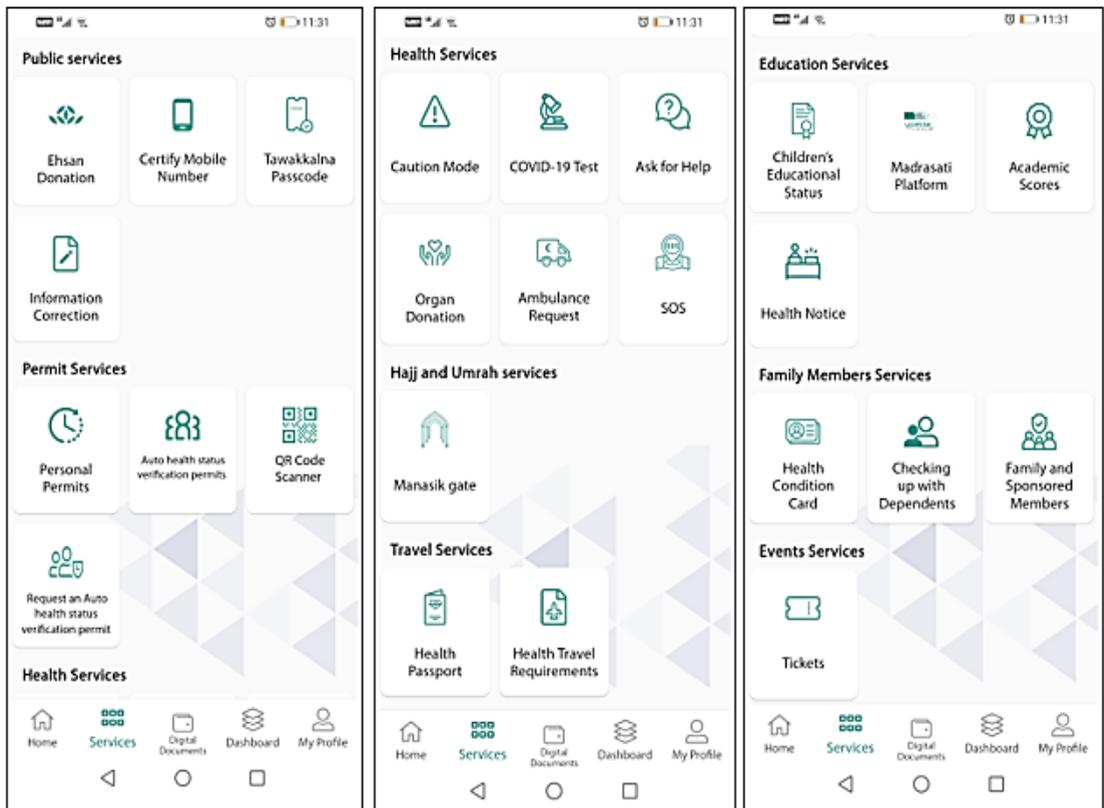
*Emergency medical permit: Provides you with the ability to request a permit for cases that need immediate medical care. The pass includes the patient's companion.*

*Students permit: Provides students with the ability to attend Qiyas exams following Education & Evaluation Commission. The permit also gives students the ability to request driver's access.*

*Suspected Cases Report: This service enables citizens and residents to notify the Saudi Ministry of Health of a suspected case of Covid-19. The service will help create a sense of social responsibility to mitigate the risk of spreading the virus.*

*Violations Reports: This service enables citizens and residents to raise concerns to the competent authorities in the event of noticing any actions that might increase the risk of the spread of Covid-19. The user can submit a concern about an individual, a group of people gathered in a place, or an individual getting in a restricted area. Competent authorities will take the necessary measures."*

Although Tawakkalna was developed to manage health details, it has been connected to the educational and tourism sectors. The interface of the Tawakkalna, shown in [figure 2](#) reveals the services provided by the application. The benefits are also associated with apps like the Manasika app, Ehsan, and the Educational platform "Madrassati."



**Figure 2:** Tawakkalna Application Services

The main feature of Tawakkalna that makes it different for identifying immune persons is the QR code status. In the beginning, it was possible to save the screenshot for the opening page of Tawakkalna (the page with the QR code) as shown in [figure 3a](#). The QR code on the Tawakkalna shows the status of the person's immunity, allowing access to different public places. Currently, it is a live-streamed status requiring everyone to open the app to show their immune status, and screenshots are impossible.

The application interface has been changed, and the QR code shows the live status by the running line around the QR code. Now the users cannot take screenshots of the same as it does not allow. This feature makes users open the Tawakkalna whenever they need to access public places. Thus, the updation ensures that the user has an immune status before entering the malls or buildings relevant to curbing the pandemic. [Figure 3b](#) is an image captured by another camera.



(a) Tawakkalna just after introduction (b) Tawakkalna interface after updations  
**Figure 3:** Tawakkalna Application QR code

### 3.3 Sehaty Application

The King Faisal Specialist Hospital & Research Center has introduced the Sehaty Application, which allows users to access their health records from any location and at any time, as well as perform a variety of tasks and submit requests, including the following (Ministry of Health Saudi Arabia, 2022b):

*Health Profile: This section summarizes the most recent information in patients' health records.*

*Lifestyle: Serves as a container for all data collected from connected, intelligent devices such as glucometers or smart scales. Initiating the functionality reads data stored on your smartphone and enables your healthcare professional to monitor your progress.*

*Appointments: This feature allows you to view your upcoming meetings and those of your dependents. Appointments may be rescheduled or canceled.*

*Medical Conditions: View the list of diagnoses, treatments, and complaints from the electronic medical record.*

*Medications: Consult a list of current and inactive medications and submit prescription renewal requests.*

*Health Maintenance: Review a list of recommended procedures or immunizations based on your age, gender, and health information.*

*Immunization: Review a list of vaccinations you may have received or recommended for you based on your age, gender, and medical history.*

*Laboratory Tests: Access information about upcoming or done laboratory tests and procedures.*

*Radiology: Access reports for all Radiology exams and procedures completed.*

*Documents: View or request medical reports, including discharge summaries or medical evaluations.*

*Vital Signs: View the values and graphs for the vital signs, height, and weight at each visit.*

*Surgical Procedures: Review completed surgical procedures in detail.*

*Pathology: View reports for all Pathology tests and treatments that have been completed.*

*Hospital Visits: This section contains information about your previous hospital visits to the outpatient, inpatient, and emergency departments.*

*Supplies: View and request authorized supplies for yourself or your dependents*

*Personal Profile: Provides sensitive information and emergency contacts for you and your dependents."*

The initiative's objective was to promote "Patient Experiences" by meeting their growing expectations and demands through effective engagements enabled by technology as a cost-effective communication platform. To use the Sehaty application, beneficiaries must first register via the Sehaty Portal or at the hospital's registration offices using their identification card "ID" to upgrade their information and activate their account.

### 3.4 Data Collection

The questionnaire in the study consisted of three domains: one section for demographic and background information and two sections evaluating opinions on Tawakkalna and Sehaty applications using the five-point Likert scale. The data collection tool was initially prepared in the English language. The online data collection tool was designed using Google forms. The reason for choosing Google forms was that the authors have successfully used it before, familiar with its features. In addition, Google docs serve as easy access, free of charge, and a convenient platform for questionnaire administration.

### 3.5 Inclusion and Exclusion Criteria

All people are included in the survey to access the usage and usability of the Tawakkalna and Sehaty applications. No age limitation is considered.

## 4. RESULTS

### 4.1 The Usability and Usage Statistics Tawakkalna

A survey was conducted among its users to know their usage and satisfaction. The following questions were distributed through WhatsApp. Part 1 contained six questions on demographic information such as nationality, gender, marital status, educational level, and employment status. [Table 1](#) shows the results obtained from 147 respondents. The majority (66%) of the respondents were Saudi nationals, and 85.1% were females. Also, 66% were aged between 18 to 29. In addition, about 66% of the respondents had a bachelor's degree, and 76.6% were unemployed.

Part 2 included questions on Tawakkalna. The results are shown in [figure 4](#).

97.9% of the population had Tawakkalna installed on their mobiles. Most use it twice daily (38.3%) or once daily (34%).

Below, [Table 2](#) shows the responses on the Tawakkalna App's usability. Majority has accepted its ease of use and interface(61.7%), its usefulness(55.3%), updating notifications(66%) and Accuracy of information(61.7%). 36.2% of the respondents mentioned that it is difficult to recover from mistakes, while 34% said it is easy to recover. [Figure 5](#) shows the usage of other services in the Tawakkalna App. Most of the usage is on the health services provided by the application(87.2%). The usage of other services is shown as Public services (36%), Permit Services (53.20%), Religious

Services (29.80%), Travel Services(42.60%), Education Services (23.40%), Family Members Services(25.50%), Events Services (6.40%), Dashboard (29.80%) respectively.

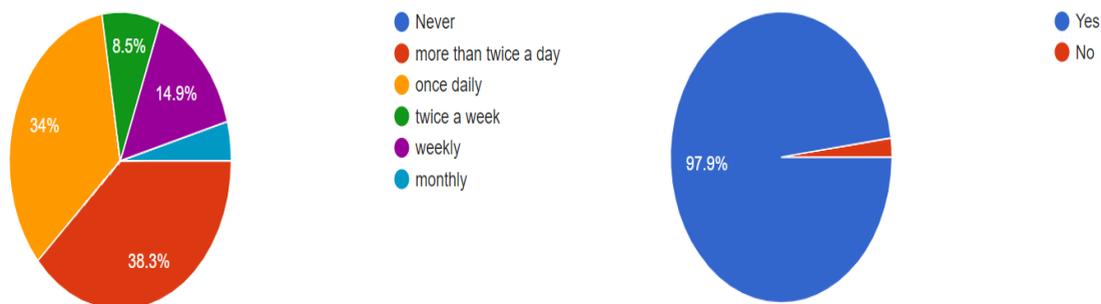
On May 1, 2022, the government launched a new "Tawakkalna Services Application," which will provide 140 services across health, education, transportation, Islamic and government services, and entertainment via 40 strategic partnerships. Tawakkalna Services App is equivalent to the previous pandemic app, the Tawakkalna, but the options within each section have been expanded and made more detailed. In addition, the Code generator and COVID-19 status have been removed from the Tawakkalna Services App since it is not a health-related application. However, Tawakkalna has been limited to pandemic-related services such as establishing users' overall health, issuing health passports, conducting coronavirus tests, providing vaccine services, and assisting users with travel requirements. This app aided in containing the virus's spread by offering health-related access to e-permits and verification of health status. Additionally, visitors and residents of other Gulf states can sign up for Tawakkalna Services using their passports or national identification number. Further, their birth date and mobile number will be requested during registration (News, 2022d).

**Table 1. Demographic Information**

	Frequency	Percentage(%)
<b>Gender</b>		
Male	22	14.9%
Female	125	85.1%
<b>Age</b>		
<18	19	12.9%
18-29	31	21.1%
30-49	97	66%
>=50	0	0%
<b>Education</b>		
Secondary or less	50	34%
Bachelor	72	48.97%
Postgraduate degree	25	17%
<b>Nationality</b>		
Saudi	97	66%
Non-Saudi	50	34%
<b>Employment Status</b>		
Employed	34	23.12%
Unemployed	113	76.87%
<b>Marital Status</b>		
Married	53	36.05%
Unmarried	94	63.94%

**Table 2. Tawakkalna Usability**

Criterion	1 Strongly Disagree	2 Disagree	3 Natural	4 Agree	5 Strongly Agree
Frequency [distribution of response %]					
Tawakkalna has a good interface and is easy to use	3 [2.04%]	0 [0%]	25 [17%]	28 [19.04%]	91 [61.9%]
Tawakkalna is a useful App	3 [2.04%]	3 [2.04%]	31 [21.08%]	29 [19.7%]	81 [55.1%]
Easily recover from any mistakes	6 [4.08%]	6 [4.08%]	53 [36.05%]	32 [21.7%]	50 [34%]
Informing for any updates	0 [0%]	9 [6.12%]	28 [19.04%]	13 [8.8%]	97 [66%]
Accuracy of displayed Tawakkalna information	3 [2.04%]	0 [0%]	16 [10.88%]	37 [25.17%]	91 [61.9%]



(a)The frequency of the usage of Tawakkalna (b)Do you have Twakkalna Application on your mobile

**Figure 4:** Response to Tawakkalna

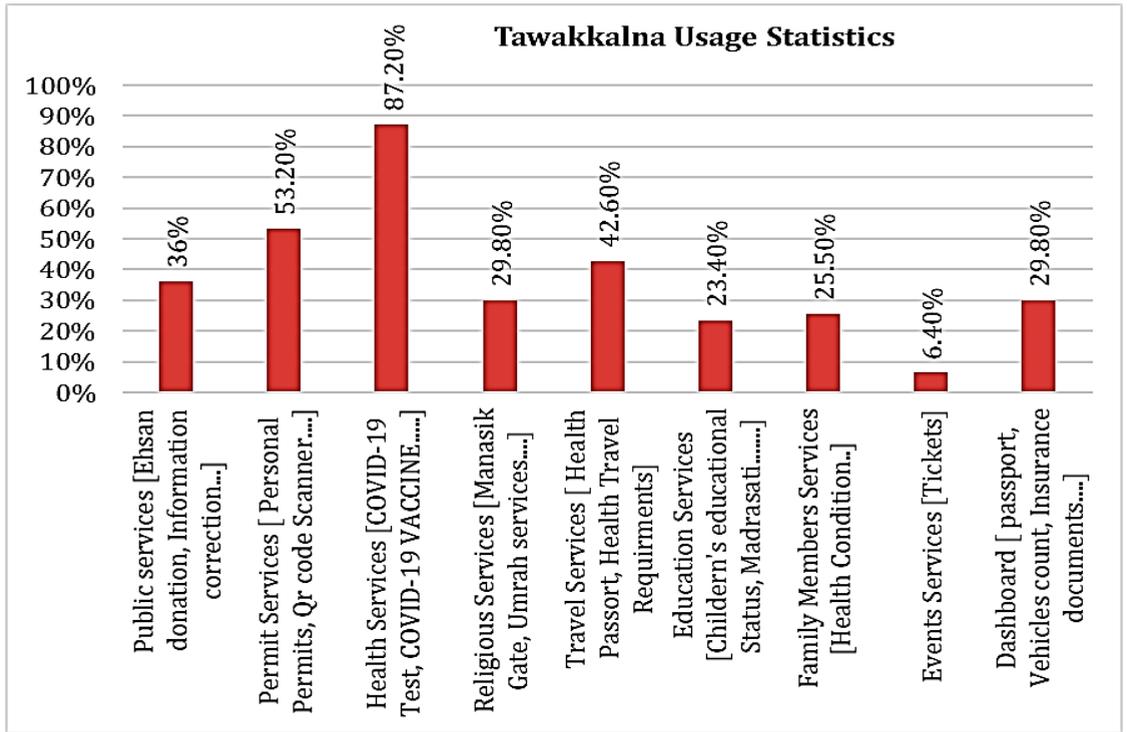
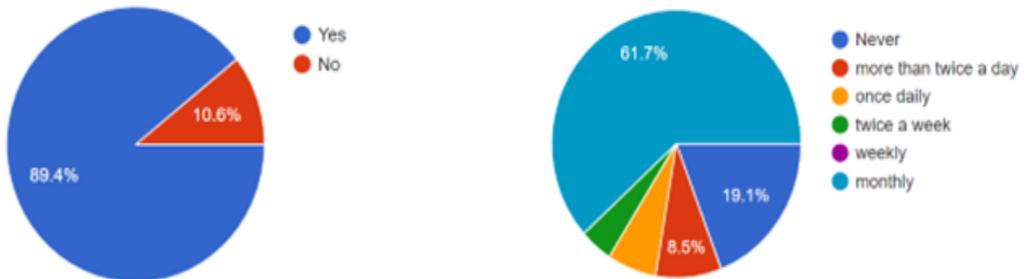


Figure 5: Tawakkalna usage statistics

Survey results on the Sehaty Application

Among the respondents, 89.4% have the Sehaty App on their mobile phones and the majority, 61.7%, use it monthly (figure 6).



(a) Do you have Sehaty App on your mobile

(b) The frequency of using the Sehaty App

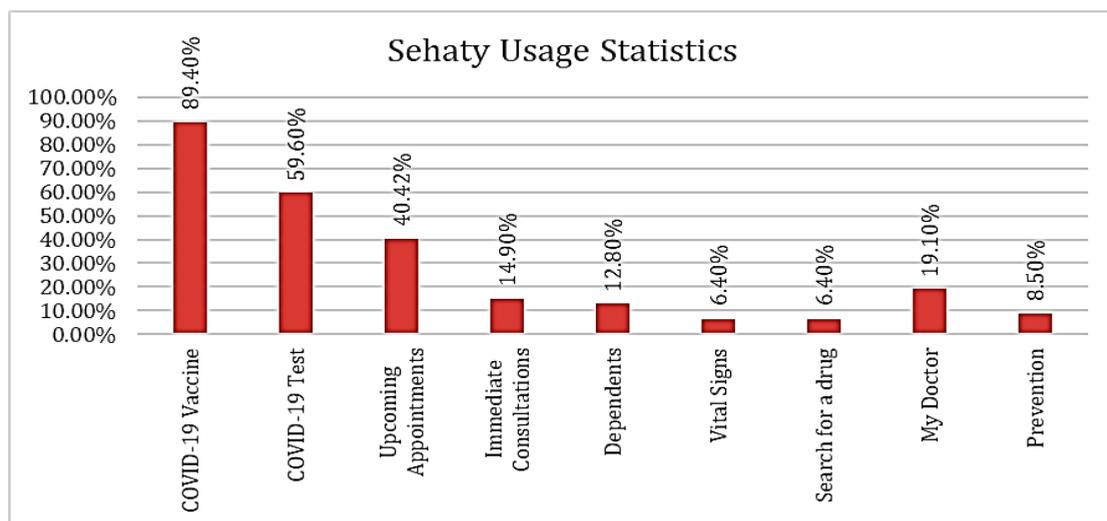
Figure 6: Survey Results on Sehaty App

Below, Table 3 shows the responses on the Sehaty App's usability. Majority has accepted its ease of use and interface (57.14%), its usefulness (40.1%), updating notifications (38.77%), rate of recovery (36.1%) and accuracy of information (48.9%)

**Table 3. Sehaty App Usability**

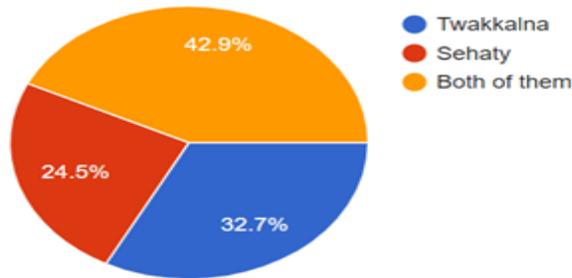
Criterion	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Frequency [distribution of response %]					
Sehaty has a good interface and is easy to use	9 [6.12%]	13 [8.84%]	22 [14.9%]	19 [12.9%]	84 [57.14%]
Sehaty is a useful App	13 [8.84%]	9 [6.12%]	31 [21.08%]	35 [23.8%]	59 [40.1%]
Easily recover from any mistakes	13 [8.84%]	15 [10.2%]	41 [27.8%]	25 [17%]	53 [36.1%]
Informing for any updates	22 [14.9%]	6 [4.08%]	31 [21.08%]	31 [21.08%]	57 [38.77%]
Accuracy of displayed Sehaty information	6 [4.08%]	13 [8.84%]	21 [14.2%]	35 [23.8%]	72 [48.9%]

Below, [figure 7](#) shows the usage of the Sehaty Application. 89.4% of the population have used it for COVID-19 vaccination. The other features usage statistics is shown as COVID-19 Test (59.60%), Upcoming Appointments (40.42%), Immediate Consultations (14.90%), Dependents (12.80%), Vital Signs (6.40%), Search for a drug (6.40%), My Doctor 19.10% and Prevention (8.50%).

**Figure 7: Sehaty Usage statistics**

Tawakkalna and Sehaty Applications were the leading platforms to register for the COVID-19 vaccinations, which were started in December 2020. The health card is also updated on the registered Tawakkalna app with the person's immunity status and the number of vaccine doses they had administered. The common feature in Tawakkalna and Sehaty is its use in booking vaccination appointments. Below, [figure 8](#) shows the response on which app was used for vaccination.

The majority have used both applications in getting a booking for the three doses of vaccinations, while 32.7% have used Tawakkalna and 24.5% have used the Sehaty application.



**Figure 8:** Vaccine reservation response

The comparison of the statistical results was made on both the applications, usage, and usability, given in [Table 4](#).

**Table 4. Comparison of Tawakkalna and Sehaty Usability**

Criterion	Tawakkalna		Sehaty	
	Mean	SD	Mean	SD
App has a good interface and is easy to use	4.38	3.96	4.06	3.75
The app is useful	3.77	3.41	3.80	3.50
Easily recover from any mistakes	4.34	3.94	3.61	3.34
Informing for any updates	4.45	4.01	3.64	3.41
Accuracy of displayed App information	4.24	3.83	4.05	3.69

As [Table 5](#) shows, there is a strong positive correlation between the app interface and users' satisfaction ( $n=147$ ,  $r=.703$ ,  $P<0.01$ ). This result supports H1 and comes in line with the previous studies. The table also shows a strong positive correlation between the ability to recover data and users' satisfaction ( $n=147$ ,  $r=.441$ ,  $P<0.01$ ). There is a positive correlation between the regular update and users' satisfaction ( $n=147$ ,  $r=.273$ ,  $P<0.01$ ).

**Table 5. Correlations analysis**

Correlations					
		Users' Satisfaction	Good interface	Easily to recovery	Regularly update
Users' Satisfaction	Pearson Correlation	1	.703**	.441**	.273**
	Sig. (2-tailed)		.000	.000	.001
	N	147	147	147	147
Good interface	Pearson Correlation	.703**	1	.603**	.450**
	Sig. (2-tailed)	.000		.000	.000
	N	147	147	147	147
Easily to recovery	Pearson Correlation	.441**	.603**	1	.454**
	Sig. (2-tailed)	.000	.000		.000
	N	147	147	147	147
Regularly update	Pearson Correlation	.273**	.450**	.454**	1
	Sig. (2-tailed)	.001	.000	.000	
	N	147	147	147	147
**. Correlation is significant at the 0.01 level (2-tailed).					

## 5. DISCUSSION

This research was conducted to assess the user satisfaction and usability of the two mobile applications, Tawakkalna and the Sehaty, used during COVID-19 in KSA. This application showed the health immune status and vaccine reservation. The survey questionnaire was distributed to collect the usage and usability statistics of the two mobile applications, which help with COVID-19 testing, vaccination, etc. The findings revealed that 147 people participated in the survey. More than half (85.1%) were females, and more than half (66%) were citizens. 97.9% of the population had Tawakkalna installed on their mobiles, while 89.4% had the Sehaty installed. 38.3% use Tawakkalna twice daily, 34% use it once daily, and 61.7% use the Sehaty application monthly. Acceptance of ease of use and interface is 61.7% for Tawakkalna and 57.4% for Sehaty. The usefulness, updating on notifications, and accuracy of information is 55.3%, 66%, and 61.7%, respectively, for Tawakkalna. 36.2% of the respondents mentioned that it is difficult to recover from mistakes, while 34% said it is easy to recover in Tawakkalna. 87.2% of the people used Tawakkalna for health services. The usefulness, updating on notifications, rate of recovery, and accuracy of information are 40.4%, 38.3%, 38.3%, and 48.9%, respectively, in the case of Sehaty. 89.4% of the population have used Sehaty for Covid-19 vaccination.

The Mean and the Standard Deviation (SD) of the application features are as follows: The Mean and SD are 4.38 and 3.96, respectively, if they have a good interface and are easy to use. At the same time, sehaty has 4.06 and 3.75, respectively. The feature Easily recovers from any mistakes obtained the Mean of 4.34 and SD 3.94 for Tawakkalna and the Mean of 3.61 and SD 3.34 for Sehaty. In case any, the information on the app updates has received Mean and SD as 4.45,4.01 and 3.64,3.41 for Tawakkalna and Sehaty, respectively. Regarding accuracy, the Mean and SD are 4.24 and 3.83 for Tawakkalna and 4.05 and 3.69 for Sehaty. In all these feature analyses, Tawakkalna has shown it is more user-friendly than Sehaty. All these show that both applications have a similar rate of acceptance. But Tawakkalna has a bit higher Mean and SD in all the criteria except the usefulness than the Sehaty application.

The answer to the question on the app's usefulness gave 3.77 as the Mean and 3.41 as SD for Tawakkalna, while Sehaty got 3.80 as the Mean and 3.50 as SD. This shows that the participating population considers the Sehaty more useful than Tawakkalna. Although both applications offer different services, the common use came in terms of the service provided for vaccination. In addition, the study shows a positive correlation between the main variables. The attractiveness of the App interface, recovering data easily, and regular updates might improve user satisfaction, translating into high confidence between the users and the Apps developers.

## **6. LIMITATIONS AND FUTURE WORK**

To obtain a user's perspective, the survey focused solely on the Tawakkalna and the Sehaty applications because these were the ones used the most frequently during the pandemic. This paper aimed to investigate the level of contentment experienced by Tawakkalna and Sehaty app users. However, additional work can be done to evaluate the applications and acquire further details regarding the extent to which the applications contribute to the nation's pandemic surveillance.

## **7. CONCLUSION**

This paper tried to evaluate the use of Tawakkalna and Sehaty applications, which were used as the main tools in response to the COVID-19 pandemic. The results showed that Tawakkalna has a more significant usage and user satisfaction than Sehaty. Tawakkalna helped decrease the number of new active daily cases after its introduction. Users are forbidden from entering shopping malls, government buildings, and mosques without Tawakalna, and they could see their risk profile and avoid places with many recorded cases. Finally, these applications became a part of daily routine. We can also see how Hajj and Umrah have become so organized because of these applications. It is highly recommended to develop the Apps interfaces – for Tawakkalna and Sehaty- and consider all users' feedback. The developers of these Apps should conduct regular surveys to assess users' satisfaction and develop these Apps accordingly.

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