THE ROLE OF SOCIAL NETWORKS IN THE COMMUNICATION OF MEDICAL DOCTORS DURING COVID-19 PANDEMIC

Alexios-Serafeim Nterekas[1]*,
Christos Dr. Melas[2],
Georgia Ntereka[1],
Vassilis S. Moustakis[1]

[1]Management Systems Laboratory,
School of Production Engineering and Management,
Technical University of Crete,
Crete Greece

[2]Assistant Professor in Health Informatics, Nursing Department,
School of Health Sciences,
Hellenic Mediterranean University,
Crete, Greece

Abstract:

Social media have changed the way people communicate, exchange information, interact, and collaborate. The present research examines the factors influencing the use of social networks by doctors during the COVID-19 pandemic, using the Technology Acceptance Model (TAM). A random sample of 336 doctors working in public hospitals in Greece was used to shed some light on doctors' preferences regarding the use of social networks such as Facebook and Twitter. Doctors reported that they used social networks during the COVID-19 pandemic to read research outputs uploaded by other medical staff and researchers. For both Facebook and Twitter, a positive strong correlation was found between Perceived Usefulness (PU) and Perceived Ease of Use (PEoU). Moreover, Behavioural Intention (BI) was positively related to PEoU and PEoU was positively related to Actual Use (AU). A strong positive correlation was found between BI and AU for Facebook. Finally, BI was positively related to PU, and PU was positively related to AU for Twitter.

Keywords:

Public hospitals, social networks, Technology Acceptance Model, Covid-19.

INTRODUCTION

The development of the internet has led to the emergence of social networks, greatly facilitating the communication of individuals, businesses, and organizations as well as the dissemination of information and knowledge. Social media encompasses online applications and programs that allow users to share varied content and thus network over assorted topics. The expansion of the use of this media form has revolutionized how people share their knowledge and communicate and collaborate while engaging in timely conversations in the workplace [1]. Social media is deemed among the most powerful communication tools of the 21st century [2]. The ascending societal use of social media has encouraged health professionals to use social media in their professional activities [3]. Chan and Leung [4] reported that social networks ameliorated communication and information sharing as well as professional collaboration among healthcare professionals [4]. Hazzam and Lahreck [5] in their research found that 53.6% of doctors used social media platforms for the exchange of peer medical information, and 53.2% used social media several times during the day to improve their interpersonal communication with colleagues [5].

Correspondence:
Alexios-Serafeim Nterekas

e-mail:
anterekas@tuc.gr

DOI: 10.15308/Sinteza-2023-191-198

The COVID-19 pandemic had a great effect on the way that people communicated worldwide. Due to social distancing and lockdowns, the use of social networks increased during the pandemic by 27% [6]. Despite the reliability issues, it is worth noting that social networks were used by several professional groups, such as medical doctors, to access information and share research outcomes. For instance, Murri et al. [7], found in their research that 70% of the respondents reported that they used social media to seek medical information during the COVID-19 pandemic.

The primary objective of this research is to examine the factors that influence doctors' intentions to use two popular social networks, namely, Facebook and Twitter, during the COVID-19 pandemic to gain access to recent medical information. To achieve these objectives, the TAM was applied using data obtained from a random sample of 336 doctors in Greece from January 18, 2021, to June 21, 2021. The TAM predicts BI and has been used widely in research to assess technology acceptance.

2. TECHNOLOGY ACCEPTANCE MODEL (TAM)

The TAM was introduced by Davis et al. [8] and involves four constructs: PEoU, PU, attitude towards use (ATT), and AU. Many modified versions of TAM have been studied such as TAM 2, TAM 3, UTAUT [9], [10]. The model depicted in Figure 1 represents a modification of the original TAM and incorporates five constructs [9].

PU denotes the perception of the worthiness of a specific system or application when used in conjunction with the daily tasks of a medical doctor. PEoU denotes the perception of ease while using the system or application. ATT denotes the individual's perception regarding the system or application, for example, "Do I prefer using a specific application or system over an available alternative?".

BI denotes the likelihood of using a certain system or application. AU denotes actual use, which is usually measured by the time or frequency of use of a particular application.

Although AU represents the dependent variable (Figure 1), the dependencies between the constructs can be significant and therefore subject to further investigation. For example, as depicted in Figure 1, PEoU can be considered to influence ATT and PU, PU can be considered to influence ATT and BI, ATT influences BI, and AU can be influenced by BI.

3. RESEARCH METHOD

3.1. SAMPLING METHOD AND PARTICIPANTS

In this research, Facebook, and Twitter, were selected due to their popularity [11], [12]. A measurement tool based on the McGowan et al. [13] instrument was used to evaluate TAM variables. Out of 350 doctors, 336 answered the questionnaire during the third wave of the COVID-19 pandemic in Greece. The sample consisted of 55.7% men and 44.3% women. Additionally, 55.5% of the respondents were under 39 years of age, whereas 44.5% were over 40. Furthermore, 41.4% of doctors held a medical diploma or postgraduate degree (MS or PhD). Doctors' specialties were divided into three main categories: pathology, surgery, and clinical laboratory and laboratory medicine. Of the sample, 40.3% of doctors reported being slightly active each day on social networks, 47.4% were reading research outputs uploaded by researchers and medical doctors, and 38.3% were exchanging messages.

3.2. INSTRUMENT TRANSLATION

To avoid any language issues, the questionnaire and scales were first translated from English to Greek by two translators, and the two translations were compared. The most appropriate translation was chosen in each case until all differences in terms of rendering disappeared completely.

Figure 1 - TAM [9][10].

This was then translated back from Greek to English by a third bilingual native English translator by following recommended procedures [14]. The minimal differences found between the original English version and the translation from Greek to English were used to conduct the final adjustments of the Greek translation, for which the translators collaborated directly. To adapt the questionnaire to the data from the public hospitals in Greece, it was modified after the researchers communicated with five doctors from these hospitals. The questionnaire consists of two sections: The first section involves demographic data such as gender, age, educational level, doctors' specialty, frequency of use, and purpose of use (Table 1). The second section involves the TAM variables (Table 2).

Table 1 - Summarizes demographic data statistics.

		Frequency	Percentage
Sex	Male	195	55.7%
	Female	155	44.3%
Age	< 30	53	15.1%
	30–39	141	40.4%
	40–49	68	19.4%
	> 49	88	25.1%
Education	Medical diploma	205	58.6%
	Medical diploma and postgraduate degree (MS or PhD)	145	41,4%
Branches of medicine	Pathology	194	55.5%
	Surgery	105	29.9%
	Clinical laboratory and laboratory medicine	51	14.6%
Social networks	Facebook (n = 130) or Twitter (n = 8)	138	39.4%
	Facebook and Twitter	198	56.6%
Frequency of Use	None	14	4.0%
	Very active	35	10.0%
	A little bit every day	141	40.3%
	A few days per week	58	16.6%
	Seldom	102	29.1%
Purpose of Use	I do not participate	14	4.0%
	Only views what others are posting	166	47.4%
	Comment on posts related to Covid-19	0	0%
	You are very active and post frequently articles/surveys almost daily	0	0%
	For exchanging messages	134	38.3%
	All the above	22	6.3%

3.3. RESEARCH HYPOTHESES

The research hypotheses are as follows [5], [10].

H1: PU while a doctor uses social networks is positively influenced by their PEoU in specific social networks.

H2: ATT while a doctor uses social networks is positively influenced by their PEoU of the specific social networks.

H3: ATT while a doctor uses social networks is positively influenced by their PU of the specific social networks.

H4: BI of social networks to a doctor is positively influenced by their PU regarding the specific social networks.

H5: BI of social networks by a doctor is positively influenced by their ATT related to specific social networks.

H6: AU of social networks by a doctor is positively influenced by the BI of the specific social networks.

3.4. FACE VALIDITY AND MEASURES

Out of 50 items originally used, a total of 36 items remained after a face validity procedure (the deleted questions are marked with bold letters in Table 2). In one of the items (PEoU) the reverse wording method was applied to ensure that someone would not mechanically fill in the questionnaire. To evaluate the responses, a five-degree licker scale was used in which 5 represents the most positive value and 1 is the most negative value.

3.5. CONTENT RELIABILITY AND VALIDITY

We used Exploratory Factor Analysis and varimax rotation to check the underlying dimensions of the scale. The internal reliability was checked using Cronbach's Alpha coefficient [15]. All Cronbach's alpha values were found above 0.70, i.e., 0.76–0.98, which indicates good reliability [16], [17], [18]. The Kolmogorov-Smirnov test was used to analyze the suitability of the data for parametric tests. Correlations indicate the degree of influence of one variable on another. A negative correlation means that when one variable increases, the other variable decreases. The Kruskal-Wallis test by ranks, is a non-parametric method for testing whether samples originate from the same distribution [19]. Statistical analysis was conducted using the open-source software Statistical Processing PSPP v.1.4.1. [20].

4. RESULTS

4.1. EXPLORATORY FACTOR ANALYSIS

The first criterion applied was the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy to examine the degree of homogeneity of the variables (0 to 1 scale) [21]. For all the factors with KMO>0.60, the sample appeared to be adequate. The second criterion applied was Bartlett's sample test of sphericity, which examines whether a relationship exists between the variables [22]. For all factors, p=0.000; therefore, the null hypothesis p<0.05) was rejected (Table 3). All initial exports were >0.50, which indicated a good contribution by each sentence to the final model [23]. All questionnaires were found to be valid except for Facebook ATT, which had low validity (52.3% < 65%). In particular, the factor analysis performed on all factors showed a total explanation of over 65%; therefore, the questionnaire was considered valid for Facebook and Twitter, except for the ATT factor, which showed a total explanation of 52.3% (<65%) concerning Facebook. This indicated that the data can be successfully explained using the factor model by limiting individual and random differences in the sample. The model produced one and two factors; however, a single factor was used for the analysis. The analysis of all the factors is presented in detail in Table 2.

4.2. NORMALITY TESTS

The Kolmogorov-Smirnov test did not support the existence of a normal distribution of the data, thus non-parametric tests were used.

Table 2 - Factor analysis with the principal components in a correlation matrix with varimax rotation.

Items in the questionnaire	Facebook		Twitter	
PEoU	**Fact 1**	**Fact 2**	**Fact 1**	**Fact 2**
Using social networks has made or is making my patient care more effective				
I promote healthy behaviors and healthcare outcomes		.72		.85
I am in direct contact with my colleagues	.80		.88	
I discuss current scientific topics in groups	.78		.74	
I communicate with hospital management easily and quickly		.91		.86
It is easy to discuss healthcare and related policy isues	.59	.48		.86
I engage in education and interaction with colleagues or patients	.89		.89	
I engage in interaction with the general public	.83		.77	
I publish the latest valid surveys	.79		.83	
I am informed about the social dimensions of the issue such that patient treatment can be decided	.77		.68	.65
Social media helps facilitate my work		.81		.89
I avoid fake news		.82		.87
Social network use negatively impacts my working time, Social media helps me quickly share business ideas and information, Social media has lots of false information that prevents people from finding valid information				
PU	**Fact 1**	**Fact 2**	**Fact 1**	
Social networks allow me to solve health problems fast		.91	.89	
Social network improves my performance in critical health matters		.91	.80	
Social networks increase my productivity in dealing with health-related issues		.84	.93	
Social networks increase my effectiveness in dealing with health-related issues		.87	.94	
Social networks help me work better, e.g., by improving communication	.85		.89	
Social networks are effective in handling the health issues that I manage	.77		.92	
Working without social networks would be difficult	.61		.83	
I should spend more time on issues that are currently being resolved immediately	.51	.61	.80	
Social networks improve the quality of my work (e.g., via the exchange of views)	.90		.86	
Social networks help me focus on important issues	.82		.93	
Overall, I find social networks useful for solving health problems	.72		.93	
Social networks facilitate the resolution of patients' health problems, Social networks are important to use for my work, Social networks help me manage multiple situations/issues quickly, I use social media too much during working hours				
ATT	**Fact 1**		**Fact 1**	
Social media makes decision-making difficult	.64		.83	
The quality of shared information is low in relation to the quantity	.78		.54	
Social media use presents a possibility of conflict (conflict of interest) in topics of discussion	.78		.94	
Social media has a nontransparent method for peer review and comments	.76		.88	
I am anxious while using social networks	.65		.90	
I feel that there is insufficient security of private data/discussions on important topics, Social networks help improve the quality of care for my patients, Social media facilitates direct communication, Social media use presents a risk of leaking professional information, Social media increases personal awareness by discovering medical news, Social media helps me relax while working				
BI	**Fact 1**		**Fact 1**	
I prefer to use social networks every day during my work	.97		.95	
I plan to use social networks every day at my work	.98		.99	
I would use social networks every day at my work	.99		.98	
AU	**Fact 1**		**Fact 1**	
I have the skills to use social networks every day during my work	.84		.78	
I have the skills to use social networks effectively for my work	.89		.94	
I have knowledge of using social networks for my work	.88		.87	
If I need help or face an issue, I know where to go to use social networks properly	.80		.75	
I have used social networks effectively in the past many times for my work	.83		.73	

4.3. CORRELATIONS BETWEEN TAM FACTORS AND DEMOGRAPHIC

According to our findings (Table 3), a negative correlation was found between PEoU and Frequency of Use (r=-0.56). This finding indicates that the easier doctors think social networks are, the less they tend to use them. Similarly, a negative correlation was found between PU and Frequency of Use, specifically (r= -0.43) for Facebook and (r= -0.52) for Twitter. Furthermore, a negative correlation was found between BI and Frequency of Use (r=-0.67) for Facebook, and (r=-0.50) for Twitter. Finally, a positive correlation was found between PU and Purpose of Use (r= 0.49) for Facebook and (r=0.66) for Twitter.

4.5. CORRELATIONS AMONG TAM FACTORS.

In Table 4, the correlations found between the factors are presented. For Facebook, a positive correlation was found between PU and PEoU (0.83). A strong positive correlation was also found between BI and PEoU (0.68), AU and PEoU (0.66), and AU and BI (0.64). For Twitter, a strong positive correlation was found between PU and PEoU (0.84), as well as between BI and PEoU (0.7), BI and PU (0.69), AU and PEoU (0.7), and AU and PU (0.77). Finally, ATT (Facebook and Twitter) had negative correlations with PEoU, PU and BI.

4.6. DIFFERENCES IN DOCTORS' SPECIALTIES

Differences between doctors' specialties (Pathology, Surgery, Clinical laboratory, or laboratory medicine) were found using the Kruskal–Wallis test (**p<.05). Surgical doctors had lower average use, PEoU, ATT, PU, BI, and AU in all correlations (except Facebook, ATT, and BI) than other specialties. A possible explanation could be that surgeons can't use social networks during their work.

Table 3 - TAM factors - demographic statistically significant correlations **p <.05, *p<.10.

	Sex	Age	Education	Social Networks	Frequency of Use	Purpose of Use
FB PEoU	-.10*			.14**	-.56**	.44**
TWT PEoU	-.29**	-.31**	-.13*		-.56**	.44**
FB ATT	-.18**	.14**	.23**	-.49**	.09*	-.21**
TWT ATT		.13*	.22**	.38**	.14**	-.48**
FB PU		-.09*			-.43**	.49**
TWT PU	-.23**	-.28**	-.20**		-.52**	.66**
FB BI		-.19**		.34**	-.67**	.14**
TWT BI		-.26**			-.50**	.40**
FB AU			.09*	.25**	-.26**	.16**
TWT AU		-.28**	-.17**	-.12*	-.12*	.62**

Table 4 - TAM factors statistically significant correlations: **p <.05, *p<.10.

	FB PEoU	TWT PEoU	FB ATT	TWT ATT	FB PU	TWT PU	FB BI	TWT BI
FB PEoU								
TWT PEoU	.61**							
FB ATT	-.15**	-.20**						
TWT ATT	-.31**	-.54**	.69**					
FB PU	.83**	.63**	-.28**	-.60**				
TWT PU	.60**	.84**	-.47**	-.66**	.75**			
FB BI	.68**	.32**			.51**	.16**		
TWT BI	.52**	.70**	-.36**	-.48**	.53**	.69**	.54**	
FB AU	.66**	.15**		.20**	.57**		.64**	
TWT AU	.35**	.70**	-.41**	-.64**	.45**	.77**	-.12*	.46**

5. DISCUSSION

In the present study, half of the doctors participating in the research reported being slightly active each day on social networks and used social networks during the COVID-19 pandemic to read research outputs uploaded by other researchers and medical doctors (Table 1). Hazzam et al. [5] in their research found that doctors used social media several times during the day and used social platforms for the exchange of peer medical information. We found that younger doctors use Twitter more whilst Zerreck et al. [24] in their study found that younger doctors use Facebook more than other social networks. We found a strong positive correlation between PU and PEoU of Facebook and Twitter which is in line with the findings of Pare et al. [25] who found a strong positive correlation between PU and PEoU (Hypothesis H1). In addition, we found a strong positive correlation between BI and PU of Twitter (Hypothesis H4) which is in line with the findings of Melas et al. [10]. Furthermore, we found a strong positive correlation between AU and BI of Facebook which is in line with the findings of Kissi et al. [26] research. We also found a strong positive correlation between AU and PU for Twitter which is in line with the research of Kissi et al. [26]. Furthermore, we found a strong positive correlation between the BI and PEoU of Facebook and Twitter which is confirmed by Orruno et al. [27] in their research. We found a strong positive correlation between AU and PEoU of Facebook and Twitter which is confirmed by Liang et al. [28] in their research Finally, in our sample, ATT had a negative correlation with the rest of the factors of TAM (Table 4) although S. Abdool et. al. [29] in their research found positive correlations between ATT and the rest of the factors. Hypotheses H2, H3, H4 (Facebook), H5, and H6 (Twitter) were not confirmed. The classification of correlations was annotated according to [30].

6. CONCLUSIONS

The COVID-19 pandemic has affected the lives of people in every country on Earth. The general tendency that people have had to look for ways to communicate is also verified in the medical community. The research showed that doctors used social networks during the COVID-19 pandemic as a communication tool for their work. Despite the reliability issues, social networks can contribute to such high requirements for medicine.

7. ACKNOWLEDGMENT

The authors would like to especially thank all the doctors who contributed wholeheartedly to the conduct of would like to especially thank all the doctors who contributed wholeheartedly to the conduct of this research during the pandemic and the difficult conditions we were experiencing. The authors are fully responsible for the opinions and results reported here. This study was partially supported by the George and Victoria Karelia Foundation, Athens, Greece [Contract, 20/12/2017].

8. REFERENCES

[1] Y. A. Ahmed, M. N. Ahmad, N. Ahmad, N. H. Zakaria, "Social media for knowledge-sharing: A systematic literature review," *Telematics and Informatics*, vol. 37, pp. 72-112, 2019, https://doi.org/10.1016/j.tele.2018.01.015.

[2] D. Farsi, "Social Media and Health Care, Part I: Literature Review of Social Media Use by Health Care Providers," *Journal of Medical Internet Research*, vol. 23, no, 4, 2021, https://doi.org/10.2196/23205.

[3] C. M. Hennessy, C. F. Smith, S. Greener, G. Ferns, "Social media guidelines: a review for health professionals and faculty members," *Faculty Development Review*, vol. 16, no, 5, pp. 442- 447, 2019, https://doi.org/10.1111/tct.13033.

[4] W. S. Chan, A. Y. Leung, "Use of Social Networks for Communication Among Health Professionals: Systematic Review," *J Med Internet Res*, vol. 20, no.3, pp. 117, 2018, https://doi.org/10.2196/jmir.8382.

[5] J. Hazzam, A. Lahrech, "Health Care Professionals' Social Media Behavior and the Underlying Factors of Social Media Adoption and Use: Quantitative Study," *Journal of Medical Internet Research*, vol. 20, no. 11, pp. 12035, 2018, https://doi.org/10.2196/12035.

[6] E. Koeze, N. Popper, "The Virus Changed the Way We Internet," New York Times, 2020, https://www.nytimes.com/interactive/2020/04/07/technology/coronavirus-internet-use.html

[7] R. Murri, F. V. Segala, P. D. Vecchio, A. Cingolani, E. Taddei, G. Micheli, M. Fantoni, COVID II Colubus Group, "Social media as a tool for scientific updating at the time of COVID pandemic: Results from a national survey in Italy," *Plos One*, vol. 15, no.9, pp. e0238414, 2020, https://doi.org/10.1371/journal.pone.0238414

[8] F. D. Davis, R. Bagozzi, & R. Warshaw, "A technology acceptance model for empirically testing new end-user information systems: theory ad results," *MIT Sloan School of Management,* 1986. [Online]. Available: http://hdl.handle.net/1721.1/15192

[9] F. D. Davis, R. Bagozzi, R. Warshaw, "User acceptance of computer technology: A comparison of two theoretical models," *Management Science*, vol. 35, no. 8, pp. 982–1003, 1989, https://doi.org/10.1287/mnsc.35.8.982.

[10] C. Melas, A. Zampetakis, A. Dimopoulou & V. Moustakis, "Modelling the acceptance of clinical information systems among hospital medical staff: An extended TAM model," *Journal of Biomedical Informatics*, vol. 44, pp. 553–564, 2011, https://doi.org/10.1016/j.jbi.2011.01.009.

[11] A. Perrin, & M. Aderson. "Share of U.S. adults using social media, including Facebook, is mostly unchanged since 2018', Pew Research Center, 2019, https://www.pewresearch.org/fact-tank/2019/04/10/share-of-u-s-adults-using-social-media-including-facebook-is-mostly-unchanged-since-2018/

[12] L. Seci. "Most popular mobile social network up in the United States as of September 2019 by reach", Statista, 2019, https://www.statista.com/statistics/579334/most-popular-us-social-networking-apps-ranked-by-reach/

[13] B. S. McGowan, M. Wasko, B. S. Vartabedian, R. S. Miller, D. D. Freiherr, M. Abdolrasulnia, "Understanding the factors that influence the adoption and meaningful use of social media by physicians to share medical information," *Journal of Medical Internet Research*, vol. 14, no. 5, p. 117, 2012, https://doi.org/10.2196/jmir.2138.

[14] E. S. Cha, K. Kim, & J.A. Erlen, "Translation of scales in cross-cultural research: issues and techniques," *Journal of Advanced Nursing,* vol. 58 no. 4, pp. 386–95, 2007, https://doi.org/10.1111/j.1365-2648.2007.04242.x.

[15] N. Aletras, D. Tsarapatsanis, D. Preotiuc, & V. Lampos, "Predicting judicial decisions of the European Court of Human Rights: A natural language processing perspective," *PeerJ Computer Science*, vol. 2, pp. e93, 2016.

[16] W. Kruskal, W. A. Wallis. "Use of ranks in one-creterion variance analysis," *Journal of the American Satistical Association*, vol. 47, no. 260, pp. 583-621, 1952.

[17] R. W. B. Jackson, & G. A. Ferguson, "Studies on the reliability of tests", *University of Toronto Department of Educational Research Bulletin*, vol. 12, pp. 132.

[18] L. J. Cronbach, "Coefficient alpha and the internal structure of tests," *Psychometrika*, vol. 16, no.3, pp. 297–334, 1951.

[19] M.R Novick, C. & Lewis, "Coefficient alpha and the reliability of composite measurements," *Psychometrika*, vol. 32, no. 1, pp. 1–13, 1967.

[20] PSPP 1.4.1. (2020). pspp4windows. Accessed: Sep. 6, 2020. [Online]. Available: https://www.gnu.org/software/pspp/

[21] G. Klein, "The Cartoon Introduction to Statistics," Hill & Wang, 2013.

[22] M.S. Bartlett, "Properties of sufficiency and statistical tests", *Proceedings of the Royal Statistical Society, Series A, Mathematical and Physical Sciences*, vol. 160, pp. 268–282, 1937, https://doi.org/10.1098/rspa.1937.0109.

[23] L. Tucker, & R. MacCallum, "Exploratory Factor Analysis", 1933. [Online] https://labs.dgsom.ucla.edu/hays/files/view/ docs/factor.pdf

[24] C. Zerrweck, S. Arana, C. Calleja, N. Rodriguez, E. Moreno, J. P. Pantoja, G. Donatini, "Social media advertising, and internet use among general and bariatric surgeons," *Surgical Endoscopy*, vol. 34, pp. 1634-1640, 2020, https://doi.org/10.1007/s00464-019-06933-5.

[25] G. Pare, C. Sicotte, H. Jacques, "The effects of creating psychological ownership on physicians' acceptance of clinical information systems," *Journal of the American Medical Informatics Association*, vol. 13, pp. 197–205, 2006, http://doi.org/10.1197/jamia.M1930.

[26] J. Kissi, B. Dai, C. S. K. Dogbe, J. Banahene, O. Ernest, "Predictive factors of physicians' satisfaction with telemedicine services acceptance," *Health Informatics Journal*, vol. 26, no. 3, pp. 1866-1880, 2020, https://doi.org/10.1177/1460458219892162.

[27] E. Orruno, M. P. Gagnon, A. B. Abdeljelil, "Evaluation of teledermatology adoption by health-care professionals using a modified Technology Acceptance Model," *Journal of Telemedicine and Telecare*, vol. 17 no. 6, pp. 303-7, 2011, https://doi.org/10.1258/jtt.2011.101101

[28] H. Liang, Y. Xue, T. A. Byrd, "PDA usage in healthcare professionals: testing an extended technology acceptance model," *International Journal of Mobile Communications*, vol. 1, no. 4, pp. 372-389, 2003, https://doi.org/10.1504/IJMC.2003.003992

[29] S. Abdool, S. Abdallah, S. Akhlaq, H. A. & Razzak, "User acceptance level of and attitudes towards telemedicine in the United Arab Emirates: A quantitative study," *Sultan Qaboos University Medical Journal*, vol. 21, no.2, pp. e203–e209, 2021, https://doi.org/10.18295/squmj.2021.21.02.008.

[30] J. D. Evans, "Straightforward Statistics for the Behavioral Sciences," Thomson Brooks/Cole, Pacific Grove, 1996.