

# Combining Mobile Technologies, Healthcare & Service Quality. A Bibliometric Analysis

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Javed Ali<sup>1,2</sup>(✉), Ahmad Jusoh<sup>2</sup>, Norhalimah Idris<sup>2</sup>, Naveed Akhtar Qureshi<sup>1</sup>,  
Saeed Abbas Shah<sup>1</sup>, Alhamzah F. Abbas<sup>2</sup>

<sup>1</sup>Department of Business Administration, Sukkur IBA University, Sindh, Pakistan

<sup>2</sup>Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor, Malaysia

javedali@iba-suk.edu.pk

**Abstract**—The purpose of the paper is to identify the links and connections among main themes of the search i.e., Mobile Technologies, Service Quality and Healthcare. It also aims at identifying the valuable contributions from authors, journals, countries, and institutions in the searched area. Data has been extracted from Scopus database and it covers the timeline from 2005 to 2021. The final documents (n=245) have been analysed through VOSviewer software and MS Excel. Results show that Guo, X., International Journal of Medical Informatics, Harbin Institute of Technology, China and United States are top performing author, journal, institution and countries respectively. According to the results for collaborations and associations, Bhuiya A., United States and Mobile Healthcare are the most prominent author, country and keyword with highest score of total link strength (TLS). Findings suggested important and valuable avenues for future research directions in terms of underperforming countries, under-utilized subject areas and under-explored themes (keywords). This study, to best of our knowledge, is the first of its kind in mapping the literature of combined themes (Mobile Technologies, Service Quality and Healthcare).

**Keywords**—Mobile Technologies, Service Quality, Healthcare, bibliometric analysis

## 1 Introduction

This paper presents the bibliometric mapping of ‘Mobile Technologies, Service Quality and Healthcare’ search. Different past studies based on bibliometric analysis have presented the analysis of the themes such as service quality and healthcare. [1] performed bibliometric analysis of service quality in the context of healthcare. [2] examined different articles on databases of EBSCO and ProQuest and completed bibliometric analysis of service quality. [3] performed bibliometric analysis on electronic service quality and services from 2000 to 2020 by using Scopus database. [4] explored and reviewed the service quality of education services, medical services, transportation services and financial services from 2000 to 2019 in China. It was based on bibliometric analysis and articles were extracted from CNKI (<https://www.cnki.net/>). [5] inspected the trend of China’s service quality developments from 1999 to 2019. [6] presented the mapping of mobile healthcare literature from 2012 to 2020. It was

based on bibliometric and visualization analysis. [7][13][14] performed bibliometric analysis on service quality attributes used in models available in literature.

This paper is different from the previous studies in a way that the current study presents the review of combined themes of service quality, healthcare and mobile technologies till 2021. Therefore, it intends to achieve following research objectives.

- RO 1. To identify publication output of searched themes till 2020.
- RO 2. To identify the most prolific authors, prominent journals, influential countries and institutions in the final search around the world.
- RO 3. To identify the sub-themes of mobile technologies, healthcare and service quality and their occurrence and association.
- RO 4. To identify the links and associations of combined themes of the search (mobile technologies, service quality and healthcare)

## 2 Methods

The search was carried out in Scopus database because it was the largest database than others [8]. It also offered wide-ranging coverage of the subjects than that of Med-Line, Web of Sciences and so on [1][8][9][15].

### 2.1 Search strategy

To screen the documents, different threshold values were used. Documents for the analysis were extracted in January 2022. The search was begun with applying the keywords (service quality, mobile technology and healthcare) in the database. The complete search string has been provided in the Appendix 1. Search strategy contained inclusion and exclusion criterion. Documents were limited to articles and from journals only, the year 2022 was excluded, and the language of the documents selected was English. Search strategy flowchart is mentioned in Figure 1. The final number of documents extracted was 245.

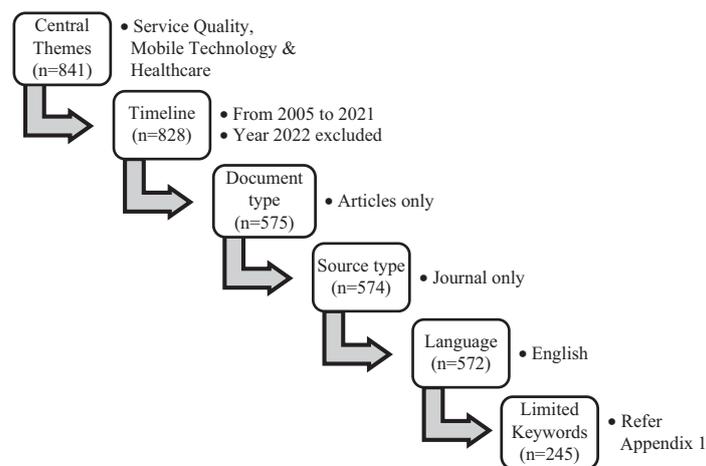


Fig. 1. Search flow chart

### 3 Analysis and results

The final screened documents were exported and analyzed in MS-Excel and VOSviewer (Centre for Science and Technology Studies, Leiden University, Netherlands). VOSviewer software is user-friendly and helpful in creating and analyzing bibliometric maps. Bibliometric maps show the links which represent collaborations and associations among items of search (e.g., authors, countries, and keywords). These items are associated with the links and their strength is represented with positive numerical value [10]. The higher the value, the higher the link strength between two items [10]. The Association strength was selected during the analysis of items (e.g., keyword, authors, countries).

#### 3.1 Research output and trend

Publication output of our search showed gradual increase throughout the years specifically after the year 2011 it showed the rapid increase in the publications of the documents containing themes of service quality, healthcare and mobile technologies (Figure 2). The first two years showed just one publication each. Publication output of last two years contained more than 90 documents which showed the importance of themes in contemporary literature. Most of the documents were published in the subject of Computer Science (22%), followed by Medicine (17%) and (Business, Management and Accounting (16%). Contributions in other subjects are mentioned in (Figure 3).

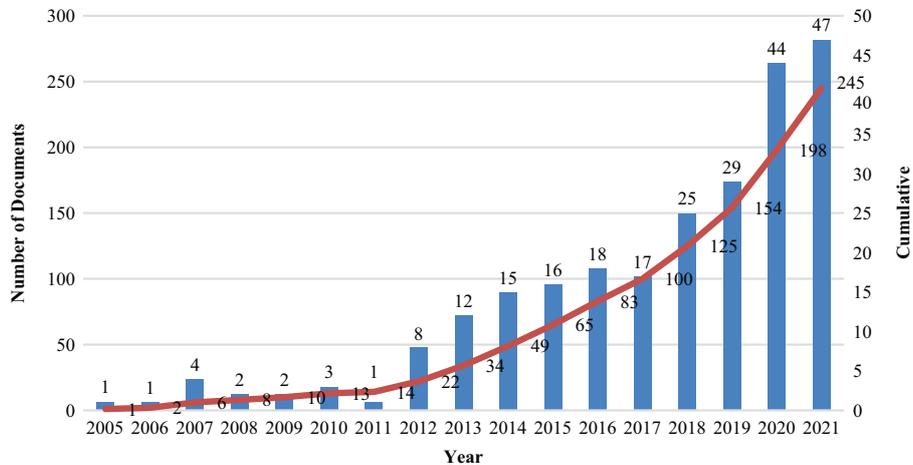


Fig. 2. Graph showing publication output of search

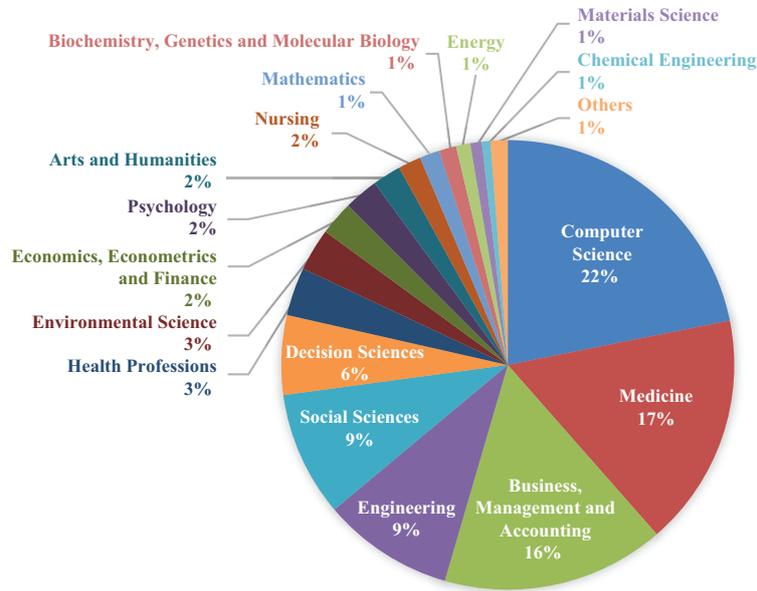


Fig. 3. Pie-chart showing the publications across subjects

### 3.2 Prolific authors and journals

We analyzed the most prolific authors and journals in ‘Service Quality, Mobile Technology and Healthcare’ search. We identified top authors and journals in chosen search criteria by applying minimum number of publications 05. Guo, X. from Harbin Institute of Technology China was leading at the top with 09 total publications, 23 h-index and 2006 citations. Akter, S. was found on second in the list with 06 total publication, 28 h-index and 4941 citations followed by Ooi, K.B. (TP, 06; h-index, 55; TC, 7544), Zhang, X. (TP, 06; h-index, 14; TC, 646) and others mentioned in Table 1. Among the top ten journals, International Journal of Medical Informatics is at the top with total publications of 10 with 7.1 CiteScore (2020) and it is published by Elsevier. It is followed by International Journal of Information Management with 09 total publications and 18.1 Citescore (2020) and it is too published by Elsevier. Their most cited documents and other top contributing journals are mentioned in Table 2.

**Table 1.** List of prominent authors (minimum threshold for total publication is 05)

S/No	Author	Scopus Author ID	1st Publication*	TP	h-Index	TC	Current Affiliation	Country
1	Guo, X.	24777794600	2013	9	23	2006	Harbin Institute of Technology	China
2	Akter, S.	36058277700	2010	6	28	4941	University of Wollongong	Australia
3	Ooi, K.B.	14619509700	2012	6	55	7544	UCSI University, Kuala Lumpur	Malaysia
4	Zhang, X.	55934230200	2014	6	14	646	Nankai University Business School	China
5	Bhuiya, A.	7004211277	2014	5	34	3808	International Centre for Diarrhoeal Disease Research	Bangladesh
6	Liébana-Cabanillas, F.	55151541700	2017	5	24	2366	Universidad de Granada, Granada	Spain
7	Ray, P.	55648077300	2010	5	27	3052	University of Michigan-Shanghai	China

**Table 2.** List of top contributing journals (minimum threshold for total publication is 05)

S/No	Journal	TP	Cite Score 2020	The Most Cited Article (reference)	Times Cited	Publisher
1	International Journal of Medical Informatics	10	7.1	Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model	290	Elsevier
2	International Journal of Information Management	9	18.1	A SEM-neural network approach for predicting antecedents of m-commerce acceptance	177	Elsevier
3	International Journal of Environmental Research and Public Health	8	3.4	Healthcare digitalization and pay-for-performance incentives in smart hospital project financing	23	MDPI

(Continued)

**Table 2.** List of top contributing journals (minimum threshold for total publication is 05) (Continued)

S/No	Journal	TP	Cite Score 2020	The Most Cited Article (reference)	Times Cited	Publisher
4	Technology in Society	8	4.2	Evaluation and selection of mobile health (mHealth) applications using AHP and fuzzy TOPSIS	64	Elsevier
5	Journal of Medical Internet Research	7	6.9	A data encryption solution for mobile health apps in cooperation environments	40	JMIR Publications Inc.
6	Jmir Mhealth nnd Uhealth	6	6.3	What predicts patients' adoption intention toward mhealth services in China: Empirical study	61	JMIR Publications Inc.
7	Computers in Human Behavior	5	13.8	Informal tools in formal contexts: Development of a model to assess the acceptance of mobile technologies among teachers	97	Elsevier
8	Sustainability Switzerland	5	3.9	The role of mobile technology in tourism: Patents, articles, news, and mobile tour app reviews	47	MDPI
9	Technological Forecasting and Social Change	5	12.1	Predicting the determinants of mobile payment acceptance: A hybrid SEM-neural network approach	114	Elsevier

### 3.3 Prominent countries and institutions

Different countries and institutions across the world have contributed in the searched themes. We identified the top contributing countries and institutions with their total publications and the most cited papers. The minimum threshold for publishing a document was 05. Hence, 19 top performing countries and 10 institutions have been identified. China and United States have produced 39 documents at the top of the list, followed by Taiwan (30), Australia (21) and others are mentioned in Table 3. Among the institutions, Harbin Institute of Technology is leading the other institutions with 11 total publications, followed by Hong Kong Polytechnic University (09), UNSW business school (08) and others mentioned in Table 4.

**Table 3.** List of top performing countries (minimum threshold=05 publications)

S/No	Country/ Territory	TP	Most Cited Paper	Times Cited
1	China	39	Understanding the acceptance of mobile health services: A comparison and integration of alternative models	230
2	United States	39	What catalyses mobile apps usage intention: An empirical analysis	196
3	Taiwan	30	An investigation on physicians' acceptance of hospital information systems: A case study	89
4	Australia	21	Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model	290
5	Bangladesh	20	Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model	290
6	Spain	18	A SEM-neural network approach for predicting antecedents of m-commerce acceptance	177
7	Malaysia	17	What catalyses mobile apps usage intention: An empirical analysis	196
8	India	15	Wearable IoT sensor based healthcare system for identifying and controlling chikungunya virus	66
9	South Korea	12	The role of mobile technology in tourism: Patents, articles, news, and mobile tour app reviews	47
10	United Kingdom	12	EHealth and mHealth initiatives in Bangladesh: A scoping study	55
11	Hong Kong	11	The privacy-personalization paradox in mHealth services acceptance of different age groups	110
12	Finland	7	Barriers and drivers in the adoption of current and future mobile services in Finland	146
13	Italy	7	The role of media dependency in predicting continuance intention to use ubiquitous media systems	52
14	France	6	The role of media dependency in predicting continuance intention to use ubiquitous media systems	52
15	Germany	6	Mobile business application for service and maintenance processes: Using ex post evaluation by end-users as input for iterative design	15
16	Jordan	6	Based Multiple Heterogeneous Wearable Sensors: A Smart Real-Time Health Monitoring Structured for Hospitals Distributor	54
17	Netherlands	6	Barriers and drivers in the adoption of current and future mobile services in Finland	146
18	Pakistan	6	Extending UTAUT2 toward acceptance of mobile learning in the context of higher education	30
19	Qatar	5	Applied Artificial Intelligence and user satisfaction: Smartwatch usage for healthcare in Bangladesh during COVID-19	0

**Table 4.** List of top performing institutions (minimum threshold=05 publications)

S/No	Institution/Affiliation	TP	Most Cited Paper	Times Cited
1	Harbin Institute of Technology	11	Understanding the acceptance of mobile health services: A comparison and integration of alternative models	230
2	Hong Kong Polytechnic University	9	The privacy-personalization paradox in mHealth services acceptance of different age groups	110
3	UNSW Business School	8	Development and validation of an instrument to measure user perceived service quality of mHealth	150
4	University of Wollongong	7	Development and validation of an instrument to measure user perceived service quality of mHealth	150
5	Universidad de Granada	7	A SEM-neural network approach for predicting antecedents of m-commerce acceptance	177
6	Universiti Tunku Abdul Rahman	7	What catalyses mobile apps usage intention: An empirical analysis	196
7	University of Dhaka	6	Understanding factors influencing the adoption of mHealth by the elderly: An extension of the UTAUT model	290
8	International Centre for Diarrhoeal Disease Research Bangladesh	5	EHealth and mHealth initiatives in Bangladesh: A scoping study	55
9	North South University	5	Exploring the role of service quality and knowledge for mobile health services	14
10	Korea Advanced Institute of Science and Technology	5	The role of mobile technology in tourism: Patents, articles, news, and mobile tour app reviews	47

### 3.4 Bibliometric maps

The bibliometric analysis is one of the quantitative techniques which is helpful in visualizing and synthesizing the literature of a particular piece of research work [8] [11][12]. Bibliometric maps of the current study contain 245 total screen records. Maps encompassed co-authorship analysis of authors and countries, and co-occurrence analysis of author keywords.

### 3.5 Co-authorship (authors)

The co-authorship analysis represents the links between two authors who have coauthored the documents and published them. It is denoted with the link strength. Therefore, the total link strength (TLS) exhibits the total co-authorship strength of one author with the other. Similarly, it works for countries.

Different thresholds have been applied in Co-authorship analysis. Maximum number of authors per document is 25. Minimum number of documents of an author is 01, and minimum number of citations is remained 00. After implementing these thresholds,

795 authors meet the criteria. We identified 45 top performing authors based on their total link strength representing their collaboration and co-authorship with others. Bhuiya A. is leading the all authors identified with 34 TLS, 05 documents and 193 citations. Guo X. is leading next with 33 TLS, 09 documents and 469 citations, followed by Khatun F. (TLS, 29; Documents, 04; Citations, 138), Zhang X. (TLS, 29; Documents, 07; Citations, 249), Iqbal M. (TLS, 26; Documents, 06; Citations, 125) and others mentioned in Table 5.

**Table 5.** List of authors based on TLS

S/No	Author	Documents	Citations	TLS	S/No	Author	Documents	Citations	TLS
1	Bhuiya A.	5	193	34	24	Echarri A.	1	4	18
2	Guo X.	9	469	33	25	Enaizan O.	1	52	18
3	Khatun F.	4	138	29	26	Gallego F.	1	4	18
4	Zhang X.	7	249	29	27	García-López S.	1	4	18
5	Iqbal M.	6	125	26	28	Guardiola J.	1	4	18
6	Lai K.-H.	5	100	19	29	Guerra I.	1	4	18
7	Ooi K.-B.	6	497	19	30	Hashim M.	1	52	18
8	Abdulkareem K.H.	1	52	18	31	Marín-Jiménez I.	1	4	18
9	Aguas M.	1	4	18	32	Mesonero P.	1	4	18
10	Al Shafeey G.A.	1	52	18	33	Mohammed K.I.	1	52	18
11	Alamoodi A.H.	1	52	18	34	Mohsin A.H.	1	52	18
12	Albahri A.S.	1	52	18	35	Momani F.	1	52	18
13	Albahri O.S.	1	52	18	36	Muñiz J.	1	4	18
14	Almahdi E.M.	1	52	18	37	Nidhal S.	1	52	18
15	Alsalem M.A.	1	52	18	38	Nos P.	1	4	18
16	Arajol C.	1	4	18	39	Ollero V.	1	4	18
17	Baqer M.J.	1	52	18	40	Riestra S.	1	4	18
18	Calvo M.	1	4	18	41	Robledo P.	1	4	18
19	Castro B.	1	4	18	42	Vera I.	1	4	18
20	Ceballos D.	1	4	18	43	Zaidan A.A.	1	52	18
21	Chaparro M.	1	4	18	44	Zaidan B.B.	1	52	18
22	Chyad M.A.	1	52	18	45	Zughoul O.	1	52	18
23	Dawood K.A.	1	52	18					

Co-authorship maps for authors were created in two sets; complete set including all items (Figure 4) and connected set (Figure 5). These maps have been developed on Total Link Strength (TLS). Complete set contains total 745 items (authors) is based on TLS with layout values of attraction 05 and repulsion -01 to make its visualization better. The map of connected set of items (37) is based on TLS with layout values of attraction 06 and repulsion -04.

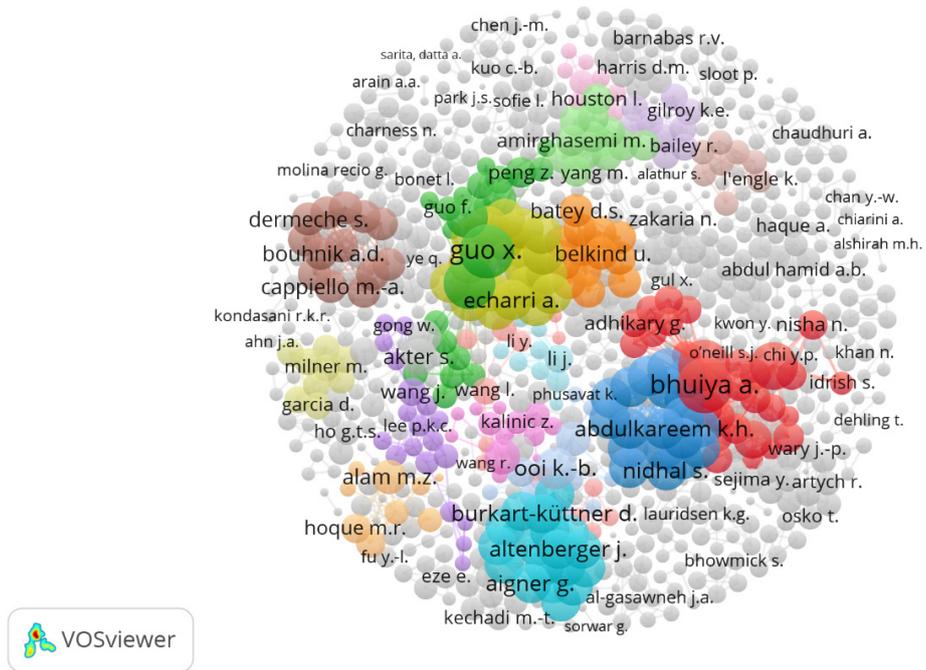


Fig. 4. Screenshot showing the map of coauthorship (authors – all items) based on TLS

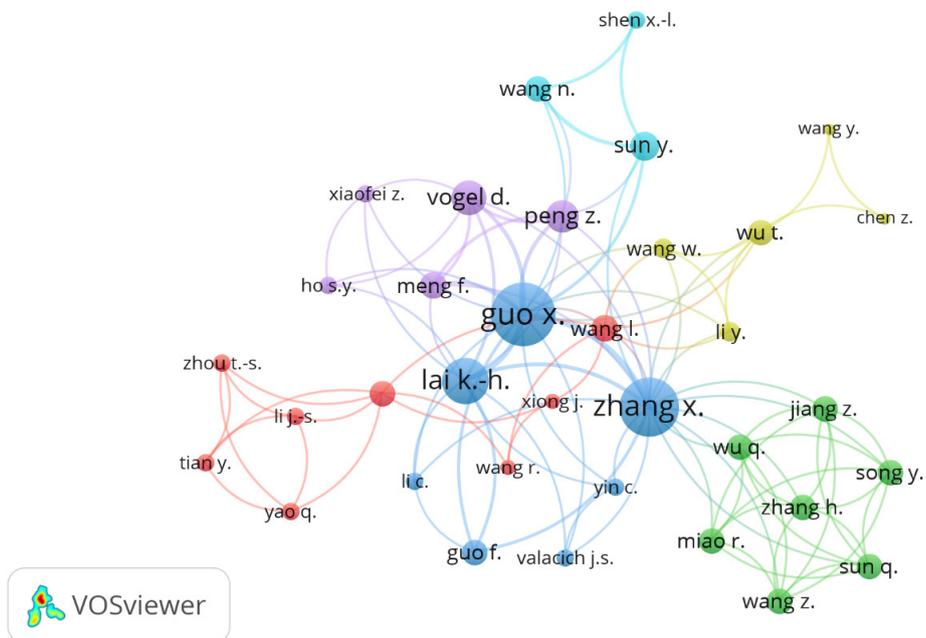


Fig. 5. Screenshot showing the map of connected set of coauthorship (authors) based on TLS

### 3.6 Co-authorship (countries)

We mapped the Co-authorship for countries. Links between two countries show their collaborations and associations in this specific searched area. The closer these countries will be, the stronger their relatedness will be [10]. Also, the thicker links between them, the stronger the link between them [10]. Different thresholds have been applied while creating the maps. The maximum number of documents of a country is 25, minimum number of documents of a country is 01 and minimum number of citations of a country is 00. Hence, total 61 items (countries) excluding one item which was not representing any country met the criteria. Two types of countries have been identified; one with high TLS score and other with low or no TLS score. It represents whether the listed country has high collaborations and association with other countries in producing document of searched themes or they haven't collaborated at all. United States, China, Spain, Bangladesh and others with high TLS are mentioned in Table 6 whereas Austria, Croatia, Ghana, Greece, Norway, Slovenia and Tunisia have not collaborated any document with other countries which is an opportunity and future research insight for the researchers belonging to these countries. Mapping of these countries pertaining to their links and connections with other countries are shown in two following maps; complete set showing all countries (Figure 6) and largest set of connected countries (Figure 7).

**Table 6.** List of countries with high and low TLS

Countries with High TLS					Countries with Low or No TLS				
S/No	Country	Documents	Citations	TLS	S/No	Country	Documents	Citations	TLS
1	United States	39	816	33	1	Austria	1	4	0
2	China	39	965	27	2	Croatia	1	5	0
3	Spain	18	829	18	3	Ghana	1	9	0
4	Bangladesh	20	638	17	4	Greece	1	2	0
5	Malaysia	17	718	15	5	Norway	2	12	0
6	Australia	21	968	13	6	Slovenia	1	4	0
7	United Kingdom	12	280	13	7	Tunisia	1	16	0
8	Hong Kong	11	254	10					
9	Netherlands	6	249	9					
10	Taiwan	30	522	8					
11	Finland	7	193	7					
12	France	6	67	6					
13	Jordan	6	114	6					
14	India	15	265	5					
15	Italy	7	170	5					
16	Singapore	3	97	5					
17	South Korea	12	245	5					



### 3.7 Co-occurrence (author keywords)

Co-occurrence analysis reflects the links and associations of author keywords used in the publications. The current study used cooccurrence analysis to identify the occurrence of different keywords related to central themes of the search i.e., service quality, mobile technology and healthcare. After applying minimum threshold (minimum occurrence=01) in the software, we retrieved total 830 items (keywords). Firstly, we identified the prominent keywords that had high number of occurrences in the documents. Secondly, we organized the keywords into three themes; keywords related to mobile technology, healthcare and service quality. Their occurrence and total link strength were identified. Finally, we identified the sub-themes which were reflecting the central themes i.e., ‘healthcare & mobile technology’ and ‘service quality & mobile technology’. Furthermore, Bibliometric maps based on the occurrence of author keywords showing all the items is visualized in (Figure 8) and the largest connected set of items is visualized in (Figure 9).

**Table 7.** List of the most occurred author keywords

Item (Keyword)	Occurrence	Total Link Strength
Mobile Healthcare	83	403
Healthcare	27	134
Service Quality	26	134
E-Healthcare	23	111
Mobile Applications	20	95
Mobile Technology	13	62
Mobile Phones	12	71
Smart Phones	11	53
Utaut	11	62
Bangladesh	10	56
Adoption	8	37
Information Quality	8	51
Mobile Service	8	35
Satisfaction	8	39
Structural Equation Modeling	8	37
Technology Acceptance Model	8	38

The most prominent keywords based on their occurrence include *mobile healthcare* (83), *healthcare* (27), *service quality* (26), *e-healthcare* (23), *mobile applications* (20) and others mentioned in Table 7. The most prominent keywords related to mobile technologies include *mobile applications* (20), *mobile technology* (13), *mobile phones* (12), *smart phones* (11) and others mentioned in Table 8. The most prominent keywords related to healthcare include *healthcare* (27), *health consciousness* (03), *hospitals* (03), *patient satisfaction* (03), *physicians* (03) and others mentioned in Table 9. Prominence of keywords related to service quality comprises of *service quality* (28), *information quality* (08), *system quality* (06) and others mentioned in Table 10.

**Table 8.** List of author keywords related to mobile technologies

<b>Mobile Technologies Related Keywords</b>		
<b>Item (Keyword)</b>	<b>Occurrence</b>	<b>TLS</b>
Mobile Applications	20	95
Mobile Technology	13	62
Mobile Phones	12	71
Smart Phones	11	53
Mobile Service	8	35
Technology Acceptance Model	8	38
Mobile Communication	6	42
Information Communication Technology	4	21
Information Technology	4	25
Mobile Computing	4	21
Cloud Computing	2	8
Digital Technologies	2	13
Digitalization	2	12
Information System Success Model	2	9
Information Systems	2	11
Internet of Things	2	8
Mobile Device	2	15
Mobile Learning	2	14
Mobile Telecommunication	2	10
Iot-Based System Success	1	4
Mobile Application Adoption	1	9
Mobile Device Usability	1	4
Mobile Devices	1	4
Mobile Information Systems	1	4
Mobile Internet Sites	1	3
Personal Digital Assistants	1	10
Smart Devices	1	4
Smart Services	1	4
Smart Wearable Devices	1	4
Smartwatches	1	5
Telecommunication Computing	1	10
Telecommunication Services	1	10
Wireless Networks	1	4
Wireless Sensor Network	1	4
Wireless Technology	1	3

**Table 9.** List of author keywords related to healthcare

Healthcare Related Keywords		
Item (Keyword)	Occurrence	TLS
Healthcare	27	134
Health Consciousness	3	13
Hospitals	3	16
Patient Satisfaction	3	11
Physicians	3	13
Antenatal Care	2	8
Cardiopulmonary Resuscitation	2	10
Family Planning	2	10
Health Informatics	2	15
Healthcare Providers	2	6

**Table 10.** List of author keywords related to service quality

Service Quality Related Keywords		
Item	Occurrence	TLS
Service Quality	26	134
Information Quality	8	51
System Quality	6	39
Healthcare Service Quality	2	7
Relationship Quality	2	9

The most prominent keywords related to a combined main theme i.e., healthcare & mobile technology include *mobile healthcare* (occurrence=83, TLS=403), *e-healthcare* (occurrence=23, TLS=111), *healthcare information technology* (occurrence=07, TLS=28), *health information systems* (occurrence=03, TLS=18) and others mentioned in Table 11. Finally, the most prominent keywords related to combined main theme i.e., service quality & mobile technology include only three keywords; *mobile service quality* (occurrence=01, TLS=03), *offline service quality* (occurrence=01, TLS=05) and *online service quality* (occurrence=01, TLS=05) (Table 12).

**Table 11.** List of author keywords reflecting combined theme

<b>Healthcare &amp; Mobile Technologies</b>		
<b>Item</b>	<b>Occurrence</b>	<b>TLS</b>
Mobile Healthcare	83	403
E-Healthcare	23	111
Healthcare Information Technology	7	28
Health Information Systems	3	18
Hospital Information Systems	2	4
Internet of Medical Things	2	11
Medical Informatics	2	12
Mobile Health Applications	2	11
Mobile Healthcare Applications	2	7
Mobile Healthcare Technology	2	7
Cardiac Implantable Electronic Devices	1	3
Cardiac Telemedicine System	1	4
Consumer Health Informatics	1	7
Electronic Patient Record	1	4
Health and Fitness Apps	1	7
Mhealth Adoption	1	5
Mhealth Monitoring Service	1	5
Mobile Diabetes Monitoring	1	8
Mobile Health Monitoring	1	6
Mobile Online Health Community	1	6
Mobile Outpatient Service	1	2
Online Doctor Consultation	1	8
Online Healthcare Consultation	1	5
Tele-Medicine	1	3
Telecare	1	7
Wearable Fitness Tracker	1	6
Wearable Health Sensor	1	6

**Table 12.** List of author keywords reflecting combined theme

<b>Service Quality and Mobile Technologies</b>		
<b>Item</b>	<b>Occurrence</b>	<b>TLS</b>
Mobile Service Quality	1	3
Offline Service Quality	1	5
Online Service Quality	1	5



#### **4 Limitations and future research directions**

The current study is limited to certain specific keywords (service quality, healthcare & mobile technology) which may not cover the overall aspects of these areas, there may be many other keywords relevant to these themes available in the literature. Different other combination of keywords can be used instead. To make the results more appealing, different thresholds have been applied which may have limited the findings to lesser number of items and excluded other available items pertaining to authors, countries, and keywords.

Different avenues for future research are recommended in the current study. There are some important subjects in which lack of studies related to central themes are published such as Nursing (2%), Psychology (2%), and health professions (3%). Similarly, certain countries (e.g., Austria, Croatia, Ghana, Greece, Norway, Slovenia and Tunisia) have been identified which have no collaboration with other countries in publishing the documents related to searched combination of themes. There is need of collaborated efforts from the researchers of mentioned countries. Various interesting sub-themes have been identified which has a smaller number of occurrences (occurrence=01) in the literature which can be incorporated in the research areas of healthcare service quality with use of different mobile technologies. These sub-themes are Mobile Application Adoption, Mobile Device Usability, Personal Digital Assistants, Smart Devices, Smart Services, Smart Wearable Devices, Smartwatches, Telecommunication Computing, Wireless Sensor Network, Wireless Technology, Consumer Health Informatics, Electronic Patient Record, Health And Fitness Apps, M-health Adoption, M-health Monitoring Service, Mobile Online Health Community, Mobile Outpatient Service, Online Doctor Consultation, Online Healthcare Consultation, Tele-Medicine, Telecare, Wearable Fitness Tracker and Wearable Health Sensor. Finally, the current study is based on Scopus database only, so other databases (e.g., Web of Science, MedLine) can be analyzed, and their results can be compared to that of Scopus.

#### **5 Conclusion**

The study was designed to map the ‘Service quality, Healthcare & mobile Technology’ literature from 2005 till 2021. Bibliometric analysis was conducted on 245 documents extracted from Scopus. Publication trend was seemed increasing rapidly in recent years showed the importance of searched themes in the literature. Valuable contributions from different authors, countries, journals and institutions have been identified in this study. Links, collaborations and associations among different authors, countries and keywords around the world have been identified. The most prominent keywords/themes related to searched area have been identified. Various avenues for future research directions have been recommended in the current study.

#### **6 Conflict of interest**

No Any.

## 7 Acknowledgment

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## 9 Appendix 1

### 9.1 The search string

*service* PRE/1 *quality* AND *healthcare* AND *mobile* PRE/1 *technology* AND ( EXCLUDE ( PUBYEAR , 2022 ) ) AND ( LIMIT-TO ( DOCTYPE , “ar” ) ) AND ( LIMIT-TO ( SRCTYPE , “j” ) ) AND ( LIMIT-TO ( LANGUAGE , “English” ) ) AND ( LIMIT-TO ( EXACTKEYWORD , “MHealth” ) OR LIMIT-TO ( EXACTKEYWORD , “Health Care” ) OR LIMIT-TO ( EXACTKEYWORD , “Service Quality” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Phone” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Health” ) OR LIMIT-TO ( EXACTKEYWORD , “Health Services” ) OR LIMIT-TO ( EXACTKEYWORD , “Quality Of Service” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Technology” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Telecommunication Systems” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Application” ) OR LIMIT-TO ( EXACTKEYWORD , “Healthcare Services” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Applications” ) OR LIMIT-TO ( EXACTKEYWORD , “Health Care Quality” ) OR LIMIT-TO ( EXACTKEYWORD , “Telehealth” ) OR LIMIT-TO ( EXACTKEYWORD , “Healthcare” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Communication” ) OR LIMIT-TO ( EXACTKEYWORD , “Smartphone” ) OR LIMIT-TO ( EXACTKEYWORD , “Smartphones” ) OR LIMIT-TO ( EXACTKEYWORD , “EHealth” ) OR LIMIT-TO ( EXACTKEYWORD , “Health Service” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Apps” ) OR LIMIT-TO ( EXACTKEYWORD , “E-health” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Health (M-Health)” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Devices” ) OR LIMIT-TO ( EXACTKEYWORD , “Mobile Services” ) )

## 10 Authors

**Javed Ali**, Department of Business Administration, Sukkur IBA University, Sindh, Pakistan; Azman Hashim International Business School, Universiti Teknologi Malaysia.

**Ahmad Jusoh**, Azman Hashim International Business School, Universiti Teknologi Malaysia. E-mail: [ahmadj@utm.my](mailto:ahmadj@utm.my)

**Norhalimah Idris**, Azman Hashim International Business School, Universiti Teknologi Malaysia. E-mail: [norhalimah@utm.my](mailto:norhalimah@utm.my)

**Naveed Akhtar Qureshi**, Department of Business Administration, Sukkur IBA University, Sindh, Pakistan. E-mail: [naveed@iba-suk.edu.pk](mailto:naveed@iba-suk.edu.pk)

**Saeed Abbas Shah**, Department of Business Administration, Sukkur IBA University, Sindh, Pakistan. E-mail: [s.abbas@iba-suk.edu.pk](mailto:s.abbas@iba-suk.edu.pk)

**Alhamzah F. Abbas**, Azman Hashim International Business School, Universiti Teknologi Malaysia. E-mail: [alhamza.fadil@gmail.com](mailto:alhamza.fadil@gmail.com)

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