



## **Comparative analysis of internet of things (IoT) in supporting the health care professionals towards smart health research using correlation analysis**

**Ayan Das Gupta<sup>1\*</sup>, Shaik Mohammad Rafi<sup>2</sup>, Balaji Ramkumar Rajagopal<sup>3</sup>, T.Milton<sup>4</sup>, S.G.Hymlin Rose<sup>5</sup>**

<sup>1</sup>WBES, Assistant Professor, Postgraduate Department of Geography, Chandernagore Government College, Hooghly, West Bengal, Chandernagore Government College affiliated to the University of Burdwan.

<sup>2</sup>Professor and Head, Artificial Intelligence and Information Technology, Sri Mittapalli College of Engineering, Guntur, Andhra Pradesh

<sup>3</sup>Data Architect, Cognizant Technology solutions, Chennai, Tamilnadu, India

<sup>4</sup>Dean, Tourism and Hospitality Management, Bharath Institute of Higher Education and Research Chennai

<sup>5</sup>Assistant Professor, Department of Electronics and Communication Engineering, R.M.D Engineering College, Gummidipoondi, Tamilnadu

\*Email: [dasguptaayan11111@gmail.com](mailto:dasguptaayan11111@gmail.com)

### **ABSTRACT**

*The topic is focused on the Internet of Things (IoT) technology which has a vital impact on the health care sector currently. The professors, experts are mostly utilized the technology in the research. It helps to get authentic result in the research so that remote area can use the technology also. It has high benefits in economically that provides proper services within low price. It is essential nowadays to improve the medical sector in treatment as well as medicines. The layer of technology helps to do proper research as well as avail proper services. The technologies of the smart wearables that are used for the purpose of providing smart healthcare services are being oriented with the IoT to enhance them in various ways. This is also making them sustain more in the long run. Findings suggested that IoT in wheelchair management, healthcare solution using mobile and other factors have positively impacted the better healthcare services.*

**Keywords:** Internet of Things (IoT), layer of IoT, correlation analysis, healthcare, r-square

Received 11.02.2022

Revised 21.03.2022

Accepted 05.04.2022

### **INTRODUCTION**

Most of the health care sector can utilize advanced levels in the treatment process to decrease the extended access and prices along with providing enough facilities in treatment procedures. Standing on the 21st century the Internet of Thing (IoT) has a high level of utilization in different sectors, especially in the health care sector. It is an external support that aids the health care professionals to do a proper analysis or research on health care services. IoT system has a major role in the respective field regarding specification such as low-cost accessibility, minimum power sensibility in technology, machine learning analytics, efficient connectivity, and availability of cloud computing [1]. Depending on the accessibility the health care professionals choose the IoT system to use the researching purposes. There has no doubt about the application or utilization of IoT systems in the health care sector where it uses smartly. Moreover, the recent technology ensures the real-time data extensive computing-assisted smart health care sector. After that, the improvement of the health care sector is highly notified as a result, bioinformatics, telemedicine increment in massive level currently [2]. On the other hand, Wireless sensor networks define the physiological elements such as blood ECG, cholesterol, allergies, pressure, oxygen levels that help several healthcare issues [3]. The capabilities of devices and technologies used to treat critical diseases. The IoT systems in the healthcare sector acts a crucial role to transfer fundamental information besides developing the medical sector also medical. In addition, the system hits the evaluation of the economical segment also so that professionals, experts can provide authentic solutions with the help of IoT systems [4]. The research paper has shed light on some specific points such as a literature review covering the intellectual health care system with the help of IoT, techniques of IoT, and application of IoT in the health care system. The methodology section derives the whole research process

briefly along with a proper analysis with the data of SPSS provided here. Furthermore, depending on the data the research paper can discuss the whole outcomes of SPSS analysis in the section that is clearly visible in a further section. Smart health care portrays the information of technology with the help of the Internet of Things in the health care sector to prevent the complexity of physical and mental health. Smart health care systems involve some smart technology as well as smart equipment to get quick solutions or results in the medical or health care field [5]. Therefore, the IoT utilization is increased currently to reduce the burden of the health care system also improve the treatment quality with minimum budget.

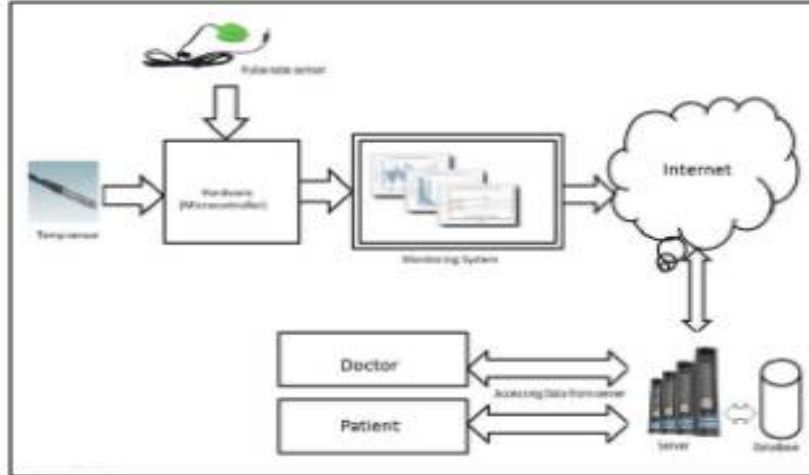


Figure 1. IoT based Healthcare

The technology helps to manage the sensor devices to get the proper solution that aids in the progress of the medical treatment. The technology supports the experts, professors to operate the process along with laboratory practices and the research of the health care sector [6]. On another side, the remote area has got more opportunities or supports due to the use of IoT in the health care sector. The major part of the technology provides complex security so it is helpful to the research where the body sensor network of IoT has enough roles to support the health care sector[7].

The Internet of Things has a massive population current day that also impact the research process in the medical sector. The different kinds of layers can help the health care sector in the research so that the expert and professors can get an authentic result and increase the growth of the medical sector [8]. The population of the technology is developed currently for providing authentic sources which are very effective also in the health care sector. Communication technology, sensor networks, data visualization, processing, and cloud computing are the major sectors that boost up the technology. Both features have a different role in perfecting or particular the system.

Business Layer	Business Models	Graphs	Dashboard
Application Layer	Smart Home	Smart Cities	Healthcare
Processing Layer	Cloud Computing	Ubiquitous Computing	Data Analytics
Transport Layer	Network Capabilities	Transport Capabilities	
Perception Layer	Device Capabilities	Gateway Capabilities	

Figure 2. The Layer of Internet of Things

Depending on the above figure, it categorizes the five-layer (figure 2) of the IoT system that both have a separate role to populate the technology especially the health care sector for research purposes [9]. The sensing layers help to compute the parameters such as body temperature, heart bit, blood pressures

including cheap rate [10]. Sending helps to measure the collected data via several internet-connected devices to understand the result. Processing helps to process all data and shows the accurate output. With the help of the sorting layer of IoT manages the data following cloud services. Lastly, mining and sorting help to store data and take major decisions based on results that are beneficial for the research also [11]. IoT technology is used in the health care sector on a massive level to develop all processes in a massive level. The technology helps the expert to get proper outcomes after doing any research. The health care sector is always looking for new approaches to progress the entire research process. That purposes over IoT technology serves the industry with effective features and avails to gain lots of benefits from different sides especially, the health care sector [12]. The quality of treatment, procedures off treatment are improved with the application of the technology where the economical efforts are minimum also [13, 14].

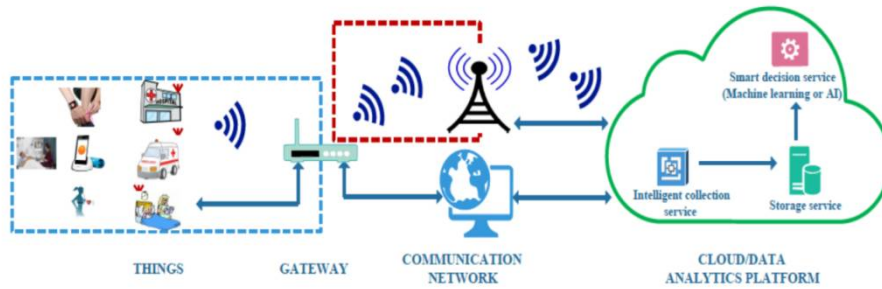


Figure 3: IoT in health care system

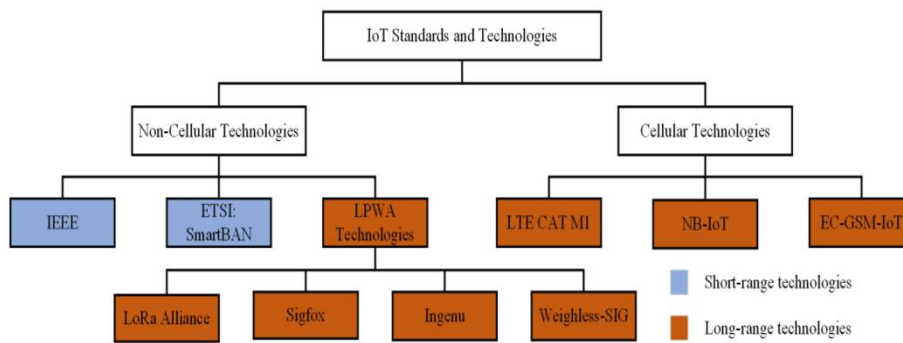


Figure 4: IoT technologies in health care system

The other major part is to achieve authentic data that is essential for any type of research also moreover, it learns self-management in a better way [15]. Furthermore, it is a smart way that helps to achieve a proper solution that is effective in the research process also [16]. The technology supports more in health care however, it arises some critical consequence that faces experts while researching any important topic. Security complexity is a major concern that sometimes serves wrong information that hampers the whole process also [17].

**MATERIAL AND METHODS**

This research is aimed at finding out the importance of the *Internet of Things (IoT)* in aiding healthcare providers in providing smart health to patients or not. For this purpose, 21 different healthcare providers were asked for their opinions about the importance of the IoT in providing smart healthcare to patients Computing with the technology in the health care sector there has a lot of benefits to using some specific methods for researching [18]. Before starting the research the researcher needs to follow some appropriate methods and understand the values critically. At the initial level, the researcher needs to know the system of literature review after that apply the methods in the section for researching purposes. The research methods try to extract data based on the information discusses in the previous section. The collected documents can implement for reviewing purposes and the result of the literature review can apply for continuing the research methods. Some of the health care providers who provide the smart health systems to the patients agreed about the necessity of the IoT in providing smart health to the patients. On the other hand, some of them opined that the IoT does not provide much importance in the aspect of providing patients with smart health. The participants who agreed on the importance of IoT for providing smart health to the patients also pointed out some importance of the IoT in the development of smart health [19]. On the other hand, who opposed the requirement of the IoT in providing smart health

to the patients expressed a rather stationary approach of smart healthcare systems with stationary devices.

There are different types of devices that have been developed for the purpose of providing smart health to patients. Such as smart watches, other smart wearable, mobile devices connected with smart healthcare devices, and many more that enable the users with the smart healthcare system to the patients[20]. The opinions that have been gathered from the individuals have been gathered from participants of both genders. The respondents have provided their responses in terms of strongly agree to strongly disagree (1=Strongly Disagree; 5=Strongly Agree). These opinions, after recording are filtered for any missing data or wrong inputs. The filtering process is done to remove any incorrectness present in the data that have been collected. Then the data have been processed in the IBM SPSS software version 26 (2022) using different types of techniques of analysis (Correlation, Regression and Dot Plot). The results of each of the analysis procedures have been carefully recorded. The analysis and discussion with regard to the collected pieces of information will provide the idea about the preference of the IoT in providing smart health to the patients [6]. This is important to analyse as the importance of smart health as well as IoT around the world is increasing at a rapid rate. Understanding the relationship between the IoT and smart health will provide many futures and present healthcare providers to provide precise smart healthcare services to their patients. Moreover, as smart health care is also provided to older people in many cases thus this knowledge would enhance the smart healthcare system to another level. The results of the SPSS analysis are if with any kind of statistical significance then the variance of the factors over time will be confirmed also [21].The significance level of  $p < 0.05$  has been considered strongly significant. In case of correlation analysis, the value closer to +1 or -1 has been considered strongly correlated.

### ANALYSIS AND INTERPRETATION

The importance of IoT is analysed here for that reason to provide some process that helps to perform adequately in the smart health care sector. Around 21 participants can participate in the whole process individually to get a proper result. The participants are asked different questions and their answers to the same questions have been recorded. Depending on the answers of the healthcare providers some graphs have been provided for being able for understanding the effect of IoT on providing smart health by the healthcare providers. The residual output is provided for showing all 21 participants for doing analysis.

#### Regression Analysis:

Here the better health services are dependent variables and are attached with the independent variables as, Cluster Condition application, single condition application, rehabilitation system, healthcare solution using a smartphone, and wheelchair management.

**TABLE 1. VARIABLES ENTERED**

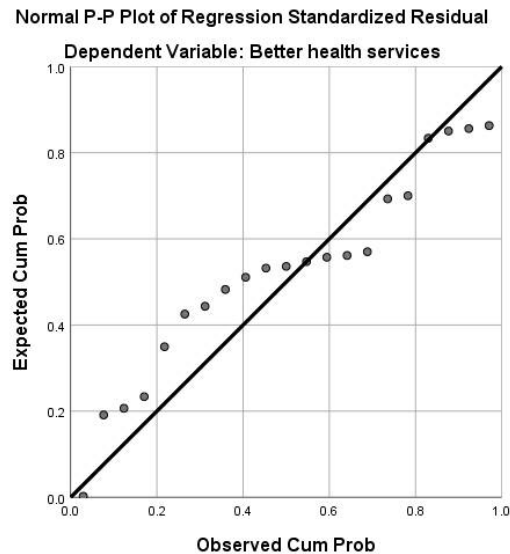
Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	Wheelchair management, Rehabilitation System, Single Condition application, Healthcare solutions using smartphone, Cluster Condition application <sup>b</sup>	.	Enter
a. Dependent Variable: Better health services			
b. All requested variables entered.			

**TABLE 2. MODEL SUMMARY CONSISTS OF R, R SQUARE VALUE**

Model Summary <sup>b</sup>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.807 <sup>a</sup>	.652	.536	.995
a. Predictors: (Constant), Wheelchair management, Rehabilitation System, Single Condition application, Healthcare solutions using smartphone, Cluster Condition application				
b. Dependent Variable: Better health services				

**TABLE 3. ANOVA OUTPUT**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.820	5	5.564	5.622	.004 <sup>b</sup>
	Residual	14.846	15	.990		
	Total	42.667	20			
a. Dependent Variable: Better health services						
b. Predictors: (Constant), Wheelchair management, Rehabilitation System, Single Condition application, Healthcare solutions using smartphone, Cluster Condition application						



**Figure 5. Residual output for Regression analysis**

The regression analysis outputs have been shown in the table 1-3 where the R square and ANOVA tables have been considered. The R square value is highly variable which cannot be explained through this method (table 2). R square=65% which suggests that, there is a 65% chance the data will be variable which cannot be explained through this diagram and analysis (figure 5 as well). Therefore, the researcher has considered other values as well. When ANOVA table has been observed, it was observed that p value is 0.004 which suggests  $p < 0.05$  (table 3). Therefore, the whole relation between the independent and dependant variables are statistically significant. When the predictors are considered independent variable, satisfaction in overall health care services is strongly correlated [22]. Studies suggest that a F value above 3.95 is considered significance where the null hypothesis is rejected. The ANOVA table shows, F value is 5.622 and thus, null hypothesis is rejected. The null hypothesis is, no relationship is present between the dependent and independent variables. Therefore, IoT in Wheelchair management, Rehabilitation System, Single Condition application, Healthcare solutions using smartphone and Cluster Condition application have strongly impacted the healthcare services.

**Correlation Analysis:**

TABLE 4. CORRELATION ANALYSIS OUTPUT SHOWS PEARSON CORRELATION AND SIGNIFICANCE VALUE

Correlation		Better health services
Better health services	Pearson Correlation	1
	Sig. (2-tailed)	
	N	21
Cluster Condition application	Pearson Correlation	.755**
	Sig. (2-tailed)	.000
	N	21
Single Condition application	Pearson Correlation	.592**
	Sig. (2-tailed)	.005
	N	21
Rehabilitation System	Pearson Correlation	.683**
	Sig. (2-tailed)	.001
	N	21
Healthcare solutions using smartphone	Pearson Correlation	.688**
	Sig. (2-tailed)	.001
	N	21
Wheelchair management	Pearson Correlation	.606**
	Sig. (2-tailed)	.004
	N	21

Depending on the above table 4, the Pearson correlation is shown between Cluster condition and better health services is +0.755 which indicates they are 75% correlated with each other. It suggests, cluster condition application improves the healthcare services. Based on the variable of Health practices has been dependent on the independent variable Cluster Condition application. On another side, the correlation is visible between Single condition application and better health services is 0.592, which defines, better health service is 59% dependent on the single condition application. Therefore, it means the independent values are more so that the better health services are dependent on cluster condition application [23]. Similarly, the correlation is visible between the Rehabilitation system and better health services are 0.683 that defines the values are correlated in here by 68%. This defines, the rehabilitation system using IoT positively impacts the healthcare service by 68%. Usually, the positive Pearson Correlation value indicates positive impact on the healthcare services. Therefore, it means the independent values are more so that the better health services are dependent on cluster condition application in that case. The better health services value of health care solution system is 0.688. This suggests that, using smartphone for providing healthcare solution has positively impacted the healthcare services. The respondents believe, smartphone use for healthcare solutions help to improve the healthcare solution. Finally, the better health services of wheelchair management are 0.606 which suggest, IoT in wheelchair management helps to provide better healthcare services by 60%. Moreover, the p value in every case is less than 0.05 ( $p < 0.05$ ) which suggests a strong relationship is present between the dependent and independent variables [24].

## DISCUSSION

The main intention of the Internet of Things (IoT) improvement and increase the utilization in the health care sector at a massive level especially the searching purposes. As per the analysis of IoT it clearly visible the better connection between the better health care services and the cluster condition application. Therefore, the variables of the research are cluster condition application, Single condition application, Rehabilitation system, Healthcare solution system, and Wheelchair management system. Furthermore, after doing the analysis it clearly shows the authentic relation or dependency among the better health care services and cluster care conditions that refer to the high margin values of the independent variable in an equal portion of all components [25].

The growth of the cluster care condition makes sure the dependency there produces the result as the development of better health care services in the medical sector. This reflects on the growth of the research also which means the progression of the treatment process. Cluster condition application shows 75% impact on the better healthcare service. The single condition application shows the dependency in 59%, the rehabilitation system shows 68% dependency, the health care solution system shows almost 68% dependency and Wheelchair management shows 60% dependency on the health care services for improvement.

The correlation values are increased so that the dependency is increased also and the use of independent values application also uses a lot in the health care sector with the support of the IoT. Therefore, the services are also developed after that its better health care service automatically progressed due to the appropriate values of correlation [26]. Moreover, the application of IoT utilization in a proper way the effects on the health care research section also which is very impressive [27]. The increase of correlation values is clearly noticeable that provides the analysis part where has the importance of the utilization of the independent variable [28]. As a result, the demand and application of the Internet of Things (IoT) in the health care sector are developed day by day so the entire process of treatment is increased gradually. Therefore, the professors, experts are also appreciated along with showing interest in the utilization of the technology at a high level, especially in the health care sector.

The benefit also varies so that the remote area also tries to utilize the technology to get better and expected results in the treatment process. That area can try to use or increase the application of the technology so that the health care sector views a great result with the help of the technology. Moreover, the application of the technology is very simple and expenses less amount including using it in different gadgets [29]. Thereafter, the experts cannot face that much complexity to utilize the technology in the health care sector. Meanwhile, depending on the above data in the analysis section it clearly focuses on the growth of the technology with the help of the components and the independent values. The independent values are very attractive and impact the growth of technology in the health care sector. Besides, it finds hope for a better way of treatment, better research facilities with the support of the technology mainly, the health care sector. In addition, the analysis helps to reach that position where the researcher can say that the growth of the technology and also defines a new horizon for the smart health care sector [30].

## CONCLUSION

The assignment concluded by the importance of Internet of Things that has a vital impact on research purposes, especially in the health care sector. The professors can depend on the result of the technology after utilizing it in any research. In the research paper, there has clearly provided a view about the literature review as a result, the authenticity of the technology, application process, popularity is realized. The methodology helps to evaluate the whole process of the research, the SPSS data view the proper analysis depending on the topic. After that, based on the SPSS result a proper discussion is provided here which does the research more authentic, interesting, and successful also. Moreover, the paper produces a proper vision for future research on the topic. The findings suggested, better healthcare services are strongly dependent on the IoT factors.

## REFERENCES

1. Li, S., Da Xu, L. and Zhao, S., (2018). 5G Internet of Things: A survey. *Journal of Industrial Information Integration*, 10, pp.1-9.
2. Nauman, A., Qadri, Y.A., Amjad, M., Zikria, Y.B., Afzal, M.K. and Kim, S.W., (2020). Multimedia Internet of Things: A comprehensive survey. *IEEE Access*, 8, pp.8202-8250.
3. Kandris, D., Nakas, C., Vomvas, D. and Koulouras, G., (2020). Applications of wireless sensor networks: an up-to-date survey. *Applied System Innovation*, 3(1), p.14.
4. Chandy, A., (2019). A review on IOT based medical imaging technology for healthcare applications. *Journal of Innovative Image Processing (JIIP)*, 1(01), pp.51-60.
5. Ahmadi, H., Arji, G., Shahmoradi, L., Safdari, R., Nishi, M. and Alizadeh, M., (2019). The application of internet of things in healthcare: a systematic literature review and classification. *Universal Access in the Information Society*, 18(4), pp.837-869.
6. Selvaraj, S. and Sundaravaradhan, S., (2020). Challenges and opportunities in IoT healthcare systems: a systematic review. *SN Applied Sciences*, 2(1), pp.1-8.
7. Mahmud, R., Koch, F.L. and Buyya, R., (2018), January. Cloud-fog interoperability in IoT-enabled healthcare solutions. In *Proceedings of the 19th international conference on distributed computing and networking* (pp. 1-10).
8. Aoudia, I., Benharzallah, S., Kahloul, L. and Kazar, O., (2020), November. QoS-aware service composition in Fog-IoT computing using multi-population genetic algorithm. In *2020 21st International Arab Conference on Information Technology (ACIT)* (pp. 1-9). IEEE.
9. Kumar, P.R., Wan, A.T. and Suhaili, W.S.H., (2020). Exploring data security and privacy issues in Internet of Things based on five-layer architecture. *International journal of communication networks and information security*, 12(1), pp.108-121.
10. Basatneh, R., Najafi, B. and Armstrong, D.G., (2018). Health sensors, smart home devices, and the internet of medical things: an opportunity for dramatic improvement in care for the lower extremity complications of diabetes. *Journal of diabetes science and technology*, 12(3), pp.577-586.
11. Du, Z., (2020). Energy analysis of Internet of things data mining algorithm for smart green communication networks. *Computer Communications*, 152, pp.223-231.
12. Carnemolla, P., (2018). Ageing in place and the internet of things-how smart home technologies, the built environment and caregiving intersect. *Visualization in Engineering*, 6(1), pp.1-16.
13. Frikha, T., Chaari, A., Chaabane, F., Cheikhrouhou, O. and Zaguia, A., (2021). Healthcare and fitness data management using the iot-based blockchain platform. *Journal of Healthcare Engineering*, 2021.
14. Alam, M.M., Malik, H., Khan, M.I., Parady, T., Kuusik, A. and Le Moullec, Y., (2018). A survey on the roles of communication technologies in IoT-based personalized healthcare applications. *IEEE Access*, 6, pp.36611-36631.
15. Fortino, G., Savaglio, C., Palau, C.E., de Puga, J.S., Ganzha, M., Paprzycki, M., Montesinos, M., Liotta, A. and Llop, M., (2018). Towards multi-layer interoperability of heterogeneous IoT platforms: The INTER-IoT approach. In *Integration, interconnection, and interoperability of IoT systems* (pp. 199-232). Springer, Cham.
16. Agbo, C.C., Mahmoud, Q.H. and Eklund, J.M., (2019), June. Blockchain technology in healthcare: a systematic review. In *Healthcare* (Vol. 7, No. 2, p. 56). Multidisciplinary Digital Publishing Institute.
17. Marikyan, D., Papagiannidis, S. and Alamanos, E., (2019). A systematic review of the smart home literature: A user perspective. *Technological Forecasting and Social Change*, 138, pp.139-154.
18. Mohammed, M.N., Desyansah, S.F., Al-Zubaidi, S. and Yusuf, E., (2020), February. An internet of things-based smart homes and healthcare monitoring and management system. In *Journal of Physics: Conference Series* (Vol. 1450, No. 1, p. 012079). IOP Publishing.
19. Mutlag, A.A., Abd Ghani, M.K., Arunkumar, N.A., Mohammed, M.A. and Mohd, O., (2019). Enabling technologies for fog computing in healthcare IoT systems. *Future Generation Computer Systems*, 90, pp.62-78.health care.
20. Shafi, S. and Mallinson, D.J., (2021). The potential of smart home technology for improving healthcare: a scoping review and reflexive thematic analysis. *Housing and Society*, pp.1-23.
21. Talal, M., Zaidan, A.A., Zaidan, B.B., Albahri, A.S., Alamoodi, A.H., Albahri, O.S., Alsalem, M.A., Lim, C.K., Tan, K.L., Shir, W.L. and Mohammed, K.I., (2019). Smart home-based IoT for real-time and secure remote health monitoring of triage and priority system using body sensors: Multi-driven systematic review. *Journal of medical systems*, 43(3), p.42.



22. Usak, M., Kubiato, M., Shabbir, M.S., Viktorovna Dudnik, O., Jermstiparsert, K. and Rajabion, L., (2020). Health care service delivery based on the Internet of things: A systematic and comprehensive study. *International Journal of Communication Systems*, 33(2), p.e4179.
23. Jang, W.C., Kim, B.I. and Kim, Y.U., 2021. A Method of Obtaining Correction Factor for Settlement Prediction of Soft Ground Using Correlation of Theoretical and Measured Settlement of Gimhae-Jinyoung through SPSS Analysis. *Journal of the Korea Academia-Industrial cooperation Society*, 22(5), pp.502-508.
24. Astivia, O.L.O. and Zumbo, B.D., (2019). Heteroskedasticity in Multiple Regression Analysis: What it is, How to Detect it and How to Solve it with Applications in R and SPSS. *Practical Assessment, Research, and Evaluation*, 24(1), p.1.
25. Usak, M., Kubiato, M., Shabbir, M.S., Viktorovna Dudnik, O., Jermstiparsert, K. and Rajabion, L., (2020). Health care service delivery based on the Internet of things: A systematic and comprehensive study. *International Journal of Communication Systems*, 33(2), p.e4179.
26. de la Torre Díez, I., Alonso, S.G., Hamrioui, S., Cruz, E.M., Nozaleda, L.M. and Franco, M.A., (2019). IoT-based services and applications for mental health in the literature. *Journal of medical systems*, 43(1), pp.1-6.
27. Jarwar, M.A., Ali, S. and Chong, I., (2018). Exploring web objects enabled data-driven microservices for E-health service provision in IoT environment. In *2018 International Conference on Information and Communication Technology Convergence (ICTC)* (pp. 112-117). IEEE.
28. Yang, Y., Nan, F., Yang, P., Meng, Q., Xie, Y., Zhang, D. and Muhammad, K., (2019). GAN-based semi-supervised learning approach for clinical decision support in health-IoT platform. *IEEE Access*, 7, pp.8048-8057.
29. Yacchirema, D.C., Sarabia-Jácome, D., Palau, C.E. and Esteve, M., (2018). A smart system for sleep monitoring by integrating IoT with big data analytics. *IEEE Access*, 6, pp.35988-36001.
30. researchgate.net (2022). "Application\_of\_IoT\_in\_Predictive\_Health\_Analysis" Available at: [https://www.researchgate.net/publication/347284701\\_Application\\_of\\_IoT\\_in\\_Predictive\\_Health\\_Analysis-A\\_Review\\_of\\_Literature](https://www.researchgate.net/publication/347284701_Application_of_IoT_in_Predictive_Health_Analysis-A_Review_of_Literature) [Accessed on : 14th January, 2022]

#### CITATION OF THIS ARTICLE

A D Gupta, S M Rafi, B R Rajagopal, T.Milton, S.G.Hymlin Rose. Comparative analysis of internet of things (IoT) in supporting the health care professionals towards smart health research using correlation analysis. *Bull. Env.Pharmacol. Life Sci., Spl Issue [1] 2022 : 701-708*