

Journal of Digital Science



ISSN 2686-8296

Volume 5 Issue 1

June 2023

© Institute of Certified Specialists

CONTENTS

An overview of Blockchain: Definitions, architecture, versions, applications and future directions	3
Mohamed Litoussi, Khalid El Makkaoui, Abdellah Ezzati	
Error Correction Using Quantum Computation	12
Khalik Khan, Sapna Jain	
Machine Maintenance Policies in Local Sugar Manufacturing: A Case Study of Madukismo, Indonesia	23
Indra Bastian, Hadyan Fadillah	
Influence of Personality on Technology Readiness and Intention to Use Online Vehicle Taxes Payment in Surabaya, Indonesia	33
Monica Mega Puspa, Indrawati Yuhertiana	
Formation of information space of knowledge learning foreign language ..	47
Yulia Sysoeva, Irina Zhdankina, Darya Bykova, Natalia Ignatieva	
Health Digital Indicators' Juxtaposition	55
Tatiana Antipova	

An overview of Blockchain: Definitions, architecture, versions, applications and future directions

Mohamed Litoussi¹[10009-0006-0129-6853], Khalid El Makkaoui^{1,2},
Abdellah Ezzati¹[10000-0002-1456-0661]

¹ LAVETE laboratory, FST, Hassan First University, Settat, Morocco

² LaMAO laboratory, MSC team, FPD, Mohammed First University, Nador, Morocco

Published online: June 25, 2023 | <https://doi.org/10.33847/2686-8296.5.1.1>

Abstract. Blockchain technology has been gaining popularity in recent years, with many industries exploring its potential applications. This innovative technology has the potential to revolutionize the way we do business and interact with each other. It has emerged as a revolutionary innovation that promises to transform various industries by enabling secure, transparent, and decentralized transactions. The blockchain is a distributed ledger technology that uses cryptography to ensure the integrity and immutability of data. In this article, we will provide an overview of blockchain, including definitions, architecture, security, applications, and future directions.

Keywords: Blockchain (BC) technology; Security; Consensus; Distributed ledger technology (DLT).

REFERENCES

1. Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System.
2. Tapscott, D., & Tapscott, A. (2016). Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World.
3. Swan, M. (2015). Blockchain: Blueprint for a New Economy.
4. Mohamed Litoussi, Nabil Kannouf, Khalid El Makkaoui, Abdellah Ezzati, Mohamed Fartitchou, IoT security: challenges and countermeasures, *Procedia Computer Science*, Volume 177, 2020, Pages 503-508, <https://doi.org/10.1016/j.procs.2020.10.069>.
5. Blockchain 1.0 vs 2.0 vs 3.0: A Complete Guide to Understanding the Evolution of Blockchain Technology," *Blockgeeks*, <https://blockgeeks.com/guides/blockchain-1-0-vs-2-0-vs-3-0/>
6. Digital Certifications in Moroccan Universities: Concepts, Challenges, and Solutions, Mohamed Litoussi, Mohamed Fartitchou, Khalid El Makkaoui, Abdellah Ezzati, Zakaria El Allali *Procedia Computer Science* Volume 201, 2022, Pages 95-100 <https://doi.org/10.1016/j.procs.2022.03.015>
7. "What is Blockchain 4.0?," *Investopedia*, <https://www.investopedia.com/terms/b/blockchain-40.asp>
8. "What is Blockchain 5.0?," *Medium*, https://medium.com/@davidjames_47048/what-is-blockchain-5-0-9c7e5bb6f4a9
9. European Commission. (2018). Blockchain in Education. Retrieved from <https://ec.europa.eu/jrc/en/publication/blockchain-education>
10. "What is a blockchain and how does it work?" - <https://www.ibm.com/topics/blockchain>
11. "Public vs private blockchain: What's the difference?" - <https://www.investopedia.com/terms/p/public-vs-private-blockchain.asp>
12. "Hybrid blockchain: What is it and why does it matter?" - <https://www.techrepublic.com/article/hybrid-blockchain-what-is-it-and-why-does-it-matter/>
13. "What Are Public, Private, and Hybrid Blockchains?," *CoinCentral*, <https://coincentral.com/public-private-hybrid-blockchains/>
14. "Public vs Private vs Hybrid Blockchain: What's the Difference?," *Blockonomi*, <https://blockonomi.com/public-vs-private-vs-hybrid-blockchain/>
15. Narayanan, A., Bonneau, J., Felten, E., Miller, A., & Goldfeder, S. (2016). Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction.
16. Buterin, V. (2014). A Next-Generation Smart Contract and Decentralized Application Platform.
17. Wood, G. (2014). Ethereum: A Secure Decentralised Generalised Transaction Ledger.
19. Antonopoulos, A. M. (2014). Mastering Bitcoin: Unlocking Digital Cryptocurrencies.

20. Thien Huynh-The, Thippa Reddy Gadekallu, Weizheng Wang, Gokul Yenduri, Pasika Ranaweera, Quoc-Viet Pham, Daniel Benevides da Costa, Madhusanka Liyanage,Blockchain for the metaverse: A Review,Future Generation Computer Systems,Volume 143,2023,Pages401-419, <https://doi.org/10.1016/j.future.2023.02.008>.
21. URL:<https://www.investopedia.com/terms/1/51-attack.asp> last accessed 2023/03/31.
22. URL:<https://www.blockchain-council.org/blockchain/types-of-blockchain-attacks-and-how-to-prevent-them/> last accessed 2023/01/31.
23. URL:<https://www.coindesk.com/information/what-is-a-smart-contract> last accessed 2023/03/31.
24. Hada A. Alsobhi, Rayed A. Alakhtar, Ayesha Ubaid, Omar K. Hussain, Farookh Khadeer Hussain,Blockchain-based micro-credentialing system in higher education institutions: Systematic literature review,Knowledge-Based Systems,Volume 265,2023, <https://doi.org/10.1016/j.knosys.2022.110238>.
25. Sergey Tsiulin, Kristian Hegner Reinau, Olli-Pekka Hilmola,The key challenges of blockchain implementation in maritime sector: summary from literature and previous research findings,Procedia Computer Science,Volume 217,2023,Pages 348-357,<https://doi.org/10.1016/j.procs.2022.12.230>.
26. Marlys Herazo Narváez, Laura Carrasquilla-Díaz, Alejandra De Luque-Pisciotti, AF Guarin, Tatiana Arrieta Barrios, José Fernando Gallego-Nicholls,Legal challenges for Blockchain implementation in Colombia,Procedia Computer Science,Volume 210,2022,Pages 323-327,<https://doi.org/10.1016/j.procs.2022.10.158>.
27. Adarsh Kumar, Neelu Jyothi Ahuja, Monika Thapliyal, Sarthika Dutt, Tanesh Kumar, Diego Augusto De Jesus Pacheco, Charalambos Konstantinou, Kim-Kwang Raymond Choo,Blockchain for unmanned underwater drones: Research issues, challenges, trends and future directions,Journal of Network and Computer Applications,Volume 215,2023,103649,<https://doi.org/10.1016/j.jnca.2023.103649>.
28. Hua Liu, Ruili Ma, Guangyao He, Abdesslam Lamrabet, Shaoling Fu,The impact of blockchain technology on the online purchase behavior of green agricultural products,Journal of Retailing and Consumer Services,Volume 74,2023,ISSN 0969-6989,<https://doi.org/10.1016/j.jretconser.2023.103387>.
29. Patricia Baudier, Galina Kondrateva, Chantal Ammi,Can blockchain enhance motivation to donate: The moderating impact of religion on donors' behavior in the USA's charity organizations,Technological Forecasting and Social Change,Volume 191,2023,122524,<https://doi.org/10.1016/j.techfore.2023.122524>.
30. SOME SIMPLE ECONOMICS OF THE BLOCKCHAIN Christian Catalini Joshua S. Gans Working Paper 22952 <http://www.nber.org/papers/w22952> NATIONAL BUREAU OF ECONOMIC RESEARCH 1050 Massachusetts Avenue Cambridge, MA 02138 December 2016, Revised June 2019.
31. Catalini, C., & Gans, J. S. (2018). Some simple economics of the blockchain. Journal of Economic Perspectives, 32(2), 217-238.
32. European Commission. (2018). Blockchain in Education. Retrieved from <https://ec.europa.eu/jrc/en/publication/blockchain-education>.

Error Correction Using Quantum Computation

Khalik Khan¹, Sapna Jain¹[0000-0002-5659-1941]

¹ SEST, Jamia Hamdard, New Delhi, India

Published online: June 25, 2023 | https://doi.org/10.33847/2686-8296.5.1_2

Abstract. Quantum Error Correction (QEC) is an important technique for protecting quantum information against decoherence and errors. This involves the design and implementation of algorithms and techniques to minimize error rates and increase the stability of quantum circuits. One of the key parameters in QEC is the distance of the error-correcting code, which determines the number of errors that can be corrected. Another important parameter is the error probability, which quantifies the likelihood of errors occurring in the quantum system. In this context, the goal of a simulation sweeps like the one performed in the code is to study the performance of the QEC code for different values of the distance and error probability, and to optimize the code for maximum accuracy. By varying these parameters and observing the performance of the code, researchers can gain insights into how to design better codes and improve the reliability of quantum computing systems. We also discuss the challenges that need to be addressed for quantum computing to realize its potential in solving practical Error-correction problems.

Keywords: quantum, error correction, decoherence, algorithm.

REFERENCES

1. Aharonov, D., Ben-Or, M., Eban, E., & Hassidim, A. (2020). Quantum Error Correction with only Two Qubits. *Physical Review Letters*, 124(10), 100504.
2. Calderbank, A. R., Shor, P. W., & Steane, A. M. (1996). Quantum Error Correction and Orthogonal Geometry. *Physical Review Letters*, 78(3), 405-408.
3. Gottesman, D. (1997). Stabilizer Codes and Quantum Error Correction. PhD thesis, California Institute of Technology.
4. Kitaev, A. Y. (1997). Quantum Error Correction with Imperfect Gates. *Quantum Communications and Measurement*, 181-188.
5. Knill, E., Laflamme, R., & Zurek, W.H. (1996). Resilient Quantum Computation: Error Models and Thresholds. *Proceedings of the Royal Society of London. Series A: Mathematical, Physical and Engineering Sciences*, 454(1969), 365-384.
6. Lidar, D. A., & Brun, T. A. (2013). *Quantum Error Correction*. Cambridge University Press.
7. Nielsen, M. A., & Chuang, I. L. (2010). *Quantum Computation and Quantum Information: 10th Anniversary Edition*. Cambridge University Press.
8. Preskill, J. (1998). Reliable Quantum Computers. *Proceedings of the Royal Society of London. Series A: Mathematical, Physical and Engineering Sciences*, 454(1969), 385-410.
9. Raussendorf, R., & Harrington, J. (2007). Fault-Tolerant Quantum Computation with High Threshold in Two Dimensions. *Physical Review Letters*, 98(19), 190504.
10. Shor, P. W. (1995). Scheme for Reducing Decoherence in Quantum Computer Memory. *Physical Review A*, 52(4), R2493-R2496.
11. Steane, A. (1996). Error Correcting Codes in Quantum Theory. *Physical Review Letters*, 77(5), 793-797.
12. Terhal, B. M. (2015). Quantum Error Correction for Quantum Memories. *Reviews of Modern Physics*, 87(2), 307-346.

13. Tureci, H. E., & Imamoglu, A. (2003). Fault-Tolerant Quantum Computation with Strongly Coupled Qubits. *Physical Review A*, 67(6), 062322.
14. Vedral, V. (2010). *Introduction to Quantum Information Science*. Oxford University Press.
15. Zeng, B., & Jiang, L. (2019). Recent Advances in Quantum Error Correction. *Quantum Science and Technology*, 4(3), 030501.

Machine Maintenance Policies in Local Sugar Manufacturing: A Case Study of Madukismo, Indonesia

Indra Bastian¹[0000-0003-4658-8690], Hadyan Fadillah¹

¹ Gadjah Mada University, Yogyakarta, Indonesia

Published online: June 25, 2023 | https://doi.org/10.33847/2686-8296.5.1_3

Abstract. This study aimed to analyze the factors that cause un-optimal on a maintenance of machinery in P.G Madukismo. An engine maintenance which was carried out by P.G Madukismo for 6 months, had not been able to suppress an engine stop time. In 2016 the planned engine stop time in P.G Madukismo was on 88.8 hours, but in reality the P.G Madukismo engine stopped clock reached on 179.44 hours during a milling season.

By exploring a case study approach, data collection was examined by interviews, observation and documentation. The data collected was analyzed using the reduction, data presentation and concluding withdrawal stages. The results of this study indicated that the main factors that caused engine maintenance had not been optimal because the useful life of the machine had been exhausted and preventive maintenance that was carried out cannot replaced all engine components that were damaged or worn. In addition, P.G Madukismo also did not have a SOP related to machine maintenance. Efforts that had been made to optimize machine maintenance were preventive maintenance, which was carried out not only outside the milling season but also during the milling season and provided training to employees to improve employee capabilities.

Keywords: machine maintenance, stop time.

REFERENCES

1. Mandiri Institute. 2016. "Industry Update Office of Chief Economist: Gula". Vol 10, May2016.
2. Cahyadi, Arif Yuni. 2015. "*Pengukuran Produktivitas PG Madukismo PT Madubaru Menggunakan Metode Objective Matrix (OMAX)*." Thesis. Yogyakarta: Gadjah Mada University.
3. Assauri, Sofjan. 2004. *Manajemen Produksi dan Operasi*. Jakarta: Publisher of Economic Faculty, University of Indonesia.
4. Gaspersz, V., 2002. Total Quality Management. Jakarta: Gramedia Pustaka Utama.
5. Ramadhan, Sri Afni. 2010. "*Analisis Pemeliharaan Mesin-Mesin Pembangkit Listrik Tenaga Gas (PLTG) Pada PT PLN (Persero) Ranting Pekanbaru*". A Thesis. Pekanbaru: Moslem State University of Sultan Syarif Kasim Baru.
6. Bastian I., PetrusLate K.P. Late in Inka Mina Ship Procurement: A Case of North Celebes, Indonesia. J. Digit. Art Humanit. 4(1), 19-30, (2023). https://doi.org/10.33847/2712-8148.4.1_3.
7. Asadayanti, Fadhillah. 2013. "*Evaluasi Penerapan Elemen Pengendalian Internal COSO, dalam Aktivitas Pemeliharaan Peralatan Penunjang Fasilitas PT. Sawokembar Galeria Yogyakarta*." Thesis. Yogyakarta: Gadjah Mada University.
8. Miles, M.B., & Huberman, A.M. 1994. *Qualitative Data Analysis*. London: SAGE.
9. Sugiyono. 2014. *Metoda Penulisan Kuantitatif Kualitatif Dan R&D*. Bandung: Publisher Alfabeta.
10. Nababan, Manaor Bismar. 2013. "*Efisiensi Produksi Pabrik Gula Nasional*". A Thesis. Bogor: Bogor Agricultural Institute.
11. Agustinus, Michael. 2016. "*Produksi Gula Terus Turun, RI Kini Jadi Importir Gula*". Accessed on March 17, 2018. <https://finance.detik.com/industri/d-3117318/produksi-gula-terus-turun-ri-kini-jadi-importir-gula>.

12. Ermanwijaya, Masri. 2017. "Efisiensi Biaya Produksi Gula Berdasarkan Activity Based Management System pada PT. Gunung Madu Plantations IX Gunung Batin Lampung Tengah". Journal of ACSY Sekayu Polytechnic Vol VI.

Influence of Personality on Technology Readiness and Intention to Use Online Vehicle Taxes Payment in Surabaya, Indonesia

Monica Mega Puspa¹[0009-0003-3755-6694],
Indrawati Yuhertiana¹[0000-0002-1613-1692]

¹ Universitas Pembangunan Nasional "Veteran" Jawa Timur, Surabaya, Indonesia

Published online: June 25, 2023 | https://doi.org/10.33847/2686-8296.5.1_4

Abstract. The purpose of this study is to ascertain the relationship between personality and technology readiness and the intention to use online vehicle taxes payment (SIGNAL application) in Surabaya, Indonesia. This study used a quantitative research methodology. The structural equation modeling (SEM) data analysis method was used in this investigation. Simple random sampling methodology and probability sampling to determine the sample. There are 100 respondents served as the sample. There were six hypotheses tested in this study. The findings demonstrated a favorable and substantial relationship between personality traits such as agreeableness, conscientiousness, extraversion, and a chance to experience and technological readiness for motor vehicle tax payment using the SIGNAL application. However, personality neuroticism has a detrimental impact on a person's ability to use technology when paying motor vehicle taxes using the SIGNAL application. Furthermore, technology readiness positively and significantly impacts the intention to use the SIGNAL application to pay motor vehicle taxes.

Keywords: Online Vehicle Tax, Technology Readiness, Personality, Intention to Use.

REFERENCES

1. Faiz F, Boyhan T, Izaak W, et al. A Literature Review: Women's Equality in the E-Commerce Information Technology Industry in the Digital Age in Developing Countries. In: *Proceedings of the 2nd International Conference on Economics, Business, and Government Challenges, EBGC 2019, 3 October, UPN 'Veteran' East Java, Surabaya, Indonesia*. European Alliance for Innovation n.o. Epub ahead of print 13 February 2020. DOI: 10.4108/eai.3-10-2019.2291828.
2. Permatasari C, Yuhertiana I, Kirana NWI. Persepsi Konsumen dalam Melakukan Pembayaran BPJS Kesehatan dengan Menggunakan E-Wallet di Masa Pandemi Covid-19. *Journal of Management and Bussines (JOMB)* 2022; 4: 1029–1037.
3. Almira A, Putri H, Yuhertiana I, et al. Technology Constraints in Online Tax Payment: Case of Surabaya City. *Journal of Economics, Business, and Government Challenges* 2019; 2: 144–151.
4. Widjanarko ARW, Yuhertiana I. Analisis Pemanfaatan E-Commerce di Masa Pandemi Covid-19 pada UMKM Db Wood Kota Surabaya. *Jurnal Ilmiah Universitas Batanghari Jambi* 2022; 22: 1556.
5. Asnawi A. Kesiapan Indonesia Membangun Ekonomi Digital Di Era Revolusi Industri 4.0. *Jurnal Ilmiah Indonesia*; 7, <https://pdfs.semanticscholar.org> (2022).

6. Tia Pradilla L, Patuh Priyadi M. Implementasi E-Government Pada Pelayanan E-Samsat Dalam Menciptakan Good Governance Pada Kantor Samsat Surabaya Timur. *Jurnal Ilmu dan Riset Akuntansi* 2022; 11: 1–16.
7. Rafitanuri S, Arsyida N, Gunawan R. Analisis Tingkat Kepuasan Masyarakat Terhadap Pelayanan Pembayaran Pajak Kendaraan Bermotor Berbasis Aplikasi SIGNAL Di Kantor Samsat Kota Tanjungpinang. *Jurnal Hukum, Politik Dan Ilmu Sosial (JHPIS)* 2022; 1: 92–103.
8. Rahma T, Yuhertiana I. Behavioral Intention to Use Online Tax Payments During Covid-19 Pandemic. *United International Journal for Research & Technology* 2022; 3: 52–61.
9. Rangan FD, Simanjutak AMA, Seralurin YC. Pengaruh Persepsi Kegunaan, Persepsi Kemudahan, Kesiapan Teknologi Informasi, Keamanan Dan Kerahasiaan Terhadap Minat Perilaku Penggunaan E-Filing. *Jurnal Akuntansi dan Keuangan Daerah* 2020; 15: 111–125.
10. Prasetyowati H, Lukis Panjawa J. Teknologi Dan Distribusi Pajak Mendukung Kualitas Pembangunan Manusia. *TRANSEKONOMIKA: Akuntansi, Bisnis dan Keuangan* 2022; 2: 23–36.
11. Silamukti AA. National Digital Samsat (SIGNAL) Program Effectiveness by the System Perspective in the Jurisdiction of Polda Metro Jaya, Indonesia. *Internasional Journal of Multicultural and Multireligious Understanding* 2022; 9: 369–379.
12. Ramdani D. Pengaruh Penerapan E-Registration, E-Filing Dan E-Billing Terhadap Kepatuhan Wajib Pajak. *ISEI Accounting Review* 2019; III: 58–66.
13. Parasuraman A. *Technology Readiness Index (TRI) A Multiple-Item Scale to Measure Readiness to Embrace New Technologies*, https://www.researchgate.net/publication/240274124_Technology_Readiness_Index_Tri_A_Multiple-Item_Scale_to_Measure_Readiness_to_Embrace_New_Technologies (2000, accessed 14 June 2023).
14. Tinitah R, Haryanta. *Peran Kepribadian terhadap Kesiapan Mengikuti Pembelajaran Online pada Mahasiswa*, <http://etd.repository.ugm.ac.id/> (2020).
15. Octaviana N. Analisis Elemen-Elemen Fraud Hexagon Theory Sebagai Determinan Fraudulent Financial Reporting. *Jurnal Akuntansi*. Epub ahead of print 30 August 2022. DOI: <https://doi.org/10.46806/ja.v11i2.895>.
16. Arpaci I, Karatas K, Kusci I, et al. Understanding the social sustainability of the Metaverse by integrating UTAUT2 and big five personality traits: A hybrid SEM-ANN approach. *Technol Soc*; 71. Epub ahead of print 2022. DOI: 10.1016/j.techsoc.2022.102120.
17. Pilch I, Wardawy P, Probiez E. The predictors of adaptive and maladaptive coping behavior during the COVID-19 pandemic: The Protection Motivation Theory and the Big Five personality traits. *PLoS One* 2021; 16: e0258606.
18. Pemasarakatan L, Klas W, Malang IA, et al. *Hubungan Dimensi Kepribadian The Big Five Personality dengan Tingkat Kesejahteraan Psikologis Narapidana*, <http://alhikmah.iain-jember.ac.id/> (2020).
19. Nurul Afifah I, Retno Pratiwi A. Analisis Persepsi Keamanan Dan Kerahasiaan, Kegunaan, Kemudahan Dan Kesiapan Teknologi Informasi Yang Mempengaruhi Minat Wajib Pajak Dalam Penggunaan E-Filing Di Kantor Pelayanan Wajib Pajak Pratama Pondok Gede 2019. *Jurnal Akuntansi dan Pasar Modal* 2019; 2: 1–24.
20. Senalasari W, Rafdinal DW. Peran Kesiapan Teknologi dalam Minat Menggunakan Aplikasi Pembayaran Seluler di Masa Pandemi Covid-19. *Jurnal Riset Bisnis dan Investasi* 2021; 7: 22–32.
21. Kamal SA, Shafiq M, Kakria P. Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). *Technol Soc*; 60. Epub ahead of print 1 February 2020. DOI: 10.1016/j.techsoc.2019.101212.

22. Carter L, Belanger F. The Utilization of E-Government Services: Citizen Trust, Innovation and Acceptance Factors. *Inf Syst J* 2005; 15: 5–25.
23. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Q* 1989; 13: 319–339.
24. Soneka PN, Phiri J. A Model for Improving E-Tax System Adoption in Rural Zambia Based on the TAM Model. *Open Journal of Business and Management* 2019; 07: 908–918.
25. Tahar A, Riyadh HA, Sofyani H, et al. Perceived ease of use, perceived usefulness, perceived security and intention to use e-filing: The role of technology readiness. *Journal of Asian Finance, Economics and Business* 2020; 7: 537–547.
26. Lu C-T, Huang SY, Lo P-Y. An empirical study of on-line tax filing acceptance model: Integrating TAM and TPB. *African Journal of Business Management*; 4, https://www.researchgate.net/publication/267839012_An_empirical_study_of_on-line_tax_filing_acceptance_model_Integrating_TAM_and_TPB (2010).
27. Rahmawati RN, Narsa IM. Intention to Use e-Learning: Aplikasi Technology Acceptance Model (TAM). *Owner* 2019; 3: 260.
28. Boon-itt S. Managing self-service technology service quality to enhance e-satisfaction. *International Journal of Quality and Service Sciences* 2015; 7: 373–391.
29. Jawara H. *The Big Five personality traits and borrowers behavior: evidence from group-based lending in Gambia*, https://www.rsepconferences.com/my_documents/abstracts/q1E95P4o1.pdf (17 April 2017).
30. Octavia N, Hayati K, Karim M. Pengaruh Kepribadian, Kecerdasan Emosional Dan Kecerdasan Spritual Terhadap Kinerja Karyawan. *Jurnal Bisnis dan Manajemen* 2020; 16: 130–144.
31. Widajantie TD, Anwar S. Pengaruh Program Pemutihan Pajak Kendaraan Bermotor, Kesadaran Wajib Pajak, Sosialisasi Pajak, Dan Pelayanan Terhadap Kepatuhan Wajib Pajak Kendaraan Bermotor (Studi Pada Kantor Bersama Samsat Surabaya Selatan). *BAJ (Behavioral Accounting Journal)* 2020; 3: 129–143.
32. Mulya O., Yuhertiana I. Hedonic and Utilitarian Motivation of Accounting Students as Z Generation in Using Mobile Banking. *J. Digit. Art Humanit.* 4(1), 10-18, https://doi.org/10.33847/2712-8148.4.1_2

Formation of information space of knowledge learning foreign language

Yulia Sysoeva¹ [0000-0002-3757-9648],
Irina Zhdankina¹ [0000-0002-0976-5427],
Dary Bykova¹ [0000-0003-1959-4677],
Natalia Ignatieva¹ [0000-0001-7803-716X]

¹ Nizhny Novgorod State Engineering and Economic University, Russia

Published online: June 25, 2023 | https://doi.org/10.33847/2686-8296.5.1_5

Abstract. Modern trends in digitalization of education lead to the expansion of methods and means of teaching foreign language. This article is devoted to identifying the main components necessary for the formation of information space of knowledge in classes in foreign language, using advantages of training applications, as well as drawing up rules for the effective study of foreign language. It should be noted that the main way to obtain information in the modern world is Internet technology. By teaching foreign language, information technology helps to shape the skills and abilities of spoken language, as well as teach vocabulary and grammar, providing genuine interest and therefore efficiency. Moreover, learning applications develop skills that are important not only for foreign language. The task of teachers of modern digital education is to find the opportunity to use all sources and means of training in the educational process.

Keywords: foreign language, information space of knowledge, learning application, level of language proficiency, digitalization.

REFERENCES

1. Bykova D., et al. (2022). Use of digital technologies to improve the classical methodology of foreign language teaching in professional educational organizations. In *Advances in Digital Science*, pp.35-49. https://doi.org/10.33847/978-5-6048575-0-2_3
2. Decree of the President of the Russian Federation from May 9, 2017 No. 203 "On the Strategy for the Development of the Information Society in the Russian Federation for 2017-2030" [Electronic Resource] URL: <http://www.qarant.ru/products/ipo/prime/doc/71570570/>, last accessed 2023/02/20.
3. Okolelov O.P.: The process of learning in the virtual educational space / Informatics and education. No.10, pp. 66-70 (2001).
4. Babushkina L.E., Safonov V.I. (2015) ICT as a means of forming the social and cultural competence of students of pedagogical institutes in teaching foreign language. OTO, No.1. URL: <https://cyberleninka.ru/article/n/ikt-kak-sredstvo-formirovaniya-sotsiokulturnoy-kompetentsii-studentov-pedvuza-pri-obuchenii-inostrannomu-yazyku>, last accessed 2022/02/20.
5. Stepanek, J., Simkova, M.: Design and implementation of simple interactive e-learning system. *Procedia Soc. Behav. Sci.* 83, 413-416 (2013) <https://doi.org/10.1016/j.sbspro.2013.06.081>
6. Kacetl, J., Klímová, B.: Use of smartphone applications in English language learning – a challenge for foreign language education. *Education Science*. 9(3), 179 (2019). DOI: 10.3390/educsci9030179
7. Ignatieva, N., Zhdankina, I., Bykova, D., Sysoeva, Yu.: Using smart technologies at the classes of foreign languages at a non-linguistic university. In: Antipova T. (eds.) *Integrated Science in Digital Age 2020. Lecture Notes in Networks and Systems*, vol 136, Springer, Switzerland, (2020). https://doi.org/10.1007/978-3-030-49264-9_21

8. Karsenti, T., Kozarenko, O., Skakunova, V. (2020). Digital Technologies in Teaching and Learning Foreign Languages: Pedagogical Strategies and Teachers' Professional Competence. Education and Self-Development. 15. 76-88. 10.26907/esd15.3.07.
9. Belyasova, J., Teleshova R. Particularities of language classes in a multi-cultural context (2019) In: DSIC 2018, AISC 850, pp. 174-187. DOI: https://doi.org/10.1007/978-3-030-02351-5_22.
10. Obdalova O.A. (2009) Computer-mediated learning environment as a means and indispensable condition of teaching foreign languages in modern system of education. Language and culture, No.1(5). URL: <https://cyberleninka.ru/article/n/informatsionno-obrazovatel'naya-sreda-kak-sredstvo-i-usloviye-obucheniya-inostrannomu-yazyku-v-sovremennyh-usloviyah>, last accessed 2023/02/20.
11. Study language. Study world. | Memrise [Electronic resource] URL: <https://www.memrise.com/ru/>, last accessed 2023/02/20.
12. Grammar | LearnEnglish - British Council Learn English [Electronic resource] URL: <https://learnenglish.britishcouncil.org/grammar>, last accessed 2023/02/20.
13. FluentU: Language Immersion Online | Learn a Language [Electronic resource] URL: <https://www.fluentu.com/>, last accessed 2023/02/20.
14. Online tutors on Preply [Electronic resource] URL: <https://preply.com/ru/>, last accessed 2023/02/20.
15. Busuu - Learn languages online: Start learning for free [Electronic resource] URL: <https://www.busuu.com/ru>, last accessed 2023/02/20.
16. Learn languages online for free with Mondly [Electronic resource] URL: <https://ru.mondly.com/>, last accessed 2023/02/20.
17. Tandem | Mobile application and web [Electronic resource] URL: <https://www.tandem.net/ru>, last accessed 2023/02/20.
18. Grammarly [Electronic resource] URL: <http://grammarly.com>, last accessed 2023/02/20.
19. Zhdankina, I.Yu., Ignatieva, N.N.: Assessment of competences formation on classes of foreign language at non-linguistic universities. KANT 2(27), 41-47 (2018).
20. Chekun O.A., Lushnikova I.I. Modern technologies in teaching foreign languages of the digital generation of students. Bulletin of Moscow State University of the Humanities named after M.A. Sholokhov. Pedagogy and psychology, No.1. (2015).
21. Traynev V.A., Traynev I.V.: Information communication pedagogical technologies (generalizations and recommendations) / Publishing and trading corporation "Dashkov and Co.," (2009), URL: https://www.studmed.ru/traynev-va-informacionnye-kommunikacionnye-pedagogicheskie-tehnologii-obobscheniya-i-rekomendacii_0d5ceb50fde.html, last accessed 2023/02/20.

Health Digital Indicators' Juxtaposition

Tatiana Antipova [0000-0002-0872-4965]

ICS, Agia Napa, Cyprus

Published online: June 25, 2023 | https://doi.org/10.33847/2686-8296.5.1_6

Abstract. A study is discussed the comparison of main health performance indicators in two different countries: New Zealand and Republic of Cyprus, and globally by approaches from the particular to the general, and multi-dimensional measures of global health indication. The objective was to establish the content validity, the reliability and sensitivity, and the validity of rank order comparisons. This study analyzed 2021-2023 annual reports World Health Organization, European Union Commission, and NZ government. The finding of this work is synopsis of Health Digital Indicators. The result of synopsis has shown that there are so many different kinds of Health Indicators that unite by digital technology to collect data for them. Author juxtaposed regional (European and Pacific) and global health indicators counted for health goals.

Keywords: health, indicators, assessing, adequacy, juxtaposition, evaluation, measurement.

REFERENCES

1. State of Health in the EU. Companion Report, 2021. URL: ec.europa.eu/health/state (accessed June 2023).
 2. World Health Organization (WHO), Organisation for Economic Co-operation and Development (OECD), International Bank for Reconstruction and Development, Delivering Quality Health Services: a Global Imperative for Universal Health Coverage, 2018, p. 93.
 3. World Health Organization (WHO), Comprehensive Safe Hospital Framework, 2015, pp. 1–12.
 4. Health System Efficiency - WHO European Region. <https://www.euro.who.int>.
 5. World Health Statistics 2021. <https://www.who.int/data/stories/world-health-statistics-2021-a-visual-summary>, last accessed 11 June, 2023.
 6. World Health Statistics 2022. <https://www.who.int/publications/i/item/9789240051157>, last accessed 12 June, 2023.
 7. World Health Statistics 2023. <https://www.who.int/data/stories/world-health-statistics-2023-a-visual-summary/>, last accessed 17 June, 2023.
 8. Antipova T., Zhelnin A., Zhelnina I. Briefs in Assessing the Adequacy of Health Care Facilities' Fixed Assets. *J. Digit. Sci.* 4(1), 85 – 91 (2022). https://doi.org/10.33847/2686-8296.4.1_8.
 9. Antipova T. Need for High-Tech Medical Devices in Value-Based Health Care. *Advances in Digital Science*, 50-62, 2022. https://doi.org/10.33847/978-5-6048575-0-2_4.
 10. Antipova T., Shikina I. (2017) Informatic indicators of efficacy cancer treatment. 12th Iberian Conference on Information Systems and Technologies (CISTI). pp. 1 - 5, DOI: 10.23919/CISTI.2017.7976049.
 11. C. Lankford Walker (1993) A Cross-Sectional Analysis of Hospital Profitability, *Journal of Hospital Marketing*, 7:2, 121-138, DOI: 10.1300/J043v07n02_11.
 12. Griffith, J. R., Alexander, J. A., & Warden, G. L. (2002). Measuring comparative hospital performance / practitioner response. *Journal of Healthcare Management*, 47(1), 41-57. Retrieved from <http://0-search.proquest.com.www.elgar.govt.nz/scholarly-journals/measuring-comparative-hospital-performance/docview/206715530/se-2>
 13. Antipova T. (2021) Digital View on COVID-19 Impact. In: Antipova T. (eds) *Comprehensible Science. ICCS 2020. Lecture Notes in Networks and Systems*, vol 186, pp. 155-164. Springer, Cham. https://doi.org/10.1007/978-3-030-66093-2_15.
 14. Tools and methodologies to assess the efficiency of health care services in Europe. An overview of current approaches and opportunities for improvement. Report by the Expert Group
- ©ICS. Journal of Digital Science, ISSN 2686-8296, Vol.5, Iss. 1, June 2023

- on Health System Performance Assessment. Luxembourg: Publications Office of the European Union, 2019. ISBN 978-92-76-02613-6. <https://doi.org/10.2875/346480>.
15. State of Health in the EU · Cyprus · Country Health Profile 2021.
16. Voskanyan Y., et al. Multifactorial model of adverse events and medical safety management. *J. Digit. Sci.* **2**(1), 29 – 39 (2020). https://doi.org/10.33847/2686-8296.2.1_3
17. Lupu, D., & Ramona, T. (2022). COVID-19 and the efficiency of health systems in Europe. *Health Economics Review*, *12*(1). doi:<https://doi.org/10.1186/s13561-022-00358-y>
18. Voskanyan Y., et al. Risk management in the healthcare safety management system. *J. Digit. Sci.* **3**(1), 41-53 (2021). https://doi.org/10.33847/2686-8296.3.1_4
19. Shlyafar S., Shikina I. (2023) High-tech heart surgery in elderly patients in Russia. *J. Digit. Art Humanit.* *4*(1), 43-49. https://doi.org/10.33847/2712-8148.4.1_6.
20. Gerova O., Shikina I. Accessibility to Join Bone Marrow Donor Registry for Volunteers. *J. Digit. Art Humanit.* *4*(1), 37-42, (2023). https://doi.org/10.33847/2712-8148.4.1_5
21. Davis, Peter et al. Efficiency, effectiveness, equity (E3). Evaluating hospital performance in three dimensions. *Health Policy*, Vol. 112. <https://doi.org/10.1016/j.healthpol.2013.02.008>

Aims and Objectives

Published online by ICS two times a year, Journal of Digital Science (JDS) is an international peer-reviewed journal which aims at the latest ideas, innovations, trends, experiences and concerns in the field of digital science covering all areas of the scholarly literature of the sciences, social sciences and arts & humanities. The main topics currently covered include: Artificial Intelligence Research; Digital Economics, Education, Engineering, Finance, Health Care.

The main goal of the journal is the effective dissemination of original incites/results generated by the human brain and presented/reflected in articles using modern information/digital technology.

Editorial Board

Editor-in-Chief Tatiana Antipova, ICS,
<https://orcid.org/0000-0002-0872-4965>

Associate Editor Julia Belyasova, Catholic University of Louvain, Louvain-la-Neuve, Belgium;
<https://orcid.org/0000-0001-6983-2129>

Editors

Abdulsatar Sultan, Catholic University in Erbil, Erbil, Iraq;

<https://orcid.org/0000-0001-5090-5332>

Achmad Nurmandi, Universitas Muhammadiyah Yogyakarta, Indonesia

<https://orcid.org/0000-0002-6730-0273>

Jelena Jovanovic, University of Nis, Nis, Serbia;

<https://orcid.org/0000-0001-7238-6393>

Indra Bastian, Universitas Gadjah Mada, Yogyakarta, Indonesia;

<https://orcid.org/0000-0003-4658-8690>

Indrawati Yuhertiana, Universitas Pembangunan Nasional Veteran Jatim, Surabaya, Indonesia;

<https://orcid.org/0000-0002-1613-1692>

Lucas Tomczyk, Uniwersytet Jagielloński, Krakow, Poland

<https://orcid.org/0000-0002-5652-1433>

Narcisa Roxana Moşteanu, American University of Malta, Bormla, Malta

<https://orcid.org/0000-0001-5905-8600>

Olga Khlynova, Russian Academy of Science, Moscow, Russia

<https://orcid.org/0000-0003-4860-0112>

Omar Leonel Loaiza Jara, Universidad Peruana Unión, Lima, Peru

<https://orcid.org/0000-0002-3262-709X>

Roland Moraru, University of Petrosani, Romania

<https://orcid.org/0000-0001-8629-8394>

Tjerk Budding, Vrije Universiteit Amsterdam, Netherland

<https://orcid.org/0000-0002-5343-7535>

Zhanna Mingaleva, National Research Polytechnic University, Perm, Russia

<https://orcid.org/0000-0001-7674-7846>

Quang Vinh Dang, Industrial University, Ho Chi Minh City, Viet Nam

<https://orcid.org/0000-0002-3877-8024>

Contact information

Website: <https://ics.events>

Email: conf@ics.events