SRMUN ATLANTA 2022
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cstd_atlanta@srmun.org

Greetings Delegates,

Welcome to SRMUN Atlanta 2022 and the United Nations' (UN) Commission on Science and Technology for Development (CSTD). My name is Michael Bovi, and I will be serving as your Director for the CSTD. I have previously served as an Assistant Director for the International Atomic Energy Agency at SRMUN Atlanta 2019 and as Director of the United Nations Children's Fund Executive Board at SRMUN Atlanta 2021. I graduated with a B.S in Computer Science with a concentration in Software, Systems and Networking, and I currently work as a Software Analyst. Our Assistant Director is Manu Kanani, and it's his second time on SRMUN staff after having recently served as Assistant Director of the Security Council at SRMUN Atlanta 2021. Manu graduated with a degree in Computer Science in 2021 and now works in New York City at a management consulting firm.

The CSTD was created to provide the UN with high-level technical advice through analysis and policy recommendations. CSTD helps to govern the development of new technologies, such as big data analytics, biotech and genome editing, the Internet of things (IoT), and artificial intelligence. The Commission consists of 43 Member States elected by the Economic and Social Council for a term of four years.

By focusing on CSTD's overarching mission, we have developed the following topics for delegates to discuss come conference:

I. Exploring the Impact of Blockchain Currencies and Their Role in the Global Market
II. Expanding Equitable Access to Advanced Computing Technologies for Developing Member States

The background guide provides a strong introduction to the committee and the topics and should be utilized as a foundation for the delegate's independent research. While we have attempted to provide a holistic analysis of the issues, the background guide should not be used as the single mode of analysis for the topics. Delegates are expected to go beyond the background guide and engage in intellectual inquiry of their own. The position papers for the committee should reflect the complexity of these issues and their externalities. Delegations are expected to submit a position paper and be prepared for a vigorous discussion at the conference. Position papers should be no longer than two pages in length (single spaced) and demonstrate your Member State's position, policies, and recommendations on each of the two topics. For more detailed information about formatting and how to write position papers, delegates can visit srmun.org. ***All position papers MUST be submitted no later than Friday October 28th, 2022, by 11:59pm EST via the SRMUN website to be eligible for Outstanding Position Paper Awards.***

Manu and I are excited to be serving as your dais for the CSTD. We wish you luck in your conference preparation and look forward to working with you soon. Please feel free to contact Emily, Manu, or myself if you have any questions while preparing for the conference.

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History of the United Nations Commission on Science and Technology for Development

The Commission on Science and Technology for Development (CSTD), established in 1992, was founded to advise the United Nations' (UN) General Assembly (GA) and the Economic and Social Council (ECOSOC) on matters related to science and technology.[1] The first official meeting of the CSTD, or the Commission, was in April 1993 at the UN Headquarters in New York.[2] The CSTD reports directly to ECOSOC with suggestions for policy through the analysis of science- and technology-related information on which to base the recommendations by the Commission.[3] The CSTD consists of 43 Member States, each elected by ECOSOC to serve terms of four years.[4] Delegates to the Commission are nominated by their respective Member States, serving as an expert in science or technology to represent the positions of their governments.[5] The CSTD must have 11 Member States from Africa, nine Member States from the Asia-Pacific region, eight Member States from Latin America and the Caribbean, five Member States from Eastern Europe, and ten Member States from Western Europe and other regions.[6] At each regular session of the CSTD, the body elects the executive leadership of the Commission, known as the Bureau, who is responsible for the activities for the next session.[7] The Bureau is composed of a Chairperson, and four Vice-Chairpersons.[8] The budget for CSTD is decided by ECOSOC annually.[9] Currently, the CSTD has a budget that is approximately USD 363,100, or 0.3 percent of the UN's regular budget.[10]

CSTD works to promote cooperation between groups such as UN funds, programs, and specialized agencies to help achieve the objectives of the implementation.[11] CSTD works closely alongside other UN bodies such as the Commission on the Status of Women (CSW), the UN Regional Commissions, the International Telecommunication Union (ITU), and the UN Educational, Scientific and Cultural Organization (UNESCO).[12] The CSTD is designed to provide high-level guidance to the UN, specifically ECOSOC.[13] The CSTD aims to advise the UN on appropriate actions and suggest common policies. In 2006, ECOSOC mandated the Commission to serve as a reviewing body of the outcomes of the World Summit on the Information Society (WSIS).[14] Endorsed by UNGA Resolution 56/183 in December 2001, the WSIS began its first phase in Geneva, Switzerland in 2003.[15] The goal for the WSIS' first phase in Geneva was to establish the structure of the WSIS and take into account the different interests of participating states.[16] A second phase was held two years later in November 2005 in Tunis, Tunisia to create modern solutions to problems posed by sectors such as internet governance.[17] CSTD's mandate from ECOSOC to act as the centerpiece body for the follow-up of the WSIS was established by the passage of ECOSOC resolution 2006/46 on the 28th of

[1] "Mandate and Institutional Background," United Nations Conference on Trade and Development, https://unctad.org/topic/commission-on-science-and-technology-for-development/mandate (accessed February 25, 2022).
[2] "Mandate and Institutional Background," UNCTAD.
[3] "Mandate and Institutional Background," UNCTAD.
[4] "Membership of the Commission on Science and Technology for Development," United Nations Conference on Trade and Development, https://unctad.org/topic/commission-on-science-and-technology-for-development/membership (accessed February 25, 2022).
[5] "Membership of the Commission on Science and Technology for Development," UNCTAD.
[6] "Membership of the Commission on Science and Technology for Development," UNCTAD.
[7] "Membership of the Commission on Science and Technology for Development," UNCTAD.
[8] "Membership of the Commission on Science and Technology for Development," UNCTAD.
[9] "Bureau of the CSTD," United Nations Conference on Trade and Development, https://unctad.org/topic/commission-on-science-and-technology-for-development/bureau (accessed May 15, 2022).
[10] "Proposed programme budget for the biennium 2018-2019," United Nations Conference on Trade and Development, https://unctad.org/system/files/official-document/a72d6section12_en.pdf (accessed February 25, 2022).
[11] "Mandate and Institutional Background," UNCTAD.
[12] "Commission on Science and Technology for Development," United Nations Conference on Trade and Development, https://unctad.org/topic/commission-on-science-and-technology-for-development#:~:text=Strong%20links%20exist%20with%20other,relevant%20science%20and%20technology%20issues (accessed May 13, 2022).
[13] "About the CSTD," UNCTAD.
[14] "Mandate and Institutional Background," UNCTAD.
[15] "Basic Information: About WSIS," World Summit on the Information Society, https://www.itu.int/net/wsis/basic/about.html (accessed May 13, 2022).
[16] "Basic Information: About WSIS," WSIS.
[17] "Basic Information: About WSIS," WSIS.

July 2006.[18] The Commission would then use their research to advise ECOSOC on how to best implement the Summit's outcomes.[19] The Commission focuses on the review of Member States' progress in the implementation of the recommendations put forth by WSIS.[20] The CSTD also shares best practices to handle challenges that Member States may face during implementation.[21]

Serving as a forum for the discussion of new science and technology, CSTD aims to advance the understanding of science and technology in developing Member States. From this process, the CSTD formulates recommendations and guidelines for consideration within the UN.[22] To achieve the Sustainable Development Goals, the CSTD examines how to best apply modern science and technology to challenges faced by Member States.[23] Discussions within the Commission are open to Member States, academia, and non-governmental organizations (NGOs) to explore new ways for developing Member States to contribute to the progress of innovations in science and technology.[24] The Commission stresses the risk of an increase in a technological divide between Member States should they not review best practices and relevant policies.[25]

The CSTD is designed to provide high-level guidance to the UN, specifically ECOSOC.[26] The CSTD aims to advise the UN on appropriate actions and suggest common policies.[27] In recent years, the CSTD has been critical to furthering discussion on science, technology, and innovation (STI) relating to vaccines and the Coronavirus.[28] The CSTD held virtual meetings from the June 10-12, 2020, to shape the future science and technology policy in terms of the global recovery from the COVID-19 pandemic.[29] These meetings explored solutions to controlling the rapid technological change in the modern world in order to sustain inclusive development and the acceleration of progress towards meeting the SDGs in the post-pandemic world.[30] The CSTD has also explored how science, technology, and innovation (STI) can contribute to sustainable development following the pandemic.[31] These efforts have been at the forefront of the CSTD's latest annual sessions. Another important aspect to the CSTD in recent years is exploring the fourth industrial revolution and how Member States can best prepare for future scientific and technological innovations.[32]

[18] "WSIS Follow-up," World Summit on the Information Society, https://www.itu.int/net/wsis/basic/about.html (accessed May 15, 2022).
[19] "Mandate and Institutional Background," UNCTAD.
[20] "Mandate and Institutional Background," UNCTAD.
[21] "Mandate and Institutional Background," UNCTAD.
[22] "Mandate and Institutional Background," UNCTAD.
[23] "About the CSTD," United Nations Conference on Trade and Development, https://unctad.org/topic/commission-on-science-and-technology-for-development/about (accessed February 25, 2022).
[24] "About the CSTD," UNCTAD.
[25] "About the CSTD," UNCTAD.
[26] "About the CSTD," UNCTAD.
[27] "About the CSTD," UNCTAD.
[28] "Science, technology and innovation efforts to address COVID19," United Nations Conference on Trade and Development, https://unctad.org/topic/commission-on-science-and-technology-for-development/covid-19 (accessed February 25, 2022).
[29] "UN to explore role of science and technology policies in COVID-19 recovery," United Nations Conference on Trade and Development, https://unctad.org/news/un-explore-role-science-and-technology-policies-covid-19-recovery (accessed May 15, 2022).
[30] "UN to explore role of science and technology policies in COVID-19 recovery," UNCTAD.
[31] "Science, technology and innovation efforts to address COVID19," UNCTAD.
[32] "Commission on Science and Technology for Development, twenty-fifth session," United Nations Conference on Trade and Development, https://unctad.org/meeting/commission-science-and-technology-development-twenty-fifth-session (accessed February 25, 2022).

I. Exploring the Impact of Blockchain Currencies and Their Role in the Global Market

Introduction

What was once a niche technology used by small online communities has exploded into an industry worth billions of dollars.[33] With new trading platforms appearing regularly and increased accessibility to the marketplace increasing, cryptocurrencies are working to solidify their place in the global economy.[34] Some Member States' governments, such as Venezuela, have invested in creating their own state-backed cryptocurrencies, though these are mainly used to help price services or make small payments to citizens.[35] With the creation of cryptocurrency came the blockchain. The blockchain is the backbone of cryptocurrencies and tracks all transactions made with a specific cryptocurrency. It exists as a collaborative, immutable public ledger that is maintained by its users.[36] Since their creation in 2009, cryptocurrencies have garnered nearly 250 million individual users worldwide, and the rate at which new users are joining is accelerating.[37] Major companies, financial institutions, and governments are warming to cryptocurrencies as well, such in 2021 when the Republic of El Salvador became the first United Nations (UN) Member State to accept Bitcoin as legal tender.[38]

History

Following the recession of 2008, people began to grow distrustful of standard financial institutions and the need for a third-parties to verify any financial transactions.[39] An individual operating under the name Satoshi Nakamoto, which is believed to be a pseudonym, sought to create a way to allow transactions to occur peer-to-peer rather than through large third-party institutions.[40] That same year, Nakamoto published a white paper proposing a peer-to-peer payment method that used a system of timestamped blocks of data secured by proof-of-work computations.[41] The idea was that, without needing a third-party institution such as a bank, individuals could conduct transactions in a way in which their funds were verified and that, once sent, they could not spend that money again by simply replicating the same information they initially used to send it.[42] Every transaction would be recorded at the time it was conducted in a ledger known as a "blockchain," which every participant in the system would have access to, thus giving them the ability to verify the truthfulness of every transaction without the need for a mediating institution.[43] Each successive transaction would update the ledger for every participant, creating a permanent and

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[33] "Cryptocurrency Market Size, Growth 2022 Global Industry Revenue, Business Demand and Applications Market Research Report to 2028," MarketWatch, MarketWatch, Last Modified May 17, 2022, https://www.marketwatch.com/press-release/cryptocurrency-exchanges-market-size-share-2022-global-key-leaders-analysis-segmentation-growth-future-trends-gross-margin-demands-emerging-technology-by-regional-forecast-to-2028-94-pages-report-2022-08-05

[34] "Cryptocurrency Market Size, Growth 2022 Global Industry Revenue, Business Demand and Applications Market Research Report to 2028," MarketWatch.

[35] Brian Ellsworth, "As Venezuela's Economy Regresses, Crypto Fills the Gaps." Reuters, Last modified June 22, 2021, https://www.reuters.com/technology/venezuelas-economy-regresses-crypto-fills-gaps-2021-06-22/#:~:text=Venezuelan%20President%20Nicolas%20Maduro%20in,are%20ultimately%20paid%20in%20bolivars.

[36] Marco Iansiti and Karim R. Lakhani, "The Truth About Blockchain," Harvard Business Review, February 2017, https://hbr.org/2017/01/the-truth-about-blockchain.

[37] Raynor de Best, "Number of identity-verified cryptoasset users from 2016 to June 2021," Statista, https://www.statista.com/statistics/1202503/global-cryptocurrency-user-base/ , Accessed August 28, 2022.

[38] Raynor de Best, "Number of identity-verified cryptoasset users from 2016 to June 2021," Statista.

[39] Paulina Likos and Coryanne Hicks, "The History of Bitcoin, the First Cryptocurrency." Usnews, Last modified February 4, 2022, https://money.usnews.com/investing/articles/the-history-of-bitcoin.

[40] Paulina Likos and Coryanne Hicks, "The History of Bitcoin, the First Cryptocurrency."

[41] Nakamoto, Satoshi. *Bitcoin: A Peer-to-Peer Electronic Cash System*. https://bitcoin.org/en/bitcoin-paper. (Accessed July 15, 2022).

[42] Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*. p. 1.

[43] Marco Iansiti and Karim R. Lakhani, "The Truth About Blockchain," Harvard Business Review, February 2017, https://hbr.org/2017/01/the-truth-about-blockchain.

publicly available record of who was sending and receiving money.[44] Nakamoto debuted their project on January 3, 2009 with the launch of the blockchain used Bitcoin, for the first cryptocurrency.[45]

The Double-Spend Problem

Unlike traditional financial transaction methods, which at some point promise a physical exchange of currency for a given item, digital currencies are entirely electronic files known as "tokens."[46] This makes them susceptible to being "duplicated or falsified," enabling a person to spend the same piece of digital currency more than once.[47] Given that financial and other systems of exchange are built on trust between the participants, the ability of those participants to endlessly duplicate and re-spend money that never was or should no longer be theirs, known as "double-spending," would make any system with digital currencies unworkable because no participant could trust that they were exchanging a digital good or service for authentic currency whose payment couldn't later be reversed.[48] Satoshi Nakamoto posited that this problem raised transaction costs by requiring the intervention of mediating institutions.[49] In the realm of physical currency, banks perform these functions by ensuring the authenticity of the currency deposited in them and that payment cannot be reversed once received.[50] In the realm of digital currency, the role would often be handled by a "mint" that created digital tokens and to which those tokens were returned at the completion of a transaction. Such a system inhibited transactions between individuals by "limiting the minimum practical transaction size and cutting off the possibility for small casual transactions" in addition to the "broader cost in the loss of ability to make non-reversible payments for nonreversible services."[51] The blockchain theoretically solved this problem by permanently recording every transaction in a public ledger that every participant could see.[52] The ledger records the time of each transaction, cementing the chain of ownership and exchange and ensuring that participants do not have to simply trust that their currency is not duplicated or falsified.[53]

Even with the creation of this new secure transaction system, Bitcoin would hold little to no value for the first years of its life.[54] Early on, Bitcoin was mostly used for transactions between users on internet forums for goods or services. Bitcoin was also popular on the Dark Web for black market activities.[55] Its debut on public exchanges in 2010 helped the cryptocurrency to gain a larger userbase as it became easier to trade. These exchanges also helped Bitcoin to establish a price relative to the US dollar (USD).[56] As Bitcoin crept into the public eye, additional cryptocurrencies such as Ethereum were being developed using Bitcoin's blockchain structure as a starting point, hoping to improve the technology to allow for faster transaction times.[57] While blockchain was born with the creation of Bitcoin, it has the potential to be utilized across industries as a more efficient data storage system.[58]

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[44] Marco Iansiti and Karim R. Lakhani, "The Truth About Blockchain."
[45] Paulina Likos and Coryanne Hicks, "The History of Bitcoin, the First Cryptocurrency."
[46] Chohan, Usman W., "The Double Spending Problem and Cryptocurrencies" (January 6, 2021). Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3090174 (Accessed July 15, 2022).

[47] Usman W. Chohan, "The Double Spending Problem and Cryptocurrencies," p.2.
[48] Usman W. Chohan, "The Double Spending Problem and Cryptocurrencies," p.2.
[49] Nakamoto, Satoshi. *Bitcoin: A Peer-to-Peer Electronic Cash System*. https://bitcoin.org/en/bitcoin-paper. Accessed July 15, 2022.
[50] Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*. p. 2.
[51] Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*. p. 1.
[52] Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*. p. 2.
[53] Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*. p. 2.
[54] Paulina Likos and Coryanne Hicks, "The History of Bitcoin, the First Cryptocurrency."
[55] Paulina Likos and Coryanne Hicks, "The History of Bitcoin, the First Cryptocurrency."
[56] Paulina Likos and Coryanne Hicks, "The History of Bitcoin, the First Cryptocurrency."
[57] Paulina Likos and Coryanne Hicks, "The History of Bitcoin, the First Cryptocurrency."
[58] Yli-Huumo J, Ko D, Choi S, Park S, Smolander K, "Where Is Current Research on Blockchain Technology?—A Systematic Review," *PLoS ONE* volume 11, (October 2016), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0163477 .

Current Situation

With the number of users approaching a quarter-billion, cryptocurrencies are becoming more popular with consumers and investors, and attracting attention from financial institutions and governments.[59] More than 4,000 cryptocurrencies currently exist around the world, and while other potential benefits are still being explored, their current primary usages are as private payment methods and investments.[60] Bitcoin, the most popular cryptocurrency, has been valued as high as USD 65,000 per unit, though it is plagued by extreme volatility, sometimes fluctuating as much as USD 20,000 within a period of two to three months.[61] As a payment method, cryptocurrencies are growing in popularity as a method of transferring money across national borders, as cryptocurrency sent from one party to another does not require an immediate currency conversion, allowing the transactions to happen much faster than wiring money.[62]

Though only El Salvador has adopted a cryptocurrency as a form of legal tender, other Member States are considering a similar course or other methods of incorporating cryptocurrencies into their financial systems.[63] Indeed, a number of Member States have taken steps to legally classify cryptocurrencies, with a number of them, including the United Kingdom of Great Britain and Northern Ireland and the Republic of Singapore, declaring cryptocurrencies to be property as opposed to legal tender.[64] In a July 2021 article, two months before El Salvador's decision to adopt Bitcoin as legal tender, the International Monetary Fund (IMF) warned against the practice, arguing that the values of cryptocurrencies were too volatile and could destabilize a Member State's economy, in addition to potentially harming relations with banks in other Member States that are required to take measures to ensure crypto transactions are not being used to launder money or finance illicit activities.[65]

The blockchain technology used in cryptocurrencies is beginning to see usage in other areas that require secure digital recordkeeping. In The Republic of Finland, digital payments company MONI has partnered with the Finnish immigration service to give refugees in the Member State digital cards that allow them to receive benefits directly from the government without the need for a domestic bank account.[66] Another such initiative has already launched in New York with the use of the Fummi app. This app is designed to provide a digital identification (ID) for homeless individuals, so they are able to utilize government services.[67]

One of the largest hurdles for implementing blockchain technology is the complexity of the software and the lack of oversight for existing blockchains.[68] Overcoming this would require the developers of blockchains to work cooperatively with Member State governments to ensure stability and system integrity.[69] Another major obstacle for Member States is legislation and regulation.[70] New technology rapidly evolves and expands, making it hard for

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[59] Raynor de Best, "Number of identity-verified cryptoasset users from 2016 to June 2021," Statista, https://www.statista.com/statistics/1202503/global-cryptocurrency-user-base/, Accessed August 28, 2022.

[60] Jeffrey M. Green, "What Are the Laws for Cryptocurrency?" The Balance, https://www.thebalance.com/what-are-the-laws-for-cryptocurrency-5121102, Accessed August 28, 2022.

[61] "Bitcoin USD (BTC-USD)," Yahoo Finance, https://finance.yahoo.com/quote/BTC-USD/history?p=BTC-USD, Accessed August 28, 2022.

[62] Daniel Webber, "Cryptocurrency In Cross-Border Payments: After Coinbase's Success, Can Crypto Flourish Beyond Assets?" Forbes, https://www.forbes.com/sites/danielwebber/2021/04/21/cryptocurrency-in-cross-border-payments-after-coinbases-success-can-crypto-flourish-beyond-assets/?sh=1bdf95dc416f, Accessed August 28, 2022.

[63] Laurent Belsie, "El Salvador's Experiment with Bitcoin as Legal Tender," National Bureau of Economic Research, https://www.nber.org/digest-202207/el-salvadors-experiment-bitcoin-legal-tender, Accessed August 28, 2022.

[64] Timothy Smith, "Cryptocurrency Regulations Around the World," Investopedia, https://www.investopedia.com/cryptocurrency-regulations-around-the-world-5202122, Accessed August 28, 2022.

[65] Tobias Adrian and Rhoda Weeks-Brown, "Cryptoassets as National Currency? A Step Too Far," IMFBlog, https://blogs.imf.org/2021/07/26/cryptoassets-as-national-currency-a-step-too-far/, Accessed August 28, 2022.

[66] Russ Juskalian, "Inside the Jordan Refugee Camp That Runs on Blockchain."

[67] "Blockchain What Does It Mean for the UN," *United Nations*.

[68] United Nations Conference on Trade and Development. *Harnessing Blockchain for Sustainable Development: Prospects and Challenges*. United Nations, 2021. https://unctad.org/system/files/official-document/dtlstict2021d3_en.pdf.

[69] United Nations Conference on Trade and Development. *Harnessing Blockchain for Sustainable Development: Prospects and Challenges*.

[70] United Nations Conference on Trade and Development. *Harnessing Blockchain for Sustainable Development: Prospects and Challenges*.

governments to keep pace in their regulation efforts.[71] Security is also a large concern because if sensitive information such as government IDs, health records or tax information are being stored on the blockchain then they could be prone to attack by hackers.[72] Because the blockchain is replicated on multiple systems all over the network, it isn't always clear who may have access to it.[73]

Case Study

Jordan

As the use of blockchain spreads and its technology advances, Member States have begun, alongside the UN, to implement this technology for global humanitarian efforts.[74] One Member State where the use of blockchain has emerged is Jordan. In the small city of Azraq, Jordan, home to a large Syrian refugee camp, blockchain is being used to help refugees in the camp receive aid by the use of verified iris scans to pay for their food, rather than the use of identification cards.[75] Robert Opp, the World Food Programme's (WFP) former director of innovation, stated that the use of blockchain for humanitarian reasons is only the starting point, citing the positive effects blockchain can bring in terms of efficiency, effectiveness, and security.[76] Member States, Nongovernmental, and Intergovernmental organizations can leverage blockchain technology's record-keeping to combat corruption and waste by preventing the mal- and misappropriation of aid and relief funds.[77] This potential benefit has led the UN to employ a special advisor on blockchain at the UN Office for Project Services (UNOPS).[78]

The process of implementing blockchain technology in Jordan for the purpose of humanitarian aid began in early 2017 with the establishment of the Building Blocks program under the WFP.[79] This program is the largest program in the world which implementing blockchain technology, with implementation currently existing in Bangladesh and Jordan.[80] Currently, the program supports 106,000 Syrian refugees in Jordan with food assistance.[81] Working alongside UN Women, the Building Blocks program has saved the WFP USD 2.4 Million dollars in transaction fees alone in Jordan.[82] The implementation of blockchain technology has allowed for greater efficiency in delivering humanitarian cash-for-food aid. In the program's early stage, the WFP reported a 98 percent reduction in transaction fees, which made up 30 percent of WFP total aid in 2017.[83]

If the Building Blocks program continues on its trajectory of success in delivering assistance to refugees in Jordan, the adoption of blockchain technology is likely to spread to other Member States and sister UN agencies.[84] The main objective of implementing blockchain in Member States is the creation of digital wallets which can be owned and controlled by a user.[85] This wallet could store personal documents such as birth certificates, licenses, and passports

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[71] United Nations Conference on Trade and Development. *Harnessing Blockchain for Sustainable Development: Prospects and Challenges*.

[72] A. A. Monrat, O. Schelén and K. Andersson, "A Survey of Blockchain From the Perspectives of Applications, Challenges, and Opportunities," *IEEE Access* volume 7, (August 2019): 117134 - 117151, https://ieeexplore.ieee.org/abstract/document/8805074.

[73] A. A. Monrat, O. Schelén and K. Andersson, "A Survey of Blockchain From the Perspectives of Applications, Challenges, and Opportunities."

[74] Darryn Pollock, "Blockchain for Good: How the United Nations Is Looking to Leverage Technology," Forbes (Forbes Magazine, February 27, 2020), https://www.forbes.com/sites/darrynpollock/2020/02/27/blockchain-for-good-how-the-united-nations-is-looking-to-leverage-technology/?sh=5e0d75c9543d.

[75] Darryn Pollock, "Blockchain for Good: How the United Nations Is Looking to Leverage Technology."

[76] Darryn Pollock, "Blockchain for Good: How the United Nations Is Looking to Leverage Technology."

[77] Darryn Pollock, "Blockchain for Good: How the United Nations Is Looking to Leverage Technology."

[78] Darryn Pollock, "Blockchain for Good: How the United Nations Is Looking to Leverage Technology."

[79] Russ Juskalian, "Inside the Jordan Refugee Camp That Runs on Blockchain," MIT Technology Review (MIT Technology Review, April 2, 2020), https://www.technologyreview.com/2018/04/12/143410/inside-the-jordan-refugee-camp-that-runs-on-blockchain/.

[80] WFP, "Building Blocks," Building Blocks | WFP Innovation, 2022, https://innovation.wfp.org/project/building-blocks.

[81] WFP, "Building Blocks."

[82] WFP, "Building Blocks."

[83] Russ Juskalian, "Inside the Jordan Refugee Camp That Runs on Blockchain."

[84] Russ Juskalian, "Inside the Jordan Refugee Camp That Runs on Blockchain."

[85] Russ Juskalian, "Inside the Jordan Refugee Camp That Runs on Blockchain."

in order to validate claims of age and nationality for example with greater efficiency.[86] The humanitarian effort through blockchain technology in Jordan has shown to be successful in being more efficient in delivering cash-for-food aid to refugees in the country, and also effective in reducing transaction fees cost for the WFP. Due to this, the WFP is able to allocate more funding to the expansion and upkeep of blockchain use.

Actions Taken by the United Nations

In June 2018, the UN Office of Information and Communications Technology (OICT) published a document discussing blockchain technology and how the UN could apply it to sustainable development.[87] The UN estimates that over one billion people do not possess any form of legal identification.[88] In many Member States an official form of identification is required to access government programs or apply for work.[89] Sustainable Development Goal (SDG) 16.9 is to provide legal identification for all persons.[90] Blockchain in addition to the use of mobile phones could be an avenue to achieve this goal, as shown in the examples of Finland and New York City described above.[91] The provision of government services are also being examined as an area that could benefit from the efficiency and accessibility that blockchain affords users. Member States could use such technology to develop tax systems, property title databases, and even health records.[92]

The United Nations international Children's Education Fund (UNICEF) has expressed interest in cryptocurrencies that run on the blockchain.[93] In 2019 UNICEF founded the CryptoFund, which allows it to accept cryptocurrency donations and then invest them into blockchain-focused businesses.[94] One of the largest benefits of the CryptoFund is that it allows UNICEF to examine the underlying technology and better understand how it can be implemented on a larger scale.[95] The use of a blockchain for accepting donations and tracking finances also helps UNICEF to maintain an immutable paper trail of where their cryptocurrency is coming from and where it is going.[96]

While there are many potential benefits the blockchain could provide, it is not without deep concern from the international community.[97] In a policy brief published in June 2022, UNCTAD discussed the potential costs of an unregulated cryptocurrency market, particularly in developing Member States.[98] These potential costs include financial instability and ineffective capital controls.[99] More alarming, if these currencies become too widespread, they have the potential to unofficially replace domestic currencies which could severely undermine the monetary sovereignty of Member States, which would have huge implications of those Member States' economies.[100]

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[86] Russ Juskalian, "Inside the Jordan Refugee Camp That Runs on Blockchain."
[87] "Blockchain What Does It Mean for the UN," *United Nations*, June 2018, accessed May 5, 2022. https://unite.un.org/sites/unite.un.org/files/emerging-tech-series-blockchain.pdf.
[88] "Blockchain What Does It Mean for the UN," *United Nations*.
[89] "Blockchain What Does It Mean for the UN," *United Nations*.
[90] "Blockchain What Does It Mean for the UN," *United Nations*.
[91] "Blockchain What Does It Mean for the UN," *United Nations*.
[92] Melanie Swan, *Blockchain: Blueprint for a New Economy*, (O'Reilly, 2015).
[93] Darryn Pollock, "Blockchain For Good: How the United Nations Is Looking to Leverage Technology," Forbes Magazine, February 27, 2020, https://www.forbes.com/sites/darrynpollock/2020/02/27/blockchain-for-good-how-the-united-nations-is-looking-to-leverage-technology/?sh=631f6ea7543d.
[94] Darryn Pollock, "Blockchain For Good: How the United Nations Is Looking to Leverage Technology."
[95] Christina Lomazzo and Mehran Hydary, "The UNICEF CryptoFund What is it all about?" *United Nations*, December 23, 2020, https://www.unicef.org/innovation/stories/unicef-cryptofund.
[96] Darryn Pollock, "Blockchain For Good: How the United Nations Is Looking to Leverage Technology."
[97] United Nations Conference on Trade and Development, "*Policy Brief No. 100: All That Glitters Is Not Gold: The High Costs of Leaving Cryptocurrencies Unregulated*" United Nations, June 2022. https://unctad.org/system/files/official-document/presspb2022d8_en.pdf
[98] United Nations Conference on Trade and Development, "*Policy Brief No. 100: All That Glitters Is Not Gold: The High Costs of Leaving Cryptocurrencies Unregulated*"
[99] United Nations Conference on Trade and Development, "*Policy Brief No. 100: All That Glitters Is Not Gold: The High Costs of Leaving Cryptocurrencies Unregulated*"
[100] United Nations Conference on Trade and Development, "*Policy Brief No. 100: All That Glitters Is Not Gold: The High Costs of Leaving Cryptocurrencies Unregulated*"

Conclusion

While blockchain technology was created to help facilitate the rise of de-centralized currency, it has shown itself to be a very flexible system that can aid the UN in achieving its SDGs. As blockchain is more widely adopted in the private sector it is important that Member States keep up with the changing technology so they can understand how to apply it for public service use.[101] Member States will also need to grapple with the integration of cryptocurrencies into the global and their national financial systems, and the potential economic consequences of both too much and not enough integration. Developing coherent national legislative frameworks is necessary to ensure that citizens within a Member State are informed about the uses and limitations of blockchain currencies, and that each Member State has a concrete position from which it can engage with the rest of the global financial community in this sector.

One of the greatest impediments to blockchain technology is helping developing Member States to utilize it at a similar level as developed Member States.[102] Without properly accounting for challenges that are unique to developing Member States, there is a risk that the technology gap between developing and developed Member States will continue to widen. While blockchain allows for large scale systems that can benefit the citizens of Member States, it is a technology that will take years to fully develop and design legislation around.

Committee Directive

The increasing presence of cryptocurrencies in the global economy shows that they are viewed by some as legitimate forms of currency to be used for trade. When considering how the blockchain can affect the global market one needs to understand the possibilities but also the limitations of this technology. How could cryptocurrencies facilitate trade in a way standard currency cannot? What are the barriers to entry for using cryptocurrency? How do we ensure all Member States are able to access this technology? What legislation may be needed to regulate this new technology? It is this committee's directive to review and establish recommendations to advance this goal, in hopes of exploring and extending productive current and future uses of blockchain technologies and cryptocurrencies for all its Member States.

[101] Kaleb Davis, "The Economic Impact of Cryptocurrency," GlobalEDGE, Last modified November 3, 2021, https://globaledge.msu.edu/blog/post/57042/the-economic-impact-of-cryptocurrency.

[102] United Nations Conference on Trade and Development. *Harnessing Blockchain for Sustainable Development: Prospects and Challenges*.

II. Expanding Equitable Access to Advanced Computing Technologies in Developing Member States

Introduction

As rapid technological innovations and developments usher in what some have called the Fourth Industrial Revolution, the international community continues to struggle ensuring equitable access to advanced computing technologies.[103] The era is marked by critical breakthroughs in advanced computing technologies such as Artificial Intelligence (AI), advanced analytics, High Performance Computing (HPC) (also known as supercomputers), and the Internet of Things (IoT).[104] Advanced computing technologies enable innovations in many fields such as climate science, seismology, manufacturing, pharmacology, biotechnology, physics, and mathematics.[105] Developments within these fields will transform "virtually all industries and sectors."[106] Despite the potential of advanced computing technologies, least developed countries (LDCs) lag behind developed and developing Member States across a wide range of dimensions in digital development.[107]

In 2020, the estimated percentage of individuals using the internet in developed Member States was 90 percent, whereas the same indicator stood at only 27 percent for LDCs.[108] Although the "technology gap" between LDCs and developed Member States has seen year-over-year (YoY) improvement, the high costs related to advanced computing technologies may prove prohibitive to LDCs and threaten to widen the gap.[109] Some advanced computing technologies, such as AI, have the potential to acutely harm Member States with a low skilled workforce through automation.[110] The collaboration of the international community is crucial to mitigate the risks associated with widening the technology gap, as failing to do so will exacerbate wealth inequalities.[111] Similar to previous technological revolutions, the Member States that have benefited from advanced computing technologies are exclusively those that are able to afford and access these technologies.[112]

History

Many of today's technological innovations are built upon the advancements made during the Third Industrial Revolution.[113] The Third Industrial Revolution transitioned analog and mechanical electronics to digital electronics, aptly receiving the name the Digital Revolution.[114] The beginning of the Digital Revolution is marked by the

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[103] Chong Guan, Zhiying Jiang, and Ding Ding. "Chapter 1: The Fourth Industrial Revolution (Industry 4.0)." *The Emerging Business Models.* June, 2020, accessed May 15, 2022. https://www.worldscientific.com/doi/pdf/10.1142/9789811203930_0001

[104] Adamou Hamza, and Azanzi Jiomekong. "High Performance Computing in Resource Poor Settings: An Approach based on Volunteer Computing." *International Journal of Advanced Computer Science and Applications.* January 1, 2020, accessed May 15, 2022.

[105] Digital EU, "A digital economy and society powered by High-Performance Computing." *European Commission.* January 26, 2022, accessed May 15, 2022. https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-powered-high-performance-computing-brochure

[106] Digital EU, "A digital economy and society powered by High-Performance Computing."

[107] International Telecommunication Union, "Measuring digital development: Facts and figures 2021." *ITU-D ICT Statistics.* January 1, 2022, accessed May 15, 2022. https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf

[108] International Telecommunication Union, "Measuring digital development: Facts and figures 2021."

[109] Chong Guan, Zhiying Jiang, and Ding Ding. "Chapter 1: The Fourth Industrial Revolution (Industry 4.0)."

[110] Cristian Alonso, Siddharth Kothari, and Sidra Rehman, "How Artificial Intelligence Could Widen the Gap Between Rich and Poor Nations." *International Monetary Fund.* December 2, 2020, accessed May 15, 2022. https://blogs.imf.org/2020/12/02/how-artificial-intelligence-could-widen-the-gap-between-rich-and-poor-nations/

[111] Shamika N. Sirimanne. "What is 'Industry 4.0' and what will it mean for developing countries?" *United Nations Conference on Trade and Development.* May 3, 2022, accessed May 15, 2022. https://unctad.org/news/blog-what-industry-40-and-what-will-it-mean-developing-countries

[112] Chong Guan, Zhiying Jiang, and Ding Ding. "Chapter 1: The Fourth Industrial Revolution (Industry 4.0)."

[113] Chong Guan, Zhiying Jiang, and Ding Ding. "Chapter 1: The Fourth Industrial Revolution (Industry 4.0)."

[114] Mohajan, Haradhan. "Third Industrial Revolution Brings Global Development." *Journal of Social Sciences and Humanities.* December 6, 2021, accessed May 15, 2022. https://mpra.ub.uni-muenchen.de/110972/1/MPRA_paper_110972.pdf.

invention of the transistor on December 16, 1947, in the United States (US) of America.[115] The invention of the transistor catalyzed the development of many other critical innovations that defined the Digital Revolution such as the mainframe computer, microprocessor, world-wide-web, internet, WiFi, e-commerce, personal computers, and later smartphones.[116] Many of the technologies responsible for the Digital Revolution were developed in the United States, and the US military was directly responsible for several technological innovations including the personal computer, the internet, and Global Positioning System (GPS).[117] Silicon Valley, a region on the west coast of the US, is considered the global center of technology innovation in the world.[118] Japan was also a major driver of the Digital Revolution, bringing the world such inventions as the Compact Disk (CD), Digital Video Disk (DVD), laptop, 3-D Printing, and flash memory.[119] Additionally, Germany was an early pioneer of computing technology with its Z3, which in 1941 was the first programmable computer.[120] In more recent years, the People's Republic of China has become a leader in computing technology, especially in manufacturing, occupying a vital place in the global high-technology and computing value chain. China is currently the largest producer and exporter of consumer electronics, producing more than 90 percent of mobile phones (1.8 billion units) and computers (300 million units) as of 2018.[121]

Semiconductors, once at the forefront of technological innovation, are now ubiquitous.[122] Semiconductors are present in pocket calculators, airplanes, trains, cars, and almost all electronics.[123] The remarkable importance of semiconductors as a component to various other products has been highlighted by a shortage of semiconductors caused by the COVID-19 pandemic.[124] The downstream impacts of the "chip shortage" was most impactful for the automotive industry, causing automakers to cut production.[125] In 2021 alone, some of the largest auto manufacturers in the world saw their production of new vehicles reduced by more than 1 million units as a result of their inability to secure semiconductors for the various computerized functions that are now essential for advanced automobiles.[126] The chip shortage's impacts extend beyond personal vehicles: dire warnings have been issued by government agencies about the impact of the shortage on manufacturing writ large, most notably a US Department of Commerce report that noted, "If a COVID outbreak, a natural disaster or political instability disrupts a foreign semiconductor facility for even just a few weeks, it has the potential to shut down a manufacturing facility in the US, putting American workers and their families at risk."[127]

The internet has revolutionized every nearly facet of life – education, communication, entertainment, information sharing and nearly all sectors of the economy have leveraged the internet to become more effective, efficient, and

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[115] Nokia Bell Labs, "1956 Nobel Prize in Physics - John Bardeen, Walter H Brattain and William Shockley," *Nokia*. Accessed July 16, 2022. https://www.bell-labs.com/about/awards/1956-nobel-prize-physics

[116] Mohajan, Haradhan. "Third Industrial Revolution Brings Global Development."

[117] "A growing number of governments hope to clone America's DARPA," *The Economist*. June 3, 2021, accessed July 16, 2022. https://www.economist.com/science-and-technology/2021/06/03/a-growing-number-of-governments-hope-to-clone-americas-darpa

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[121] Hongyu, Bianji, "China remains world's largest producer, consumer, exporter of consumer electronics," *People's Daily Online*. April 9, 2019, accessed July 17, 2022. http://en.people.cn/n3/2019/0409/c90000-9564908.html

[122] Das, Saswato R., "The chip that changed the world," *New York Times*. September 19, 2008, accessed July 17, 2022. https://www.nytimes.com/2008/09/19/opinion/19iht-eddas.1.16308269.html

[123] Das, Saswato R., "The chip that changed the world."

[124] Stewart, Duncan, Hamling, Dan, Bucallie, Ariane, and Crossan, Gillian "My kingdom for a chip: The semiconductor shortage extends into 2022," *Deloitte Insights*. December 1, 2021, accessed July 17, 2022. https://www2.deloitte.com/xe/en/insights/industry/technology/technology-media-and-telecom-predictions/2022/semiconductor-chip-shortage.html

[125] Stewart, Duncan, Hamling, Dan, Bucallie, Ariane, and Crossan, Gillian "My kingdom for a chip: The semiconductor shortage extends into 2022."

[126] Craig Cole, "Why the heck is there still a chip shortage for cars?" *CNET*, February 11, 2022, https://www.cnet.com/roadshow/news/features/automotive-cars-computer-chip-shortage-2022/.

[127] Cole, "Why the heck is there still a chip shortage for cars?" *CNET*.

innovative.[128] The innovations, and efficiencies of digital technologies impacted every sector, improving productivity, and raising the standard of living.[129] The easy access to articles, scientific journals, videos, tutorials, and the ability to communicate freely through the internet has made the internet a "vital tool for exchanging information and education."[130] Global access to the internet was further accelerated due to the widespread adoption of smartphones, whose top uses are instant messaging, social media usage, and web browsing.[131] The internet became an integral part of developed economies; advertising, e-banking, e-commerce, and outsourcing became pillars of the internet economy enabling developed economies to function with increased efficiency.[132] The digital economy has become increasingly integrated and integral to the global economy, constituting 15.5 percent of the global GDP.[133]

While the Third Industrial Revolution made the world "about 10 times wealthier," it has coincided with a stark rise in inequality.[134] Although wages and employment improved in correlation to the rise of the internet, the most beneficial impacts were felt in regions that were already affluent.[135] Despite the great economic promise, global inequality continued to worsen, only improving once between 2008 and 2013.[136] It is estimated that a ten percent increase in mobile broadband penetration in Africa would result in a 2.5 percent increase in the GDP per capita on the continent.[137] In addition, it is estimated that a one percent increase in the share of internet users in sub-Saharan Africa would increase the per capita growth by 0.1 to 0.4 percent.[138] Analysts warn, even in developed economies, income inequality might increase if disadvantaged and rural populations have limited access to the internet.[139]

Current Situation

The ubiquity of many technologies developed during the Digital Revolution were crucial as Member States dealt with the COVID-19 pandemic.[140] Quarantine and lockdowns forced many workers to stay home.[141] Robust access to the internet enabled citizens of developed Member States to continue working-from-home (WFH) via digital video conferencing tools.[142] WFH reduced commute times for workers while having minimal impact on their productivity.[143] Similarly, as hospitals became increasingly dangerous due to widespread transmission of the virus,

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[128] Dentzel, Zaryn, "How the Internet Has Changed Everyday Life," *BBVA Open Mind*. March 2013, accessed July 17, 2022. https://www.bbvaopenmind.com/en/articles/internet-changed-everyday-life.

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[132]Shane Greenstein. "What has the Internet Done for the Economy?" *KelloggInsight.* March 2, 2011, accessed May 15, 2022. https://insight.kellogg.northwestern.edu/article/what_has_the_internet_done_for_the_economy

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[135] Shane Greenstein. "What has the Internet Done for the Economy?"

[136] The World Bank, "Yes, Global Inequality Has Fallen. No, We Shouldn't Be Complacent," *The World Bank*. October 23, 2019, accessed July 17, 2022, https://www.worldbank.org/en/news/feature/2019/10/23/yes-global-inequality-has-fallen-no-we-shouldnt-be-complacent.

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[138] International Monetary Fund, "Low Internet Access Driving Inequality," *IMF Blog*. June 29, 2020, accessed July 17, 2022. https://blogs.imf.org/2020/06/29/low-internet-access-driving-inequality/.

[139] International Monetary Fund, "Low Internet Access Driving Inequality," *IMF Blog*.

[140] N. Romesh Wijesooriya, Vimal Mishra, Paul L.P. Brand, and Bruce K Rubina. "COVID-19 and telehealth, education, and research adaptations." *Pediatric respiratory reviews vol. 35.* June 18, 2020, accessed May 15, 2022. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7301824/.

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[142] Oxford University Press. "Education: The journey towards a digital revolution." *OUP*. 2021, accessed May 15, 2022. https://global.oup.com/news-items/OUP_DigitalReportFinal.pdf

[143] Gibbs, Michael and Mengel, Friederike and Siemroth, Christoph, "Work from Home & Productivity: Evidence from Personnel & Analytics Data on IT Professionals."

healthcare providers were able to continue providing care through telehealth technologies.[144] However, health inequalities persist for low and middle income Member States due to the high costs and limited access of 4G internet.[145] As the pandemic caused a surge in demand for mental health resources, access to mental health professionals was severely limited.[146] The confluence of these factors led people to turn towards virtual therapy, which provided significant and effective improvement for those suffering from mental illness.[147] Researchers investigating COVID-19 were able to utilize the internet to enhance collaboration using virtual collaboration tools (e.g. Slack), and datasets from studies were published online where they could be analyzed by many researching at once.[148]

AI has the potential to deliver significant economic growth.[149] It is estimated that AI will contribute an additional 1.2 percent to global gross domestic product (GDP) growth per year – that culminates to USD 13 Trillion by the year 2030.[150] However, labor automation and other AI-enabled technologies are likely to unevenly impact Member States and workers.[151] Member States with strong preparedness for AI are likely to see an additional "20 to 25 percent in net economic benefits," whereas developing Member States will likely "only capture 5 to 15 percent," a disparity that will further deepen the inequality between the two groups. [152]

Actions Taken by The United Nations

The United Nations (UN) has addressed the topic of equitable access to technologies and has made efforts to encourage technology sharing between Member States. In 2015, the UN General Assembly (GA) adopted the 2030 Agenda for Sustainable Development establishing "regional and international cooperation […] and access to science, technology and innovation and enhanced knowledge sharing on mutually agreed terms [...], including on concessional and preferential terms" to be a goal for the organization to facilitate.[153] The agenda further announces the establishment of the Technology Facilitation Mechanism to support the Sustainable Development Goals (SDGs).[154]

In more recent years, the UN has reaffirmed the organization's commitment to technology sharing during the COVID-19 pandemic.[155] On September 15, 2020, the UNGA adopted resolution A/RES/74/306 as a comprehensive response to the pandemic.[156] The resolution called upon all Member States to enhance "access to science,

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[144] N. Romesh Wijesooriya, Vimal Mishra, Paul L.P. Brand, and Bruce K Rubina. "COVID-19 and telehealth, education, and research adaptations."

[145] Babatunde, A. O., Abdulazeez, A. O., Adeyemo, E. A., Uche-Orji, C. I., and Saliyu, A. A. "Telemedicine in Low and Middle Income Countries: Closing or Widening the Health Inequalities Gap?" *European Journal of Environment and Public Health*. December 19, 2020, accessed July 17, 2022. https://www.ejeph.com/download/telemedicine-in-low-and-middle-income-countries-closing-or-widening-the-health-inequalities-gap-10777.pdf

[146] Caron, Christina. "'Nobody Has Openings': Mental Health Providers Struggle to Meet Demand." New York Times. February 17, 2021, accessed June 24, 2022. https://www.nytimes.com/2021/02/17/well/mind/therapy-appointments-shortages-pandemic.html.

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[149] James Manyika, and Jacques Bughin. "The promise and challenge of the age of artificial intelligence." *McKinsey Global Institute.* October 15, 2018, accessed May 15, 2022.

[150] James Manyika, and Jacques Bughin. "The promise and challenge of the age of artificial intelligence."

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[152] Jacques Bughin, Jeongmin Seong, James Manyika, Michael Chui, and Raoul Joshi. "Notes from the AI frontier: Modeling the impact of AI on the world economy."

[153] United Nations General Assembly resolution 1, Transforming our world: the 2030 Agenda for Sustainable Development, A/RES/70/1, (October 21, 2015), https://sdgs.un.org/2030agenda

[154] United Nations General Assembly resolution 1.

[155] United Nations General Assembly resolution 306, Comprehensive and coordinated response to the coronavirus disease (COVID-19) pandemic, A/RES/74/306, (September 11, 2020), https://daccess-ods.un.org/tmp/6910665.0352478.html.

[156] United Nations General Assembly resolution 306.

innovation, technologies, technical assistance and knowledge e-sharing" utilizing "existing mechanisms, especially with developing countries," specifically to counter the pandemic and advancing the SDGs.[157]

On August 1st, 2021 the Economic and Social Council (ECOSOC) adopted resolution E/RES/2021/29 upon the recommendation of the CSTD.[158] The resolution addresses the need for developing Member States to benefit from scientific and technological innovations, and proposes all Member States "review and share technology foresight outcomes, including pilot projects, with other Member States, making use of existing regional mechanisms."[159] The resolution also aims to "raise awareness among policymakers [...] to identify particular opportunities for developing countries to benefit" from technological innovations.[160]

Case Study

Artificial Intelligence and Medical Technologies

Artificial intelligence is revolutionizing the healthcare sector; clinical trials, nursing, surgeries, and nearly every aspect of healthcare will be utilizing AI, creating a more efficient system that provides patients with better outcomes.[161] AI-enabled medical devices have seen rapid improvements recently, as of October 2021, nearly 350 medical devices have been approved by the US Food and Drug Administration (FDA), with approximately 100 having been approved in 2020.[162] AI is currently utilized in various different medical devices and can be used to support clinicians to more accurately understand information – chiefly in radiology (medical imaging) and cardiology (disorders of the heart and cardiovascular system).[163]

Within radiology (and oncology), AI has proven to be a driving force improving outcomes for patients, in a study IBM's Watson (an AI technology) successful diagnosis rate for lung cancer is 90 percent, whereas human doctors only stood at 50 percent.[164] This technology is beginning to find its way into developing countries, increasing the effectiveness of doctors in their clinics and, importantly, allowing them to reach farther outside those clinics into areas where physical access may be limited or sporadic.[165] For patients with heart failure, 30 percent of patients that are hospitalized will be readmitted within 90 days of discharge.[166] An AI-driven wearable sensor is able to predict if a patient will require readmission 80 percent of the time with the average detection happening 10 days prior to the

[157] United Nations General Assembly resolution 306.
[158] Economic and Social Council resolution 29, Science, technology and innovation for development, E/RES/2021/29, (July 22, 2021), https://documents-dds-ny.un.org/doc/UNDOC/GEN/N20/236/00/PDF/N2023600.pdf?OpenElement.
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[161] Christiansen, Philip, et al, "ARTIFICIAL INTELLIGENCE: Healthcare's New Nervous System," *Accenture Health*. July 30, 2020, accessed July 17, 2022. https://www.accenture.com/_acnmedia/pdf-49/accenture-health-artificial-intelligence.pdf.
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[166] Stehlik, Josef, Schmalfuss, Carsten, Bozkurt, Biykem,Nativi-Nicolau, Jose, Wohlfahrt, Peter, et al. "Continuous Wearable Monitoring Analytics Predict Heart Failure Hospitalization" *Circulation: Heart Failure*. February 25, 2020, accessed July 17, 2022. https://www.ahajournals.org/doi/10.1161/CIRCHEARTFAILURE.119.006513

readmission.[167] This wearable is incredibly important as being able to detect "changes in the heart sufficiently early will allow physicians to initiate prompt interventions" that could prevent the condition from worsening and avoid rehospitalization.[168] AI in conjunction with robotics is also improving care for patients - minimally invasive AI-powered robotics provides guidance for minimally invasive spinal surgeries.[169] In regular spinal surgeries, around 73 percent of implants are placed correctly, whereas surgeries assisted by minimally invasive AI-powered robotics drastically improves success rates to 98 from 89 percent.[170] In addition, patients that had a robot assisted surgery recover faster, have reduced pain, and lower complication rates.[171]

In addition to AI, the IoT is also proving to become incredibly useful in improving healthcare.[172] As of 2020, it is estimated that there are over 450 million internet connected medical devices, and this number is expected to grow to 700 million by 2025.[173] IoT medical devices, especially when in conjunction with artificial intelligence can provide greatly improved experiences for patients.[174]

The healthcare sector provides an excellent example of the disparity in access between developed and developing Member States. According to the UNESCO International Bioethics Committee (IBC), many developing Member States lack even the storage capacities required to keep the types and amounts of data necessary to set up and run the systems that developed Member States are already taking full and growing advantage of.[175] Moreover, the same IBC report noted that, in addition to the prohibitive cost of AI healthcare infrastructure, the technology's current applications are geared more toward the types of diseases and health conditions found in developed Member States, and thus may not yet be capable of functioning to their fullest potential in developing Member States.[176]

Conclusion

Digital technologies have radically changed the world, alleviated a wide range of issues across all sectors and fields, and catalyzed enormous economic growth. However, the advent of these new technologies further widened the technological and economic gaps between developing and developed Member States. The international community has prioritized technology sharing and equitable access to technology, however a large and growing gap remains between Member States.

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[167]Stehlik, Josef, Schmalfuss, Carsten, Bozkurt, Biykem,Nativi-Nicolau, Jose, Wohlfahrt, Peter, et al. "Continuous Wearable Monitoring Analytics Predict Heart Failure Hospitalization"

[168] Stehlik, Josef, Schmalfuss, Carsten, Bozkurt, Biykem,Nativi-Nicolau, Jose, Wohlfahrt, Peter, et al. "Continuous Wearable Monitoring Analytics Predict Heart Failure Hospitalization"

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[172] Taylor, Karen, Steedman, Mark, Sanghera, Amen, and Thaxter, Matthew. "Medtech and the Internet of Medical Things: How connected medical devices are transforming health care," *Deloitte Centre for Health Solutions*. July 2018, accessed July 18, 2022. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-medtech-iomt-brochure.pdf.

[173] Patel, Mark, Chui, Michael, and Collins, Mark. "The Internet of Things: Catching up to an accelerating opportunity," *McKinsey & Company*. November 2021, accessed July 18, 2022. https://www.mckinsey.com/~/media/mckinsey/business%20functions/mckinsey%20digital/our%20insights/iot%20value%20set%20to%20accelerate%20through%202030%20where%20and%20how%20to%20capture%20it/the-internet-of-things-catching-up-to-an-accelerating-opportunity-final.pdf.

[174] Taylor, Karen, Steedman, Mark, Sanghera, Amen, and Thaxter, Matthew. "Medtech and the Internet of Medical Things: How connected medical devices are transforming health care," *Deloitte Centre for Health Solutions*. July 2018, accessed July 18, 2022. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-medtech-iomt-brochure.pdf.

[175] UNESCO Digital Library, "Report of the IBC on big data and health," p.10, https://unesdoc.unesco.org/ark:/48223/pf0000248724.

[176] UNESCO Digital Library, "Report of the IBC on big data and health," p.10, https://unesdoc.unesco.org/ark:/48223/pf0000248724.

As new advanced computing technologies are being developed, their potential and benefit is undeniable. However, the benefits of these technologies almost exclusively remain in developed Member States. To fulfill the SDGs, this growing and undeniable disparity must be addressed by the international community to ensure that all Member States are able to benefit from the technological developments.

Committee Directive

Expanding equitable access to advanced computing technologies, especially for developing Member States is imperative for the global economy and outlined by the SDGs. Technology sharing, knowledge transfers, and addressing unequal access to advanced computing technologies are a priority for the UN. Delegates should conduct thorough research to develop an understanding and perspective on how their and other Member States might answer the following: What advanced computing technologies should be prioritized? How might delegates encourage and support the global community to close the 'technology gap' between developing and developed Member States?

Annotated Bibliography

I. Exploring the Impact of Blockchain Currencies and Their Role in the Global Market

Kuepper, Justin. "How Cryptocurrencies Affect the Global Market." The Balance. The Balance, February 5, 2022. https://www.thebalance.com/how-cryptocurrencies-affect-the-global-market-4161278.

This article by financial analyst and journalist Justin Kuepper analyzedß the effects of cryptocurrency and the use of blockchain technology on the global market economy. The article offers an overview of cryptocurrency and the use of blockchain as a whole and the global appeal to the currency. It also includes responses by government banks and reserves to the issue. The article also reviewed about the impact of blockchain and cryptocurrency on global investments.

Fortune Business Insights. "Cryptocurrency Market Size, Growth & Trends: Forecast [2028]." Cryptocurrency Market Size, Growth & Trends | Forecast [2028], 2021. https://www.fortunebusinessinsights.com/industry-reports/cryptocurrency-market-100149.

Fortune Business Insights presented a comprehensive in-depth analysis of the impact of cryptocurrency and blockchain on the global market and its trends. The article showed various sources of empirical data to show trends of cryptocurrency and blockchain, and how it will continue through the year 2028 at the current rates. Driving factors and restraining factors are analyzed to determine the role of blockchain currencies in the evolving global market economy. The data presented in this article is particularly useful to the topic.

Harwick, Cameron. "Cryptocurrency and the Problem of Intermediation." The Independent Review 20, no. 4 (2016): 569–88. http://www.jstor.org/stable/44000162.

The rise of cryptocurrency and the use of blockchain technology and the claims that it will play a large, significant role in the international monetary system are outlined by Cameron Harwick in academic journal, *The Independent Review*. The author presents the problem of intermediation with cryptocurrencies due to the lack of a central issuer. The information presented in this article of the journal offers key insight to the rise of cryptocurrency and how it affects the global market.

Catalini, Christian. "Blockchain Technology and Cryptocurrencies: Implications for the Digital Economy, Cybersecurity, and Government." Georgetown Journal of International Affairs 19 (2018): 36–42. http://www.jstor.org/stable/26567525.

The *Georgetown Journal of International Affairs* is a peer-reviewed biannual journal published by Johns Hopkins University. Written by the founder of the MIT Cryptoeconomics Lab, Christian Catalini, he analyzes the rise of interest in blockchain technology associated with cryptocurrency and the implications this has on the future of the global economy. He dives into how this technology evolves the arising digital market and the role that cryptocurrency and blockchain technology will play in the new emerging market.

Holtmeier, Moritz, and Philipp Sandner. "The Impact of Crypto Currencies on Developing Countries." FSBC Working Paper. Frankfurt School Blockchain Center, December 2019. http://explore-ip.com/2019_The-Impact-of-Crypto-Currencies-on-Developing-Countries.pdf

Moritz Holtmeier and Philipp Sandner's December 2019 working paper published by the Frankfurt School Blockchain Center in Germany provides a unique perspective to the effects of blockchain/crypto currencies on developing nations. The research and data presented in the paper provides supplemental information to delegates who may be representing developing nations.

II. Expanding Equitable Access to Advanced Computing Technologies in Developing Member States

‘Utoikamanu, Fekitamoeloa. “Closing the Technology Gap in Least Developed Countries.” United Nations. United Nations, December 2018. https://www.un.org/en/chronicle/article/closing-technology-gap-least-developed-countries.

> This article is from the UN Chronicle written by former UN Under-Secretary General and High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, Fekitamoeloa ‘Utoikamanu. It details the UN efforts to close the gap of computing technology in many of the least developed states. Many relevant statistics are provided along with the Secretary-General’s Strategy on New Technologies. The information presented is relevant to the topic.

Rodrik, Dani. “Will New Technology in Developing Countries Be a Help or a Hindrance?” World Economic Forum, October 9, 2018. https://www.weforum.org/agenda/2018/10/will-new-technologies-help-or-harm-developing-countries/.

> This 2018 article by Professor Dani Rodrik in the World Economic Forum approaches the expansion of computing technology to developing countries with the question of whether or not it will actually help developing nations. The article provides well-documented studies on the spread of technology in developing states and the impact that it has had in transforming agriculturally based economies. This article is key in presenting the challenges that face solutions to expanding access to advanced technology in developing states.

Borgen Project. “How Technology Is Helping Economies in Developing Countries.” The Borgen Project. Borgen Project https://borgenproject.org/wp-content/uploads/The_Borgen_Project_Logo_small.jpg, December 23, 2019. https://borgenproject.org/how-technology-is-helping-economies/.

> Compiled by well-known non-governmental organization (NGO) the Borgen Project, this blog analyzes the positive effects of expanding equitable access to computing technology can have on the economies of developing nations. Statistics from the article show this implementation has been successful in nations such as Nigeria, Egypt, and Indonesia. The article also lays out how expansion of technology can reduce cost of production which in turn encourages new business.

StateUniversity. “The International Gap in Technology - the Digital Divide in Education, Education and Technology in the Balance.” StateUniversity.com, 2022. https://education.stateuniversity.com/pages/2124/International-Gap-in-Technology.html.

> StateUniversity explores the international gap of technology in developing nations in crucial sectors such as education in this research. The divide is measured through various sources of data including internet access and access to other information and communications technologies (ICT). The article argues that it is a necessity to bridge the technology gap in the education sector for developing states. The information and data presented in the article is crucial to the topic.

“Commission on Science and Technology for Development (CSTD) Sustainable Development Knowledge Platform.” United Nations. United Nations. Accessed May 15, 2022. https://sustainabledevelopment.un.org/index.php?page=view&type=30022&nr=2846&menu=3170.

> The Sustainable Development Knowledge Platform is part of the United Nations Department of Economic and Social Affairs (UN DESA). This organized note from the platform details the work of the Commission of Science and Technology on Development (CSTD) on providing equitable access of technology to all through the COVID-19 pandemic and in the post-pandemic world. This provides important and recent information to delegates on current efforts through the pandemic to expand access to technologies.