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Digitalization of Social Impact for Social Economy Organizations

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ABSTRACT
Social impact accounting is a significant issue for social economy organizations (SEOs), such as associations, foundations, social enterprises, social cooperatives, and other nonprofit organizations that aim to be transparent and accountable. The academic accounting literature addresses theoretical and empirical contributions on the methods and tools of measurement, assessment, and reporting of social impact. However, there are few contributions on the emerging topic of the digitalization of the social impact accounting process. Preliminary research analyses consider digital tools such as distributed ledgers including blockchain, big data, artificial intelligence, and the Internet of Things as innovations that allow SEOs to be more accountable and transparent with their social impacts and value created. The increased attention to these technologies opens the way for new and multidisciplinary research questions on this topic.

RÉSUMÉ
La comptabilité de l'impact social est une question importante pour les organisations de l'économie sociale (OES) telles que les associations, les fondations, les entreprises sociales, les coopératives sociales et d'autres organismes sans but lucratif qui visent à être transparents et responsables. La littérature comptable académique traite déjà des contributions théoriques et empiriques aux méthodes et outils de mesure, d'évaluation et de compte rendu de l'impact social. Cependant, il existe peu de contributions sur le récent sujet de la numérisation de la comptabilité sociale. Des analyses de recherche préliminaires considèrent les outils numériques tels que les registres distribués, les chaînes de blocs, les mégadonnées, l'intelligence artificielle et l'Internet des objets comme étant des innovations permettant aux OES d'être plus responsables et transparentes par rapport à leurs impacts sociaux et à la valeur qu'elles créent. L'attention accrue portée à ces technologies ouvre la voie à de nouvelles questions de recherche multidisciplinaires sur ce sujet.

Keywords / Mots clés : social impact, social economy, artificial intelligence, blockchain, big data / impact social, économie sociale, intelligence artificielle, chaîne de blocs, mégadonnées

INTRODUCTION

The European Small and Medium-sized Enterprises Executive Agency identifies technology categories such as distributed ledger technology (DLT)—including blockchain, big data, Internet of Things (IoT), and artificial intelligence (AI)—as "key enablers" in the social economy in the next 15 years (Gagliardi, Psarra, Wintjes et al., 2020, p. 143). Digital innovation (or digitalization) is an opportunity for social economy organizations (SEOs) to improve their accountability, transparency, and impact. Social economy organizations are organizations "that prioritize social economy objectives over their economic ones" (Mook, Whitman, Quarter, & Armstrong, 2015, p. 3). Non-financial information must be measured, evaluated, and reported using tools that are useful for improving the capabilities of these organizations to pursue social purposes in a sustainable way. This article introduces these technologies, outlines how digital tools could support SEOs, and then identifies issues that could be analyzed in further research studies.

EXAMPLES OF DIGITAL INNOVATION

Distributed ledger technology, including blockchain, is "a system of electronic records that enables independent entities to establish a consensus around a shared 'ledger'—without relying on a central coordinator to provide the authoritative version of the records. They are used to collect, store, and transfer valuable records securely." (Gagliardi et al., 2020, p. 12). In the social economy, DLT and blockchain are applied mostly in field actions in "support of mass migration, social energy, community banking, finance and distributed democratic management" (Gagliardi et al., p. 12). Therefore, blockchain could positively affect citizen philanthropy and social entrepreneurship at large (Jain & Simha, 2018), charitable and nonprofit organizations such as charity shops (Elsden, Symons, Bunduchi, Speed, & Vines, 2019; Howson, 2021), social projects (Al-Saqaf & Seidler, 2017), humanitarian operations management (Hunt, Narayanan, & Zhuang, 2022), volunteer service (Zhou, Wu, & Zhou, 2017), social impact (Seyedsayamdost & Vanderwal, 2020), and the achievement of sustainable goals, i.e., fighting and breaking poverty, reducing financial exclusion in the global south (Kshetri, 2017a, 2017b), and achieving the other UN 2030 sustainable development goals (Parmentola, Petrillo, Tutore, & De Felice, 2021; Tomlinson, Boberg, Cranefield, Johnstone, Luczak-Roesch, Patterson, & Kapoor, 2021; de Villiers, Kuruppu, & Dissanayake, 2021). Several benefits stem from blockchain operational principles (i.e., decentralization, transparency, equality, and accountability) ensuring that all participants are treated equally and are not abused by a central or more powerful element. Another benefit based on the autonomous and decentralized nature of blockchain is the financial inclusion of people on a global scale (Galen, Brand, Boucherle et al., 2018). There is also widespread interest in exploring the potential of blockchain as an efficient donation tracking system for charitable purposes (Avdoshin & Pesotskaya, 2021; Saleh, Avdoshin, & Dzhonov, 2019; Shaheen, Hamed, Zaghloul et al., 2021; Singh, Rajak, Mistry, & Raut, 2020; Sirisha, Agarwal, Monde, Yadav, & Hande, 2019).

Big data is defined as "voluminous amounts of structured and unstructured data. The potential value of big data is unlocked only when leveraged to drive decision-making, through data management and analytics. Big Data Analytics refers to techniques used to analyze and acquire intelligence from big data" (Gagliardi et al., 2020, p. 12). Interestingly, big data are recognized as a valuable resource to quantify the social context and to measure the impact of the actions implemented (Gibin

& Maturo, 2020). However, one of the major burdens of using big data for social problems is the lack of adequate data governance standards (Desouza & Smith, 2014). Challenging and critical issues about big data include privacy and security for most of the social economy field of activities, e.g., healthcare, social assistance, education. Also, big data could be considered a positive innovation for the nonprofit sector at large, e.g., from the data feminism perspective (Sandberg, Hand, & Russo, 2022), and for social impact (Lytras & Visvizi, 2019) and social impact assessment (Sherren, Parkins, Smit, Holmlund, & Chen, 2017).

Artificial intelligence "refers to the computational, inferential, and learning ability of digital tools (machines) to process, interpret and act upon data and information like humans. Expectations regarding the successful application of AI to the social economy are only just forming" (Gagliardi et al., 2020, p. 13). For instance, the use of chatbots—that is software that simulates human-like conversations with users via text messages—seems to positively influence individual morality in charitable giving, thus suggesting a practical intervention for nonprofit organization managers (Zhou, Fei, He, & Yang, 2022). Similarly, Baek, Bakpayev, Yoon, and Kim (2022) found that smiling AI agents "that look like humans rather than like robots" can increase charitable giving. Other areas of nonprofit management can benefit from AI, including crowdsourcing and online donation management (Jha & Bansal, 2022).

The Internet of things is:

> The virtual and physical environment wherein sensors and actuators blend seamlessly with the environment, and the information is shared across platforms to develop a common operating picture. It is enabled by wireless sensor technologies all around us. Such technological infrastructure may reveal particularly valuable for the social economy, for example, remote sensors and un-manned monitoring may be used in a host of situations from traffic control to environmental monitoring. Moreover, in an ageing society, house-technologies are exceptionally valuable to help independent living. (Gagliardi et al., 2020, p. 12)

de Villiers et al. (2021) clarify that it is possible to measure progress towards the UN 2030 sustainable development goals through IoT and blockchain technology.

DIGITAL INNOVATION FOR SOCIAL ACCOUNTABILITY

One of the most important effects that digital tools and innovations can have on SEOs is to make them more transparent and accountable. Moreover, if an organization improves its accountability through digitalization, it builds trust with key stakeholder groups, i.e., beneficiaries, partners, donors.

Kuruppu, Dissanayake, and de Villiers (2022) argue that blockchain (and triple-entry accounting) can: increase transparency, auditability, and openness; reduce the administrative burden of manually compiling, verifying, and reporting information; liberate resources and engage with more stakeholder groups, such as beneficiaries and partners; and provide a platform to integrate feedback and engage with less powerful stakeholders. Farooq, Khan, and Abid (2020) propose a blockchain-based charity management platform that aims to provide a transparent, secure, auditable, and efficient system by using crypto wallets and smart contracts, two core elements of blockchain architecture. Another solution is the Karma project, a blockchain-based charity platform designed

to increase the transparency and accountability of donation funds (Renat, Peresichansky, Belenov, & Barger, 2021). These effects should amplify the positive outcomes and the social impact of non-governmental organization initiatives, projects, and operations.

FURTHER APPLICATIONS, COSTS, AND CHALLENGES FOR THE SOCIAL ECONOMY AND SOCIAL IMPACT

Further research on this topic could analyze empirical evidence (case studies and statistical data) of the effects of DLT (including blockchain), big data, AI, and IoT on the operations, management, and accountability of SEOs, as well as their impact on the beneficiaries and partners and on society at large.

The European Economic and Social Committee (EESC) Report (Guerini, 2019) highlights blockchain applications of great interest to the social economy, including: tracing donations and fundraising; improving the governance of SEOs (secure and traceable consultation and voting, facilitating members' participation, etc.); authenticating activities carried out at a distance by SEOs; certificating skills (ensuring the security of qualifications and diplomas in digital format); making intellectual property rights and copyright clearer and more certain (establishing smart contracts for the transfer of content); offering secure telemedicine and e-care system; and making agricultural products fully traceable and identifiable (preventing fraud and counterfeiting) (Gagliardi et al., 2020, p. 131).

At the same time, there are "challenges" that generally apply to the use of DLT (including blockchain), such as "ensuring the quality of the right information; solving accountability and governance of algorithms; complying with data protection rules; and solving the energy and environmental costs (Blockchain suffers from high-energy and memory use)" (Gagliardi et al., 2020, p. 132). Furthermore, some limitations that hinder the purportedly neutrality of blockchain should be recognized. Both the digital and knowledge divide are likely to favour certain cultures and countries, because resourcefulness such as high bandwidth, storage, and processing capacities are often unavailable in many developing countries. In addition, Ballard (2020) warns that charities might avoid cryptocurrency-based donations because of high environmental costs.

Artificial intelligence offers several "opportunities" for society at large (i.e., enabling human self-realization, enhancing human agency, increasing societal capability, and cultivating social cohesion), but it has corresponding "risks" (i.e., devaluing human skills, removing human responsibility, reducing human control, eroding human self-determination) (Floridi, Cowls, Beltrametti et al., 2018, p. 691). Since the social economy is engaged in serving collective ends and distributed governance, it could play a key role in directing technological change towards AI and other digital innovations that creates value for organizations and people and reduces the risk of extracting value and abusing human rights.

Regarding the application and opportunities of big data and IoT, the EU Executive Agency for SMEs reveals that "they have not been frequently mentioned as 'key' to the organization of the social economy" (Gagliardi et al., p. 128). Indeed, big data are usually integrated into other advanced technologies. Big data "are increasingly embedded in activities related to local communities, they may be used to promote the commons as a viable alternative to market-based transaction systems and data sovereignty awareness; match-making applications are increasingly used to source competencies on the labor market" (Gagliardi et al., pp. 86–87).

IoT applications "are increasingly used to collect data from remote sensors to provide unmanned (or supervised) monitoring services" (Gagliardi et al., p. 86). For the social economy, IoT "changes social relationships among people and objects. Applications in this framework are characterized by a social and ethical perspective when retrieving personal data and simulating persons' or communities' behaviors" (Gagliardi et al., pp. 124–125).

Finally, digital innovation can be analyzed in different ways, including examining its effects on:

- the social economy at large;
- the organizations that prioritize social economy objectives (SEOs);
- their initiatives, projects, and operations;
- the social impact and value created; and
- the accountability process developed by the SEOs engaging beneficiaries, partners, donors, and other stakeholders.

REFERENCES

Al-Saqaf, W., & Seidler, N. (2017). Blockchain technology for social impact: Opportunities and challenges ahead. *Journal of Cyber Policy*, *2*(3), 338–354.

Avdoshin, S., & Pesotskaya, E. (2020, November). Blockchain in charity: Platform for tracking donations. In Arai, K., Kapoor, S., Bhatia, R. (Eds.), *Proceedings of the Future Technologies Conference* (FTC), *2*, 689–701. doi:10.1007/978-3-030-63089-8_45

Baek, T.H., Bakpayev, M., Yoon, S., & Kim, S. (2022). Smiling AI agents: How anthropomorphism and broad smiles increase charitable giving. *International Journal of Advertising, 41*(5), 850–867.

Ballard, R. (2020). Blockchain: The facts and fiction. *ITNOW*, *62*(2), 22–25.

de Villiers, C., Kuruppu, S., & Dissanayake, D. (2021). A (new) role for business: Promoting the United Nations' sustainable development goals through the internet-of-things and blockchain technology. *Journal of Business Research, 131,* 598–609.

Desouza, K.C., & Smith, K.L. (2014). Big data for social innovation. *Stanford Social Innovation Review, 12*(3), 38–43.

Elsden, C., Symons, K., Bunduchi, R., Speed, C., & Vines, J. (2019). Sorting out valuation in the charity shop: Designing for data-driven innovation through value translation. *Proceedings of the ACM on Human-Computer Interaction*, *3*(CSCW), 1–25.

Farooq, M.S., Khan, M., & Abid, A. (2020). A framework to make charity collection transparent and auditable using blockchain technology. *Computers & Electrical Engineering, 83*. doi:10.1016/j.compeleceng.2020.106588

Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., ... & Vayena, E. (2018). AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and machines*, *28*(4), 689–707.

Gagliardi D., Psarra F., Wintjes R., Trendafili K., Pineda Mendoza J., Haaland K., Turkeli S., Giotitsas C., Pazaitis A., & Niglia F. (2020). New technologies and digitisation: Opportunities and challenges for the social economy and social enterprises. *European Commission, Executive Agency for SMEs*. doi:10.2826/667682

Galen, D., Brand, N., Boucherle, L., Davis, R., Do, N., El-Baz, B., ... & Lee, J. (2018). Blockchain for social impact: Moving beyond the hype. *Center for Social Innovation, RippleWorks*. URL: https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/study-blockchain-impact-moving-beyond-hype.pdf [December 10, 2022].

Gibin, M., & Maturo, A. (2020). No profit e impatto sociale al tempo dei Big Data: tra Quantified Context e Blockchain. *No profit e impatto sociale al tempo dei Big Data: tra Quantified Context e Blockchain,* 157–174.

Guerini G. (2019). EESC opinion: Blockchain and distributed ledger technology as an ideal infrastructure for Social Economy (Own-initiative opinion). URL: https://www.eesc.europa.eu/en/news-media/news/blockchain-can-have-multiple-applications-social-economy-must-not-create-new-digital-economy-elite-says-eesc [December 10, 2022].

Howson, P. (2021). Crypto-giving and surveillance philanthropy: Exploring the trade-offs in blockchain innovation for nonprofits. *Nonprofit Management and Leadership*, *31*(4), 805–820.

Hunt, K., Narayanan, A., & Zhuang, J. (2021). Blockchain in humanitarian operations management: A review of research and practice. *Socio-Economic Planning Sciences*, 101–175.

Jain, S., & Simha, R. (2018, July). Blockchain for the common good: A digital currency for citizen philanthropy and social entrepreneurship. In *2018 IEEE International Conference on Internet of Things (iThings) and IEEE Green Computing and Communications (GreenCom) and IEEE Cyber, Physical and Social Computing (CPSCom) and IEEE Smart Data (SmartData)* (pp. 1387–1394). doi:10.1109/Cybermatics_2018.2018.00238

Jha, S.K., & Bansal, S. (2022). Application of artificial intelligence in new product development: Innovative cases of crowdsourcing. In I. Jenna Jacob, Selvanayaki K. Shanmugam, Franciso M. Gonzalez-Longatt, & Ivan Izonin, (Eds.), *Expert clouds and applications*, p*roceedings of ICOECA 2021*, 57–63.

Kshetri, N. (2017a). Potential roles of blockchain in fighting poverty and reducing financial exclusion in the global south. *Journal of Global Information Technology Management*, *20*(4), 201–204.

Kshetri, N. (2017b). Will blockchain emerge as a tool to break the poverty chain in the Global South? *Third World Quarterly*, *38*(8), 1710–1732.

Kuruppu, S.C., Dissanayake, D., & de Villiers, C. (2022). How can NGO accountability practices be improved with technologies such as blockchain and triple-entry accounting? *Accounting, Auditing & Accountability Journal*. doi:10.1108/AAAJ-10-2020-4972

Lytras, M.D., & Visvizi, A. (2019). Big data research for social science and social impact. *Sustainability*, *12*(1), 180–183. doi:10.3390/su12010180

Mook, L., Whitman, J.R., Quarter, J., & Armstrong, A. (2015). *Understanding the social economy of the United States*. Toronto, ON: University of Toronto Press.

Parmentola, A., Petrillo, A., Tutore, I., & De Felice, F. (2022). Is blockchain able to enhance environmental sustainability? A systematic review and research agenda from the perspective of Sustainable Development Goals (SDGs). *Business Strategy and the Environment*, *31*(1), 194–217.

Renat, G., Peresichansky, A., Belenov, A., & Barger, A. (2021, May). Karma-blockchain based charity foundation platform. In *2021 IEEE International Conference on Blockchain and Cryptocurrency (ICBC)*, (pp. 1–2). doi:10.1109/ICBC51069.2021.9461072

Saleh, H., Avdoshin, S., & Dzhonov, A. (2019, November). Platform for tracking donations of charitable foundations based on blockchain technology. In *Actual Problems of Systems and Software Engineering APSSE 2019* (pp. 182–187). Los Alamitos, CA: IEEE Computer Society.

Sandberg, B., Hand, L.C., & Russo, A. (2022). Re-envisioning the role of "big data" in the nonprofit sector: A data feminist perspective. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 1–12.

Seyedsayamdost, E., & Vanderwal, P. (2020). From good governance to governance for good: Blockchain for social impact. *Journal of International Development*, *32*(6), 943–960.

Shaheen, E., Hamed, M. A., Zaghloul, W., Al Mostafa, E., El Sharkawy, A., Mahmoud, A., ... & Attiya, G. (2021, July). A Track Donation System Using Blockchain. In 2021 International Conference on Electronic Engineering (ICEEM) (pp. 1–7). New York, NY: Institute of Electrical and Electronics Engineers (IEEE).

Sherren, K., Parkins, J.R., Smit, M., Holmlund, M., & Chen, Y. (2017). Digital archives, big data and image-based culturomics for social impact assessment: Opportunities and challenges. *Environmental Impact Assessment Review, 67*, 23–30. doi:10.1016/j.eiar.2017.08.002

Singh, A., Rajak, R., Mistry, H., & Raut, P. (2020, June). Aid, charity and donation tracking system using blockchain. In *2020 4th International Conference on Trends in Electronics and Informatics* (ICOEI) (48184), 457–462.

Sirisha, N.S., Agarwal, T., Monde, R., Yadav, R., & Hande, R. (2019, January). Proposed solution for trackable donations using blockchain. In *2019 International Conference on Nascent Technologies in Engineering* (ICNTE), 1–5.

Tomlinson, B., Boberg, J., Cranefield, J., Johnstone, D., Luczak-Roesch, M., Patterson, D. J., & Kapoor, S. (2021). Analyzing the sustainability of 28 "Blockchain for Good" projects via affordances and constraints. *Information Technology for Development*, *27*(3), 439–469.

Zhou, J., Wu, M., & Zhou, J. (2017, March). Volunteer service time record system based on blockchain technology. In *2017 IEEE 2nd Advanced Information Technology, Electronic and Automation Control Conference (IAEAC)*, 610–613.

Zhou, Y., Fei, Z., He, Y., & Yang, Z. (2022). How human–chatbot interaction impairs charitable giving: The role of moral judgment. *Journal of Business Ethics*, 1–17.

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