

Cryptocurrencies and blockchain in tourism as a strategy to reduce poverty

Criptomonedas y blockchain en el turismo como estrategia para reducir la pobreza

PhD. Israel Barrutia Barreto is a professor and researcher at Universidad Científica del Sur (Perú) (ibarrutia@ucientifica.edu.pe) (<https://orcid.org/0000-0002-5728-0651>)

PhD. José Antonio Urquiza Maggia is a professor and researcher at Universidad Nacional Federico Villarreal (Perú) (josurisc@gmail.com) (<https://orcid.org/0000-0002-6999-4643>)

PhD. Samuel Isaías Acevedo is a professor and director of research at Innova Scientific SAC (Perú) (sacevedo@innovascientific.edu.pe) (<https://orcid.org/0000-0002-1505-6117>)

Abstract

Poverty in Latin America and the Caribbean continues to be a problem with no apparent solution. In this article is proposed the use of cryptocurrencies and blockchain technology as a tool to reduce poverty in the region through economic activities from tourism. A detailed analysis of the potentialities collected by tourism, cryptocurrencies and blockchain technology was carried out. Due to the tourism capabilities of the Latin American and Caribbean regions, a set of efforts must be made by governments and private companies to implement tourism development in regions and locations with great biodiversity and cultural resources not yet explored. The relative access to bitcoin accounts through smartphones means that financial transactions through cryptocurrencies are available to small merchants who normally do not have access to traditional bank accounts. On the other hand, access to the internet via mobile telephony must be further strengthened to facilitate payment systems and so that blockchain-based technologies can be developed at maximum capacity. It is concluded that in order to achieve a significant reduction of poverty, it is necessary an adequate regulation of the cryptocurrencies by the governments as well as the development of an adequate infrastructure that allows the creation and / or recovery of microenterprises boosted by the «Initial Coin Offering» (ICO).

Resumen

La pobreza en América Latina y el Caribe sigue siendo un problema sin aparente solución. Se propone en este artículo el uso de las criptomonedas y la tecnología de *blockchain* como una herramienta para reducir la pobreza en la región mediante actividades económicas provenientes del turismo. Para ello se efectuó una revisión y análisis detallado de las potencialidades que recogen en conjunto el turismo, las criptomonedas y la tecnología blockchain. Dada las capacidades turísticas de la región latinoamericana y caribeña, se debe concretar un conjunto de esfuerzos por parte de los gobiernos y empresas privadas en implementar el desarrollo turístico en regiones y localidades con gran biodiversidad y recursos naturales y culturales aún sin explorar. La relativa facilidad de acceso a cuentas bitcoin mediante teléfonos inteligentes hace que las transacciones financieras mediante criptomonedas se encuentran al alcance pequeños comerciantes que, normalmente, no tienen acceso a cuentas bancarias tradicionales. Por otro lado, debe fortalecerse aún más el acceso a internet vía telefonía móvil para facilitar los sistemas de pago y para que las tecnologías basadas en blockchain puedan desarrollarse a su máxima capacidad. Se concluye que para lograr una significativa reducción de la pobreza es necesario la confluencia de una adecuada regulación de las criptomonedas por parte de los Gobiernos, así como también el desarrollo una infraestructura adecuada que permita la creación y/o recuperación de microempresas potenciadas por la «Oferta Inicial de Monedas».

Keywords | palabras clave

Tourism economics, tourism and development, economic growth of open economics, measurement and analysis of poverty, welfare and poverty.

Economía del turismo, turismo y desarrollo, crecimiento económico de la economía abierta, medición y análisis de la pobreza, bienestar y pobreza.

Suggested citation: Barrutia Barreto, I., Urquiza Marggia, J.A. and Acevedo, S.I. (2019). Cryptocurrencies and blockchain in tourism as a strategy to reduce poverty. *Retos Revista de Ciencias de la Administración y Economía*, 9(18), 275-290. <https://doi.org/10.17163/ret.n18.2019.07>

1. Introduction

Amid the 2008 financial economic crisis caused by mortgage problems in the United States, which in turn brought a global food crisis, a widespread mistrust arose in the global financial system. This mistrust is proposed by Satoshi Nakamoto in 2008 as: “an alternative source of money, based on a virtual currency that allows all people to send or receive payments in a decentralized way in the traditional financial system” (Nakamoto, 2008, p.3). The use of cryptocurrencies has had a growing interest from governments, banks, companies, academic fields among others. Success is due to the role based on a technology called blockchain, which Nakamoto defined as as:

A ledger shared by users over a peer-to-peer network to exchange information without the need for a fixed server] that is constantly updated and in which all transactions are recorded, but no personal information is at any time shared (Nakamoto, 2008, p. 6).

In 2001, leaders of international conferences at the International Labour Organization (ILO) reaffirmed their commitment to eradicating poverty and their obligation to extend [...] “social security measures to provide a basic income to all those who need such comprehensive health care and protection” (ILO, 2001, p. 46). The Economic Commission for Latin America and the Caribbean (ECLAC), in its “Agenda 2030”, emphasizes the importance of social protection as a key under the approach of ending poverty in all its forms everywhere (CEPAL, 2019).

One of the mechanisms to reduce poverty is the development of tourism at the rural and regional level (Goh, 2015; CEPAL, 2018). This relationship between poverty reduction and tourism development was highlighted by the United Nations Commission on Sustainable Development (CSD) in 1999, in which was agreed: “to maximize the potential of tourism to eradicate poverty by developing appropriate strategies in cooperation with all major groups and indigenous and local communities” (CSD, 1999). However, poverty is a multidimensional concept, the meaning and measurement of which have changed over time.

Some authors promote research in tourism from the perspective of cryptocurrencies and find potential opportunities for the development (Önder & Treiblmaier, 2018). With algorithms as stifled, cryptocurrencies become the “gold of the future”: a safe haven for all who distrust the establishment (Dierksmeier & Seele, 2018).

The development of tourism for or in favour of poverty reduction continues to be researched with great interest and is increasingly attracting attention in the academia (Yu, Wang & Marcouiller, 2019). Studies reveal that tourism can lead to the development and poverty reduction through three effects: direct effects (jobs created by hotels and restaurants), side effects (cleaning services and services provided to hotels and restaurants) and dynamic effects (Croes & Rivera, 2016; Den Braber, Evans & Oldekop, 2018). The dynamic effects are related to the overall impact of tourism on the economy, going beyond the tourism sector.

Part of the problem is that tourism’s ability to help the poor depends on contextual conditions, such as the combination of incentives and organizational capabilities (Tumusiime & Vedeld, 2012). This combination of incentives and organizational capacities defines how tourism economies are structured; so the impact of tourism on

the poor depends more on the structure of tourist economies and less on the types of tourists who sponsor destinations. These imperfections derive from the lack of trust in creating the tourist experience (Thomas & Koens, 2016), so the relationship between tourism development and poverty reduction is not evident (Li, Jin & Shi, 2018).

Given the complexity of poverty reduction in the tourist context, can the implementation of cryptocurrencies and blockchain technology be a tool for poverty reduction in Latin America and the Caribbean through tourism activities?

In this case, the role of this technology as a mediator between tourism and poverty must be studied. For this reason, it is proposed in this research to identify through a literature review the advantages and potentials that cryptocurrencies and blockchain technology can provide in the context of Latin American and the Caribbean tourism development to reduce poverty. In this sense, a review of articles was carried out in journals indexed in Scopus and Web of Science (WoS), by searching for keywords and keyword pairs such as Tourism-Cryptocurrencies, Tourism-Blockchain, Tourism-Poverty, among others. In this process, a list of 125 publications was obtained; the publications were in the scope required for this study. 62 out of 125 publications were selected, the results of which were more in line with the objective set out in this research by examining the contribution to literature and the limitations of the research. Each of the key topics listed was identified based on a detailed analysis of the content and common aspects among the selected studies. It should be noted that 70% of the publications of cryptocurrencies and blockchain accounted for the technical and technological aspects, while 30% of the publications fall within the scope of blockchain technology applications economy and finance.

2. Relevant aspects of cryptocurrencies and blockchain technology for tourism development

2.1. The potential of cryptocurrencies as a tool for the exchange of goods and services in tourism

Research on Bitcoin and other cryptocurrencies applications has received increasing attention in the scientific community. The number of documents published on this topic has increased at an annual rate of 124% (Merediz-Solà & Bariviera, 2019). A cryptocurrency is a digital asset designed to work as a means of exchange that uses cryptography to secure the transaction, control the creation of additional units and to verify the transfer of assets.

Bitcoin, created in 2009, was the first decentralized cryptocurrency, then others were often formed called altcoins. Bitcoin and its derivatives use decentralized control and oppose centralized e-money systems and central banks. Decentralized control is related to the use of the blockchain transaction database in the role of a distributed ledger.

In this sense, and in relation to the association of the monetary resource of modernity, Bitcoin should be understood as an electronic payment system that is based on a combination of cryptography and a large anonymous and decentralized collection of participants, called «miners» to verify transactions without the need of any trusted

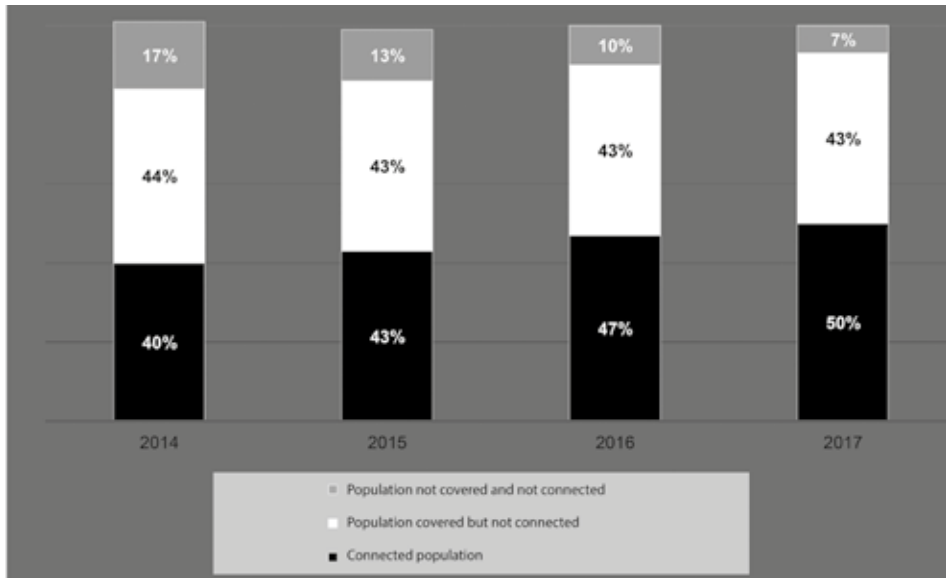
third party. The basic details, slightly simplified, are as follows: A Bitcoin owner can send currencies to another user using a combination of (i) their own public address (an alphanumeric string, something analogous to an account number), (ii) their own key private account (i.e., password associated with that address), and (iii) the recipient's public address to create a transaction with a cryptographically secure signature.

In the particular case of Bitcoin, it can serve as a tool to hedge against market uncertainty and geopolitical risks (Demir, 2018; Aysan *et al.*, 2019). A growing number of retailers now accept cryptocurrencies as a payment method. In addition, more and more investors are trying to capitalize on the volatility of virtual currency prices by buying it and selling it as a speculative investment (Shen *et al.*, 2019; Panagioditis *et al.*, 2018).

Recognizing the potential of this growing user market, investment in virtual currency businesses and start-ups has also increased. Even traditional financial institutions and the New York Stock Exchange have invested, participating in a funding round for Coinbase that raised \$75 million (Tu, 2018). Another positive experience in this direction is tourism in Greece, which offers hotel services, flights and special prices for frequent flyers that can be paid with Bitcoin (Pilkington *et al.*, 2018). In contrast, other authors claim that Bitcoin volatility leads to inflation growth and currency devaluation (Narayan *et al.*, 2018).

One of the great advantages of using cryptocurrencies is that, for transactions, the necessary technology is accessible and relatively inexpensive. Access to the Internet via mobile phones in most cases is sufficient for a cryptocurrency transaction. This ease of exchange allows the receipt of micropayments or loans by those who would not otherwise have access to liquidity by offering people without banking services an opportunity for economic growth. A study in China, India, Nigeria and South Africa shows that countries with higher levels of cryptocurrencies, Internet and mobile subscriptions also have higher levels of financial inclusion and financial sector development (Vincent & Evans, 2019). In the case of Latin America, more than 50% of the population is connected to the internet by mobile phone services (see Figure 1).

Figure 1. Percentage of populations connected and not connected to mobile Internet services in Latin America (2014-2017)



Source: GSMA Intelligence (2018, p. 38).

One of the traditional ways out of poverty is by accessing a type of microcredit. Microcredit is the system in place to provide impoverished people with small loans to start some small businesses. Microcredit has been used as an important tool against poverty (*v.gr.* Ikeda and Hamid, 2018; Ikeda and Hamid, 2018). As of 2009, approximately 74 million of people had a total microcredit of \$38 billion. However, there are also many people who do not have access to a microcredit because they do not meet enough requirements for its approval. Not having access to a physical bank or the documentation required for access to microcredits, such individuals do not have, until the advent of cryptocurrencies, options to save and secure assets or to be able to participate in financial planning and investment.

Because of their reliance on cash, they are often compromised and always limited to transacting with people near them. More than 2.5 billion adults worldwide lack an account in the formal banking sector. According to the World Bank, in some economies, such as Cambodia, the Democratic Republic of the Congo, Guinea, the Kyrgyz Republic, Turkmenistan and the Republic of Yemen, more than 95% of adults do not have an account at a formal financial institution. Of the 600 million inhabitants of Southeast Asia, only 27% have a bank account. This proportion is as low as 5% in Cambodia (Kshetri, 2017a). Research in development funding suggests that accessible and timely funding has the potential to lift the poor out of their poverty (Mushtaq & Bruneau, 2019).

The inclusion of mobile payment systems is rapidly expanding in developing countries. In Kenya, it was found that the use of mobile phones can significantly

reduce the difficulties of disadvantaged communities in accessing specific social services (Lashitew, Van Tulder & Liasse, 2019). Another recent study in Ghana shows that having access to a mobile phone improves the chances of not being poor and can significantly accelerate small business revenues (Danquah & Iddrisu, 2018). Similarly, in rural India, the rapid inclusion of mobile phones was found to create an opportunity to improve people's access to health care (Haenssger, 2018).

The costs of transactions can be much lower with the incorporation of cryptocurrencies. Due to the growing popularity of using cryptocurrency as a new means of payment, many companies are taking on a new way of launching their own cryptocurrencies, called the "Initial Coin Offering" (ICO), defined as an "investment or financing system used by blockchain-based companies in order to raise capital and give value to the tokens or currencies used in their applications or in the different services they offer" (García, 2018, p. 22). Instead of offering shares, as is the case of an Offer for Sale (OFS), a sale of "tokens" is made that can be exchanged for fiat currencies, virtual currencies or services offered by the company. It is a fairly new form not to raise initial funds that can provide high returns to short-term investors (Lahajnar & Rožanec, 2018).

An ICO could be described simply as an event in which a startup or project sells its new cryptocurrency to the public for the first time to raise capital (Dhillon, Metcalf & Hooper, 2017; Hill, 2018; Chen, 2018). The project team that initiates an ICO will determine the initial sales price. Depending on the nature of the project, investors could use these cryptocurrencies as currencies or tokens that could interact with the future product. Since then, the price of the specific cryptocurrency will be settled through supply and demand in the market (Kastelein, 2017).

Both the amount of ICOs and the amount of capital raised have been exploited since 2017 (Fish, 2019). Many of the ICO-based leverage projects have a fairly high success rate. While funds raised through traditional venture capital in 2017 were \$350 million, by financing blockchain companies the volume of ICO issuance reached \$2 billion in the same period (Nolan *et al.*, 2018). The secondary market for ICO tokens is quite liquid on the first day of trading and the initial yield is large, around an average value of +919.9% compared to the offer price whose average value is +24.7% (Adhami, Giudici & Martinazzi, 2018).

Based on interviews from several experts in the field of cryptography, some important signals have been identified to invest in the ICO process: the relationship of the local environment (government) to invest in blockchain technology projects, company history, liquidity issued in "tokens" and its distribution, response from cryptographic communities in the project, promotional bonuses, paid ads and the quality of information (Yadav, 2017). This is vitally important when implementing a new venture in tourism.

2.2. Advantages and limitations of tourism development in Latin American and the Caribbean

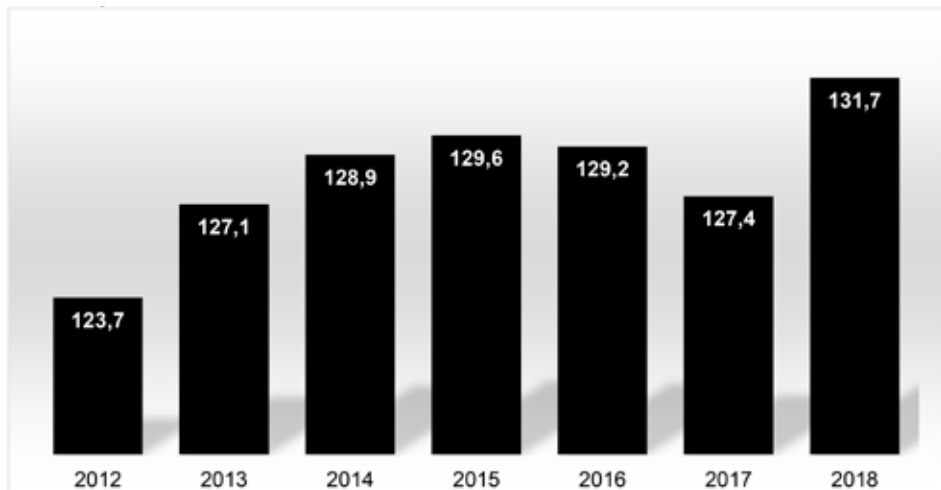
Tourism is relatively accessible to the poor, as it can generate sources of employment for women, young people and disadvantaged groups as minorities Ethnic. In addition, tourism can enhance agriculture, transport and handicrafts (Njoya & Seetaram,

2017; Li *et al.*, 2018), so it is known that tourism could provide short-term benefits to the poor. However, these benefits could decrease in the long term (Sharpley & Naidoo, 2010; Zeng *et al.*, 2015).

In island developing States, tourism contributes to poverty reduction and can improve human development (Jiang *et al.*, 2011; Kim, Uysal & Sirgy, 2013), while in remote rural areas employment in ecotourism improves financial security and social welfare (Snyman, 2012; Chirenje, 2017), although there are pre-existing sociocultural factors that may limit the participation of men and women in tourism (Tucker & Boonabaana, 2012). Although tourism provides a diversification of livelihoods for locals, those who depended on employment in the accommodation sector had the lowest incomes (Adiyia *et al.*, 2014).

For its part, tourism has a significant impact on the GDP. In 2018, the Asia-Pacific region grew by 6.4%, in North Africa there was an annual growth of 8.6%. Similarly, Ethiopia, Ecuador, St. Kitts and Nevis, Egypt and Turkey led global GDP growth in travel and tourism in 2018 (World Travel & Tourism Council, 2019). Tourism makes important contributions to the Gross Domestic Product of the countries, with Latin America having significant growth (see Figure 2).

Figure 2. Direct contribution in billions of USD from the travel sector and tourism to Gross Domestic Product (GDP) in Latin America (2012 and 2018)



Source: Own elaboration, with data obtained from World Travel & Tourism (2019, p. 8).

Despite the benefits of tourism revenues, some claim that these incomes do not reduce poverty but strengthen inequality (Mahadevan & Suardi, 2019). In Central America, poverty elasticities varied, having strong effects in Costa Rica, Guatemala and Nicaragua and moderate to weak effects in Salvador and Honduras (MacNeill & Wozniak, 2018). In China, tourism is beneficial when accommodation and restaurant services are built by the same local residents, while with capital investments made

by private companies, locals were not benefiting with the growth of the sector (Lor, Kwa & Donaldson, 2019).

In many cases it has been suggested that tourism alleviates poverty as long as social inclusion programs are generated (Medina-Muñoz, Medina-Muñoz & Gutiérrez-Pérez, 2016a). In Kenya, tourism was found to significantly reduce the gap between poverty and extreme poverty, with a greater impact on urban areas than in rural areas (Njoya & Seetaram, 2017). Similarly, others consider that corporate tourism impacts the reduction of local, regional and national poverty (Medina-Muñoz, Medina-Muñoz & Gutiérrez-Pérez, 2016b). Efforts have been made to empower communities to be players in tourism development in their region as is the case of Peru, although the concrete results have not been quantified in their entirety (Knight & Cotterill, 2016).

Recent researches suggest that changing the negative aspects of tourism and making it more equitable and sustainable should shift the focus from fostering economic growth to considering socio-political aspects of poverty and how inequalities structural issues are limiting people's development (Scheyvens & Hughes, 2018; Truong, 2018).

For its part, studies that consider the long-term effects that climate change may have on tourist flow patterns have also been developed (Bujosa, Riera & Torres, 2015), so that for the development of sustainable tourism, the vulnerabilities involving the climatic, economic, social and political factors of the environment must be evaluated (Dogru, Marchio, Bulut & Sues, 2019).

In a general sense, there is a contrast in the impact tourism can have on poverty reduction. Tourism in Latin America and the Caribbean is still in an initial development phase, making it a great investment and growth opportunity, knowing the potential and advantages offered by the abundant natural resources typical of the region.

2.3. The role of Blockchain technology in supply chain management, logistics and smart contracts

The most discussed topics in the literature where blockchain technology can generate significant changes are around smart contracts, supply chain management and logistics. Blockchain technology is considered the largest innovation in computer science, as well as the biggest disruptor of industries since the introduction of the Internet (Kshetri, 2017b). The technological features of the blockchain lend to the processing of smart contracts where settlement payments and financial payments can be triggered automatically by specific events. The study of Iansiti and Lakhani (2017) analyzes a scenario of a smart contract in which blockchain technology is used to automate a payment to a supplier as soon as the shipment is received via GPS, tracking the goods, monitoring delivery to trigger vendor payment (Iansiti & Lakhani, 2017).

The traditional supply chain process is based on external intermediaries acting as guarantors of assets and mechanism for securing property of goods. By implementing blockchain-based solutions, all parties can automatically determine ownership of the goods, approve the shipment and activate payments once received (Dobrovnik *et al.*, 2018). Organizations are reviewing their processes and business

models that seek to identify key use cases where blockchain can add value and deliver benefits (Ying, Jia & Du, 2018; Zamani & Giaglis, 2018).

The potential of blockchain technology has already been recognized by the financial sector and large companies such as IBM, Deutsche Bank, HSBC, Société Générale and UniCredit, just to name a few, are building systems to facilitate commerce in small and medium-sized companies (Önder & Treiblmaier, 2018). A reduction in transaction costs for small payments can be significant enough to decide the success or failure of a business model. Blockchain can reduce transaction costs for all hybrid models of social enterprises, whose financial sustainability is based in part on donations or public support. By adopting innovative blockchain-based technologies, it is also possible to reduce the costs of raising capital, avoiding intermediaries and payment agents.

For conventional financing media, more than \$1 billion flows each year from individuals, governments, and businesses to address the challenges of poverty and crisis around the world (Carraro, 2017). The distribution and monitoring of global development funds and humanitarian aid remains complex, opaque and hugely inefficient (World Bank, 2017). Lack of transparency is also a key issue, as there is an inability to track end-to-end flow of funds. The UN estimates that up to 30% of official development assistance is lost due to fraud and corruption. In the field, organizations face multiple barriers to ensuring full transparency of the distribution of funds (Thomason *et al.*, 2018).

With regard to the cost reduction involved in the use of blockchain technologies, the difference is significant in relation to conventional forms of payment when it comes to small exchanges such as donations or microcredits for oriented farmer tourism for developing countries (Dierksmeier and Seele, 2018). Blockchain technology has the potential to contribute to a number of UN Sustainable Development Goals (Hughes *et al.*, 2019).

Feasibility projects developed by Walmart and IBM to use blockchain technology to specifically monitor food-based products in the United States and China helped significantly reduce the time it takes to make a tracking food from days to minutes (Kshetri, 2018a). The Hainan Airlines Group (HNA) in China developed a blockchain-based e-commerce system for its employees to purchase products directly from external suppliers. The system went online in February 2015 with 2000 participating suppliers and was considered a successful implementation (Ying, Jia & Du, 2018). Blockchain technology is promising and a successful implementation in the field of tourism could contribute more effectively to the poverty reduction.

2.4. Legal status of cryptocurrencies and blockchain technology

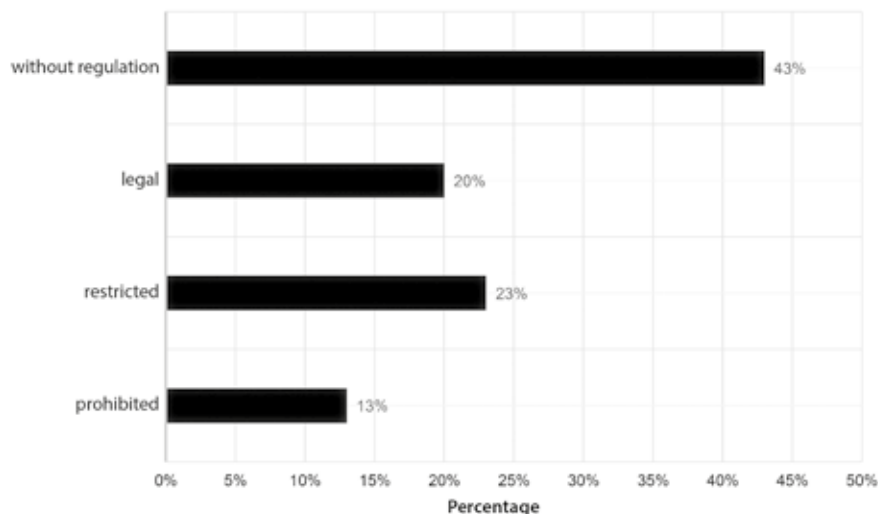
Governments, although late in recognizing the importance of Bitcoin, are now considering both regulation and taxes on this cryptocurrency (Holub & Johnson, 2018). In many scenarios, Bitcoin regulation is not seen as a pressing problem for governments, but rather the fact that severe regulation based on the worst-case scenarios could easily stifle the opportunities offered by such innovation (De Filippi & Loveluck, 2014). Generally speaking, the discussion and implementation of an appropriate legal framework is relatively underdeveloped (Tu, 2018). The same is true for blockchain

technology, although organizations seem to be actively reviewing the blockchain at the strategic level, the huge challenges in regulations highlight the immaturity of the technology (Lacity, 2018). Most countries in the world have not adopted a legal framework on the use of cryptocurrencies and blockchain, however, enough advances have already been made.

In Russia, the government has recognized that an absolute ban on cryptocurrency would not bring positive results and is seeking its own approach to cryptocurrency legal regulation. In the case of blockchain technology, it has begun to be used as a system to record real estate transactions (Zharova & Lloyd, 2018). Japan is another case where cryptocurrencies have been accepted as a means of exchange. In the field of blockchain technology, work is being done to unify the entire register of urban and tourist properties. For example, in Vietnam the state prohibits the use of cryptocurrencies and penalizes with fines of up to US\$ 8800 (Garcia, 2018). In the case of Europe, Bitcoin has already been accepted by the European Court of Justice as a valid currency and is exempted from sales tax (Önder & Treiblmaire, 2018). Germany recognizes Bitcoin as a financial instrument and can be used for commercial and tax purposes. In Spain, purchases and sales of cryptocurrencies are recognized as economic activities and are exempted from taxes.

For Latin American and Caribbean countries, most do not have a regulatory framework that incentivates activities with cryptocurrencies and blockchain (see Figure 3). Even in countries such as Bolivia and Ecuador, financial activities with Bitcoin are expressly prohibited.

Figure 3. Legal status on the use of cryptocurrencies in Latin America and the Caribbean during 2018 (%)



Source: Own elaboration, based on the data of Library of Congress (2018, p.1).

3. Discussion and conclusions

In the Latin American and Caribbean context, tourism has enormous potential and its impact on GDP can be increased further since this economic field remains in the initial phase of development. Based on the UN's Sustainable Development Goals (SDGs), the implementation of blockchain technology and cryptocurrencies in the framework of tourism can help reduce poverty in Latin America. Blockchain technology could make a significant change in sustainability aspects that affect health, drug distribution and humanitarian supplies.

There are problems in the integrity of medicines and basic foodstuffs where the challenge of implementation and logistics management across language barriers and geographical diversity is a major challenge. Blockchain attributes could offer benefits in Latin American and Caribbean countries where technology could be used to ensure quality and commitment to education in all its forms. Financial and logistical commitments to education and gender equality of central and regional authorities would be included in smart contracts among all stakeholders. Contracts related to the development of the infrastructure needed for the development of tourism to ensure clean water, sanitation and energy could be managed through blockchain technology, ensuring that fraud would be minimized, and higher levels of trust between the parties would be developed. The immutable nature of blockchain and transparency of transactions can generate wage protection and reduce exploitation among tourism workers.

Given the enormous tourism capacities of the Latin American and Caribbean regions, efforts by governments and private companies must be set to implement tourism development in regions and localities with great biodiversity and natural and cultural resources still unexplored. To this end, governments should encourage the development of microcredits to small and medium-sized cryptocurrency tourism entrepreneurs, taking advantage of the relatively covered communications and Internet access in Latin America and the Caribbean. This would leverage the empowerment of communities to be a player in the creation of ICO-driven enterprises, with the proper regulation and support of governments and private companies.

On the other hand, access to the Internet via mobile telephony must be further strengthened to facilitate payment systems and to enable blockchain-based technologies to be developed fully. In this way, the path is prepared to install a whole network of payment systems in Bitcoins and other cryptocurrencies that allow to pay goods and services, exchange for other fiat currencies and build a whole network of ATMs cryptocurrency, the implementation of which has already been observed in other countries.

In this way, the volume of transactions with cryptocurrencies increases, planning and executing those tourist packages with payment methods with cryptocurrencies, and in addition all the organization of the trip: hotels, transport, food, among others is paid by blockchain technologies. This requires the state to promote, accelerate and provide legal regulations for the use of cryptocurrencies, increasing the investor confidence.

Likewise, to motivate and educate communities in the creation of micro and medium-sized tourism companies whose logistics are managed by blockchain tech-

nology, using financing sources through ICOs, in which “tokens” are offered and can be exchanged for other fiat currencies, for other cryptocurrencies and other goods and services that benefit both the community, the tourist and the investor. New opportunities arise as transaction costs and intermediary institutions disappear. Given the huge amount of money currently invested in blockchain-based solutions and its industry-wide nature, the impact on the business sector especially in the tourism industry can be expected to be substantial and bring as a result an improvement in the living conditions in the most disadvantaged populations.

Research on the effect of blockchain technology and cryptocurrencies on tourism on literature is scarce, so it is suggested to investigate more on the subject from a correlational perspective. Being the tourism market in Latin America emerging, blockchain technology and cryptomondeas can be implemented with less difficulty than in those countries where tourism is already developed. Research into successful case studies at other latitudes can give light on replicating experience in Latin America and the Caribbean. Through government policies, a diagnosis of tourism potential should be made and a cryptocurrency-based economy adaptation should be coupled with private enterprise for accessing to health services, education and opportunities through the use of mobile technology. In this way, the most disadvantaged populations can increase income by setting fair prices in the exchange of goods and services or in the equitable distribution of profits by blockchain.

References

- Adhami, S., Giudici, G., & Martinazzi, S. (2018). Why do businesses go crypto? An empirical analysis of Initial Coin Offerings. *Journal of Economics and Business*, 100, 64-75. <https://doi.org/10.1016/j.jeconbus.2018.04.001>
- Adiyia, B., Vanneste, D., Van Rompaey, A., & Ahebwa, W. M. (2014). Spatial analysis of tourism income distribution in the accommodation sector in western Uganda. *Tourism and Hospitality Research*, 14(1-28-26). <https://doi.org/10.1177%2F1467358414529434>
- Aysan, A. F., Demir, E., Gozgor, G., & Marco, C. K. (2019). Effects of the geopolitical risks on Bitcoin returns and volatility. *Research in International Business and Finance*, 47, 511-518. <https://doi.org/10.1016/j.ribaf.2018.09.011>
- Bujosa, A., Riera, A., & Torres, C. (2015). Valuing tourism demand attributes to guide climate change adaptation measures efficiently: The case of the Spanish domestic travel market. *Tourism Management*, 47, 233-239. <https://doi.org/10.1016/j.tourman.2014.09.023>
- Carraro, C. (2017). *Towards a greener finance landscape*, A blog by Carlo Carraro, 28 de marzo de 2017. Recuperado de <https://bit.ly/2KxsT3R> [Fecha de consulta: 19 de febrero de 2019]
- Chen, Y. (2018). Blockchain tokens and the potential democratization of entrepreneurship and innovation. *Business Horizons*, 61(4), 567-575. <https://doi.org/10.1016/j.bushor.2018.03.006>
- Chirenje, L. I. (2017). Contribution to ecotourism to poverty alleviation in Nyanga, Zimbabwe. *Chinese Journal of Population Resources and Environment*, 15(2), 87-92. <https://doi.org/10.1080/10042857.2017.131Económia>, 9(18)2
- Croes, R., & Rivera, M. (2015). The Poverty Obliteration Paradigm. En M. Khan (Series Ed.), *Advances in Hospitality Series. Poverty Alleviation through Tourism Development: A Comprehensive and integrated Approach* (pp. 47-74). New York, Estados Unidos: Apple Academic Press. <https://doi.org/10.1201/b19841>
- Danquah, M., & Iddrisu, A. M. (2018). Access to mobile phones and the wellbeing of non-farm enterprise households: Evidence from Ghana. *Technology in Society*, 54, 1-9. <https://doi.org/10.1016/j.techsoc.2018.01.012>

- De Filippi, P., & Loveluck, B. (2016). The Invisible Politics of Bitcoin: Governance Crisis of a Decentralised Infrastructure. *Internet Policy Review*, 5(3), 1-28. <https://doi.org/10.14763/2016.3.427>
- Dhillon, V., Metcalf, D., & Hooper, M. (2018). *Blockchain Enabled Applications: Understand the Blockchain Ecosystem and How to Make it Work for You*. California, Estados Unidos: Apress. <https://doi.org/10.1007/978-1-4842-3081-7>
- Dierskmeier, C. & Seele, P. (2018). Cryptocurrencies and Business Ethics. *Journal of Business Ethics*, 152(1), 1-14. <https://doi.org/10.1007/s10551-016-3298-0>
- Dobronik, M., Herold, D. M., Furst, E., & Kummer, S. (2018). Blockchain for and in Logistics: What to Adopt and Where to Start. *Logistics*, 2(3), 18-32. <https://doi.org/10.3390/logistics2030018>
- Dogru, T. Marchio, E.A., Bulut, U., & Suess, C. (2019). Climate change: Vulnerability and resilience of tourism and the entire economy. *Tourism Management*, 72, 292-305. <https://doi.org/10.1016/j.tourman.2018.12.010>
- Fisch, C. (2019). Initial coin offerings (ICOs) to finance new ventures. *Journal of Business Venturing*, 34(1), 1-22. <https://doi.org/10.1016/j.jbusvent.2018.09.007>
- García, J. (2018). *Criptomonedas y Aplicación en la Economía* (Tesis de Maestría). Universidad Pontificia Comillas, España. Recuperado de: <http://hdl.handle.net/11531/32886>
- Goh, H. C. (2015). Nature and Community-based tourism (CBT) for poverty alleviation: A case study of Lower Kinabatangan, East Malaysia. *Geografía Malaysian Journal of Society and Space*, 11(3), 42-52. Recuperado de: <https://bit.ly/2GTlg6G>
- GSMA Intelligence (2018). *La Economía móvil en América Latina y el Caribe*, 03 de noviembre de 2018. Recuperado de <http://bit.ly/2JnHTm8> [Fecha de consulta: 15 de febrero de 2019]
- Haenssgen, M.J. (2018). The struggle for digital inclusion: Phones, healthcare and marginalization in Rural India. *World Development*, 104, 358-374. <https://doi.org/10.1016/j.worlddev.2017.12.023>
- Hill, J. (2018). *FinTech and the Remaking of Financial Institutions*. Estados Unidos: Academic Press. <https://doi.org/10.1016/C2016-0-03863-9>
- Holub, M., & Johnson J. (2019). Bitcoin research across disciplines. *The Information Society*, 34(2), pp. 114-126. <https://doi.org/10.1080/01972243.2017.1414094>
- Hughes, L., Dwivedi, Y. K., Misra, S.K., Rana, N.P., Raghavan, V., & Akella, V. (2019). Blockchain research, practice and policy: Applications, benefits, limitations, emerging research themes and research agenda. *International Journal of Information Management*, 49, 114-129. <https://doi.org/10.1016/j.ijinfomgt.2019.02.005>
- Iansiti, M., & Lakhani, K.R. (2017). The truth about blockchain. *Harvard Business Review*, 95(1), 118-127. Recuperado de: <https://hbr.org/2017/01/the-truth-about-blockchain>
- Ikeda, K., & Hamid M. (2018). Application of Blockchain in the Financial Sector and a Peer-to-Peer Global Barter Web. En P. Raj y G. C. Deka (Eds.), *Advances in Computers: Vol. 111. Blockchain Technology: Platforms, Tools and Use Cases* (pp. 99-120). Estados Unidos: Academic Press. <https://doi.org/10.1016/bs.adcom.2018.03.008>
- Jiang, M., DeLacy, T., Mkiramweni, N.P., & Harrison, D. (2011). Some evidence for tourism alleviating poverty. *Annals of Tourism Research*, 38(3), 1181-1184. <https://doi.org/10.1016/j.annals.2011.03.008>
- Jing, W., Jia, S., & Du, W. (2018). Digital enablement of blockchain: Evidence from HNA group. *International Journal of Information Management*, 39, 1-4. <https://doi.org/10.1016/j.ijinfomgt.2017.10.004>
- Kastelein, R. (2017). *What Initial Coin Offerings Are, and Why VC Firms Care*. Harvard Business Review, 24 de marzo del 2017. Recuperado de <https://bit.ly/2mZgh81>
- Kim, K., Uysal, M., & Sirgy, J. (2013). How does tourism in a community impact the quality of life of community residents?, *Tourism Management*, 36, 527-540. <https://doi.org/10.1016/j.tourman.2012.09.005>
- Knight, D.W., & Cottrell, S.P. (2016). Evaluating tourism-linked empowerment in Cuzco, Perú. *Annals of Tourism Research*, 56, 32-47. <https://doi.org/10.1016/j.annals.2015.11.007>

- 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. <https://doi.org/10.1080/1097198X.2017.1391370>
- Kshetri, N. (2018a). Blockchain's roles in meeting key supply chain management objectives. *International Journal of Information Management*, 39, 80-89. <https://doi.org/10.1016/j.ijinfomgt.2017.12.005>
- 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. <https://doi.org/10.1080/01436597.2017.1298438>
- Lacity, M. C. (2018). Addressing Key Challenges to Making Enterprise Blockchain Applications a Reality. *MIS Quarterly Executive*, 17(3), 201-222.
- Lahajnar, S., & Rožanec, A. (2018). Initial Coin Offering (ICO) Evaluation Model. *Investment Management and Financial Innovations*, 15(4), 169-182. [http://dx.doi.org/10.21511/imfi.15\(4\).2018.14](http://dx.doi.org/10.21511/imfi.15(4).2018.14)
- Lashitew, A. A., Van Tulder, R., & Liasse, Y. (2019). Mobile phones for financial inclusion: What explains the diffusion of mobile money innovations. *Research Policy*, 48(5), 1201-1215. <https://doi.org/10.1016/j.respol.2018.12.010>
- Li, K. X., Jin, M., & Shi, W. (2018). Tourism as an important impetus to promoting economic growth: A critical review. *Tourism Management Perspectives*, 26, 135-142. <https://doi.org/10.1016/j.tmp.2017.10.002>
- Li, T., Liu, J., Zhu, H., & Zhang, S. (2018). Business characteristics and efficiency of rural tourism enterprises: an empirical study from China. *Asia Pacific Journal of Tourism Research*, 23(6), 549-559. <https://doi.org/10.1080/10941665.2018.1483957>
- Library of Congress (2018). *Regulation of Bitcoin in Selected Jurisdictions*, 23 de Julio de 2018. Recuperado de <http://bit.ly/2V7pk7F> [Fecha de consulta: 16 de febrero de 2019]
- Lor, J.J., Kwa, S., & Donaldson, J.A. (2019). Making ethnic tourism good for the poor. *Annals for Tourism Research*, 76, 140-152. <https://doi.org/10.1016/j.annals.2019.03.008>
- MacNeill, T., & Wozniak, D. (2018). The economic, social and environmental impacts of cruise tourism. *Tourism Management*, 66, 387-404. <https://doi.org/10.1016/j.tourman.2017.11.002>
- Mahadevan, R., & Suardi, S. (2019). Panel evidence on the impact of tourism growth on poverty, poverty gap and income inequality. *Current Issues in Tourism*, 22(3), 253-264. <https://doi.org/10.1080/13683500.2017.1375901>
- Medina-Muñoz, D.R., Medina-Muñoz, R.D., & Gutiérrez-Pérez, F.J. (2016a). The impacts of tourism on poverty alleviation: an integrated research framework. *Journal of Sustainable Development*, 24(2), 270-298. <https://doi.org/10.1080/09669582.2015.1049611>
- Medina-Muñoz, D.R., Medina-Muñoz, R.D., & Gutiérrez-Pérez, F.J. (2016b). A Sustainable Development Approach to Assessing the Engagement of Tourism Enterprises in Poverty Alleviation. *Sustainable Development*, 24(4), 220-236. <https://doi.org/10.1002/sd.1624>
- Merediz-Solà, I., & Bariviera, A.F. (2019). A bibliometric analysis of bitcoin scientific production. *Research in International Business and Finance*, 50, 294-305. <https://doi.org/10.1016/j.ribaf.2019.06.008>
- Mushtaq, R., & Bruneau, C. (2019). Microfinance, financial inclusion and ICT: Implications for poverty and inequality. *Technology in Society*, 59. Advance online publication. <https://doi.org/10.1016/j.techsoc.2019.101154>
- Naciones Unidas. Comisión Económica para América Latina y el Caribe. (2019). *La Agenda 2030 y los Objetivos de Desarrollo Sostenible. Una oportunidad para América Latina y el Caribe*. Chile: Naciones Unidas. Recuperado de <http://bit.ly/2VNVfhV>
- Naciones Unidas. Comisión Económica para América Latina y el Caribe (2018). *Ruralidad, hambre y pobreza en América Latina y el Caribe*. Chile: CEPAL-FAO. Recuperado de <http://bit.ly/2POhlvm>
- Nakamoto, S. (2008). *Bitcoin: A Peer-to-Peer Electronic Cash System*, 15 abril del 2008. Recuperado de <http://bit.ly/2DTCfnX> [Fecha de consulta: 16 de febrero de 2019]

- Narayan, P. K., Narayan, S., Rahman, R. E., & Setiawan, I. (2018). Bitcoin Price Growth and Indonesia's Monetary System. *Emerging Markets Review*, 38, 364-376. <https://doi.org/10.1016/j.ememar.2018.11.005>
- Njoya, E. T., & Seetaram, N. (2018). Tourism Contribution to Poverty Alleviation in Kenya: A Dynamic Computable General Equilibrium Analysis. *Journal of Travel Research*, 57(4), 513-524. <https://doi.org/10.1177/0047287517700317>
- Nolan, A. R., Dartley, E. T., Baker, M.B., ReVeal, J., & Rinearson, J.E. (2018). Initial Coin Offerings: Key US Legal Considerations for ICO investors and sponsors. *Journal of Investment Compliance*, 19(1), 1-9. <https://doi.org/10.1108/JOIC-02-2018-0016>
- Önder, I., & Treiblmaier, H. (2018). Blockchain and tourism: Three research propositions. *Annals of Tourism Research*, 72, 180-182. <https://doi.org/10.1016/j.annals.2018.03.005>
- Organizacion Internacional del Trabajo (2001). *Resolución y conclusiones relativas a la seguridad Social*. Recuperado de <http://bit.ly/2E5GhtR>
- Panagiotidis, T., Stengos, T., & Vravosinos, O. (2018). The effects of markets, uncertainty and search intensity on bitcoin returns. *International Review of Financial Analysis*, 63, 220-242. <https://doi.org/10.1016/j.irfa.2018.11.002>
- Pilkington, M., Cruadu, R., & Grant, L.G. (2017). Blockchain and bitcoin as a way to lift a country out of poverty – tourism 2.0 and e-governance in the Republic of Moldova. *International Journal of Internet Technology and Secured Transactions*, 7(2), 115-143. <https://dx.doi.org/10.2139/ssrn.2732350>
- Ravello, J. (2012). *30 percent of aid lost to corruption – Ban Ki-moon*, Blog: devex, 10 de julio del 2012. Recuperado de <http://bit.ly/2Jn6kzP> [Fecha de consulta: 15 de febrero de 2019]
- Sharpley, R., & Naidoo, P. (2010). Tourism and Poverty Reduction: The Case of Mauritius. *Tourism and Hospitality Planning & Development*, 7(2), 145-162. <https://doi.org/10.1080/14790531003737169>
- Shen, D., Urquhart, A., & Wang, P. (2019). Does twitter predict Bitcoin? *Economics Letters*, 174, 118-122. <https://doi.org/10.1016/j.econlet.2018.11.007>
- Scheyvens, R. & Hughes, E. (2018). Can Tourism help to "end poverty in all its forms everywhere"? The challenge of tourism addressing SDG1. *Journal of Sustainable Tourism*, 27(7), 1061-1079. <https://doi.org/10.1080/09669582.2018.1551404>
- Snyman, S.L. (2012). The role of tourism employment in poverty reduction and community perceptions of conservation and tourism in southern Africa. *Journal of Sustainable Tourism*, 20(3), 395-416. <https://doi.org/10.1080/09669582.2012.657202>
- The World Bank (2017). *Remittance prices worldwide: An analysis of trends in cost of remittance services*. Recuperado de <http://bit.ly/2JmskuR>
- Thomas, R., & Koenig, K. (2016). "You know that's a rip-off": policies and practices surrounding micro-enterprises and poverty alleviation in South African township tourism. *Journal of Sustainable Tourism*, 24(12), 1641-1654. <https://doi.org/10.1080/09669582.2016.1145230>
- Thomason, J., Ahmad, M., Bronder, P., Hoyt, E., Pocock, S., Bouteloupe, J., ...& Shrier, D. (2018). Blockchain-Powering and Empowering the Poor in Developing Countries. En A. Marke (Ed.), *Transforming Climate Finance and Green Investment with Blockchains* (pp. 137-152). London, UK: Elsevier.
- Truong, V.D. (2018). Tourism, poverty alleviation and the informal economy: the street vendors of Hanoi, Vietnam. *Tourism Recreation Research*, 43(1), 52-67. <https://doi.org/10.1080/02508281.2017.1370568>
- Tu, K.V. (2018). Perfecting Bitcoin. *Georgia Law Review*, 52(2), 505-580.
- Tucker, H., & Boonabaana, B. (2012). A critical analysis of tourism, gender and poverty reduction. *Journal of Sustainable Tourism*, 20(3), 437-455. <https://doi.org/10.1080/09669582.2011.622769>
- Tumusiime, D.M., & Vedeld, P. (2012). False promise or False Premise? Using Tourism Revenue Sharing to Promote Conservation and Poverty Reduction in Uganda. *Conservation and Society*, 10(1), 15-28. <https://doi.org/10.4103/0972-4923.92189>

- United Nations, Commission on Sustainable Development. (1999). *El turismo y el desarrollo sostenible*, 15 de enero de 1999. Recuperado de <http://bit.ly/2JBawfm>
- Vincent, O., & Evans, O. (2019). Can cryptocurrency, mobile phones, and internet herald sustainable financial sector development in emerging markets? *Journal of Transnational Management*, 24(3), 259-279. <https://doi.org/10.1080/15475778.2019.1633170>
- World Travel & Tourism Council (2019). *Travel & Tourism. Economic Impact 2019 World*. Recuperado de <http://bit.ly/2NY5Kg2>
- Yadav, M. (2017). Exploring Signals for Investing in an Initial Coin Offering (ICO), *SSRN Electronic Journal*. <http://dx.doi.org/10.2139/ssrn.3037106>
- Yu, L., Wang, G., & Marcouiller, D.W. (2019). A scientometric review of pro-poor tourism research: Visualization and analysis. *Tourism Management Perspectives*, 30, 75-88. <https://doi.org/10.1016/j.tmp.2019.02.005>
- Zamani, E.D., & Giaglis, G. M. (2018). With a little help from the miners: Distributed ledger technology and market disintermediation. *Industrial Management & Data Systems*, 118(3), 637-652. <http://dx.doi.org/10.1108/IMDS-05-2017-0231>
- Zeng, B., Ryan, C., Cui, C., & Chen, H. (2015). Tourism-generated Income Distribution in a Poor Rural Community: A Case Study from Shaanxi, China. *Journal of China Tourism Research*, 11(1), 85-104. <https://doi.org/10.1080/19388160.2014.953281>
- Zharova, A., & Lloyd, I. (2018). An examination of the experience of cryptocurrency use in Russia. In search of better practice. *Computer Law and Security Review*, 34(6), 1300-1313. <https://doi.org/10.1016/j.clsr.2018.09.004>