



IPSA  **AISP**

25th World Congress of Political Science

July 21-25, 2018 | Brisbane, Australia

**It-mediated technologies in developing countries: An
examination of challenges in adoption of crowdsourcing
and sharing economy platforms**

*Araz Taeihagh, Lee Kuan Yew, School of Public Policy, National University of
Singapore*

Presented at

RC30.14 Platforms, Policy-making, and Innovation Panel

22-07-2018 | 15:30 - 17:15

It-mediated technologies in developing countries: An examination of challenges in adoption of crowdsourcing and sharing economy platforms

Araz Taeihagh, Lee Kuan Yew School of Public Policy, National University of Singapore, 469B Bukit Timah Road, Li Ka Shing Building, Singapore 259771, spparaz@nus.edu.sg

ABSTRACT - It-mediated technologies are being rapidly adopted in developing countries. In this paper, we examine crowdsourcing and sharing economy platforms and the factors that influence their adoption in developing countries. While these platforms share commonalities in use of IT and reputation systems, as well as reliance on crowds, and facilitation of the exchange of information, different types of platforms have unique characteristics and bring different sets of challenges. We examine the challenges regarding their successful adoption in developing countries and go beyond the examination of developing economies based on GDP and adopt a multi-dimensional clustering approach that results in a more nuanced differentiation among developing countries. This, in turn, enables a more detailed examination of the applicability of crowdsourcing and sharing economy platforms when faced with different challenges in various types of developing countries.

Keywords: Sharing Economy, Crowdsourcing, Platforms, Development, Governance

1 Introduction

Crowdsourcing is the IT-mediated engagement of the crowds for the purposes of problem-solving, task completion, idea generation and production (Howe 2006; Brabham 2008). Along with the growth of crowdsourcing, in parallel, sharing economy another IT-mediated technology is rapidly being developed. Similar to crowdsourcing, sharing economy is an umbrella term referring to the phenomena pertaining to sharing, exchange, or rental of goods and services to others through IT without transfer of ownership.

Despite the rapid adoption and development of crowdsourcing and sharing economy given that IT-intermediates, improve efficiency and decrease transactions costs and information asymmetry, and considering that these two phenomenon share similarities in use of information technology, relies on crowds, monetary exchange, use of reputation systems etc. there is a gap in the literature in examining the similarities and differences between them and at times these platforms are categorized as crowdsourcing and sharing economy by different scholars.

In this work we examine various types of crowdsourcing and sharing economy and use this knowledge and revisit the concept of developing countries. We examine some of the challenges faced by different types of developing countries in effective use of crowdsourcing and sharing economy platforms. Next we first introduce crowdsourcing and its principal types before introducing the sharing economy and its different types in Section 3. Using this knowledge, we examined different types of developing countries

and focus on their challenges in addressing crowdsourcing and sharing economy effectively in Section 4 before concluding with a summary of the article's contribution.

2 Crowdsourcing

Crowdsourcing is the IT-mediated engagement of the crowds for the purposes of problem-solving, task completion, idea generation and production in which dispersed knowledge of individuals and groups are leveraged through a mix of bottom-up innovative crowd-derived processes and inputs with efficient top-down goals set and initiated by an organization (Howe 2006; Brabham 2008).

Crowdsourcing can be conducted through “propriety crowds” which organisations foster using their own internal platforms or through “built-in crowds” by using third-party platforms that provide the infrastructure required as a paid service (Bayus 2013, Prpić, Taeihagh and Melton, 2015; Taeihagh 2017). In this work use the three generalized types of crowdsourcing (Prpić et al. 2015) that focus on microtasking in Virtual Labour Markets (VLM, Prpić, Taeihagh & Melton 2014; Luz, Silva & Novais 2015; De Winter et al. 2015), Tournament-based competition (TC, Jeppesen & Lakhani 2010; Glaeser et al 2016) and Open Collaboration (OC) through social media and web (Crump 2011; Rogstadius et al. 2013; Michel, Gil and Hauder, 2015). These categorizations are useful for the purpose of examining the general characteristics of cost, level of anonymity, scale of the crowds involved, IT structure used, time required for implementation of the crowdsourcing approach, magnitude of the crowdsourcing tasks involved and for the reliability of the technique based on the research by Prpić et al. (2015).

VLM

A VLM is an IT-mediated market where individuals can engage in spot labour offered by organizations generally through microtasks, typifying the production model of crowdsourcing (Brabham 2008), in exchange for monetary compensation (Prpić, Taeihagh & Melton 2014; Luz, Silva & Novais 2015; De Winter et al. 2015).

Microtasks offered at sites such as Amazon's Mechanical Turk include document translation, transcription, photo and video tagging, editing, sentiment analysis, categorization, data entry, content moderation (Narula et al. 2011). These are activities that can be divided into microtasks that can be completed in parallel and at scale using human computation.

TC

TC or Idea Competition (Jeppesen & Lakhani 2010; Glaeser et al. 2016) is another form of crowdsourcing in which organisations post their problems to specialised IT-mediated platforms such as Eyeka or Kaggle or to in-house platforms such as Challenge.gov and (Brabham 2013). Here with the help of the IT-mediated platform, organizers form a competition and set the rules and prize(s) for the competition. Individuals or groups can post their solutions (depending on the rules of the competition and capabilities of the platform) through the specialized IT-mediated platform to be considered for the prize which can range from a few hundred dollars to a million dollars or more. These TC platforms generally attract and maintain more specialized crowds interested on the particular focus of the platform which can differ widely from computer science (Lakhani et al. 2010) and data science (Taieb and Hyndman 2014) to open government and innovation (The White House 2010).

OC

In OCs problems/opportunities are posted and crowds usually engage in these endeavours voluntarily without monetary compensations (Crump 2011; Michel, Gil and Hauder, 2015). Starting a wiki, using social media and online communities (Rogstadius et al. 2013; Michel, Gil and Hauder, 2015) to garner contributions, are prime examples of this type of crowdsourcing. The level of engagements from the crowds depends on a number of factors such as the reach and engagement of the IT medium used, and the efficacy of the ‘open call’ by the organization and the crowd capital of the organization (Prpić Taeihagh Melton 2015; Prpić and Shukla 2013). As an example, Twitter has hundreds of millions of users, with more than 300 million being active on a monthly basis. However, an open call does not necessarily result in significant engagements from the crowds present in the platform. The success of the open call is dependent on a myriad of reason such as the influence of the organisation making the call within the platform ; an open call might get significant traction in the platform or on the other hand might get completely ignored.

3 Sharing Economy

Various terms such as sharing economy, shared economy, peer economy, collaborative economy and collative consumption are often used to describe the phenomena pertaining to sharing, exchange, or rental of goods and services to others through IT. Each of these terms have their own nuances that differentiate them from one another (Arribas et al. 2016) but are not contradictory in nature (Allen and Berg 2014). For

instance, collaborative consumption can include transfer of ownership on temporary or permanent basis (Ranchordas 2014).

Sharing economy is defined as a disruptive economic model where consumption of goods, assets or services is conducted through temporary rental, sharing or exchange of resources through crowd-based IT services or intermediates (Botsman and Rogers 2010; Belk, 2014; Hamari et al. 2015; Goudin 2016). The purpose of sharing economy is described as increasing efficiency and effectiveness by reducing transaction costs and information asymmetry, increasing asset utilization rates and recirculation of goods, along with increasing the competition in the marketplace, safer provision of services and goods that are normally available informally through formal procedures (Goudin 2016; Welsum 2016).

Based on the aforementioned description key features of the Sharing Economy are:

- Transformative and disruptive nature as evident by the effects of services such as Uber and Airbnb on Transportation and Tourism sectors (Guttentag 2015; Ikkala and Lampinen 2015; Cannon and Summers 2014),
- Consumption and use of goods, services or assets through rental, sharing or exchange of resources which increases the utilization rate (Goudin 2016),
- Heavy reliance of information technology through online platforms and/or mobile devices – For instance, Sharing Economy relies on IT for identifying relevant individuals or businesses, exchanging and aggregating relevant information (e.g. products, services, usage), booking of services, and payment of fees.

Technological breakthroughs that enable such activities have reduced transaction costs and increased the reach of sharing economy (Gansky 2010; Belk 2014; Goudin 2016)

- Direct engagement of Crowds and/or Intermediaries –sharing economy focuses on consumer markets either through crowd-based online services or intermediaries (Hamari et al. 2015) providing consumer to consumer (peer-to-peer) or business-to-consumer models. This particular aspect of sharing economy in which economic activity is carried out through crowd-engagement directly connects to crowdsourcing (see Section 4). Moreover, a large portion of the communications happen through word of mouth and social media (Gansky, 2010).
- Temporary nature of the engagement (e.g. temporary transfer of ownership) (Belk 2014) - rather than permanent transfer of ownership of goods distinguishes sharing economy from buying and selling of goods and services online (e-commerce - Burt and Sparks 2003).

It is already evident that sharing economy has the potential to be applied in a diverse range of sectors which include:

- Tourism and hospitality (Quattrone et al 2016, Ert et al. 2016, Zervas et al 2017),
- Mobility and logistics e.g. carsharing and ridesharing (Clewlow 2016; Li et al. 2018),
- Labour and service platforms (Thompson 2015; Fraiberger and Sundararajan 2015),

- Food and dining (Hendrickson 2013; Tanz, 2014; Richards and Hamiltons 2018)
- Goods and equipment (Morrissey 2015; Anderson 2016),
- Financial (Ordanini et al. 2011; Zhang et al. 2014).

Sharing Economy can be classified to different categorises based on the diverse set of features and applications. Sector based categorizing as presented earlier is the easiest form of classification; however, as Kenny, Rouvinen and Zysman (2015) point out sectors are blurring due to digitization and use of platforms. In this paper we use the categorization of Gansky (2010) and Rauch and Schleicher (2015). They considered two models of sharing economy in which a business either owns goods/services and rents them or the business creates an IT platform to temporary allow exchange of goods and services for a charging fee to the interested parties in various ways (Demary, 2015). These two models were named as: Full mesh mode (company assets rented out to customers) and Own-to-Mesh mode (platforms enabling peer-to-peer sharing of goods for a transaction or partnership fee rather than owning the goods) by Gansky (2010). Rauch and Schleicher (2015) named these two models as asset hubs (a business own good or services and rents them out or (Peer-to-Peer Sharing Networks (the business creates a peer-to-peer platform for exchange of goods and services on a temporary basis).

4 Crowdsourcing and Sharing Economy and Development

Fialho and Van Bergeijk (2016) illustrate that the proliferation of developing country

categorizations has reached a confusing level. Various terms such as developing country, third world country, less developed country, least developed country, low and middle income country, low and medium human development country, non-industrialised country, emerging nation etc. have been used to describe countries that are underdeveloped by institutions such as United Nations, International Monetary Fund and World Bank (UN 2016; IMF 2016; World Bank 2016). For instance, World Bank definition of a developing country is a country in which the majority have access to far fewer public services and live with less money relative to industrialised countries (World Bank 2012).

Nafziger (2005) highlights the substantial differences between and within different types of developing countries by highlighting the differences between economies in transition, OPEC (excluding Kuwait and UAE), 48 least developed countries and the rest of developing countries. Koch (2015) points out the different priorities of countries in terms of development, ranging from dealing with overcoming widespread poverty and inequality, issues of stability, state building and security, to consolidated democracies and members of G20 or uppermiddle-income countries that are also considered developing. Vázquez and Sumner 2013 point out, that at any given point in time, development cannot be represented linearly from low to high (development countries) based on increase in income per capita ranking.

Koch (2015) argues the move from a focus on either 'poor countries or poor people' categorization towards a multi-dimensional view of developing countries to better capture the development challenges different developing countries face which can be

achieved by going beyond one-dimensional classification of economic development according to GDP per capita, by including factors that provide a more accurate picture of a country's social and political development.

By using the multi-dimensional clustering system of different types of developing countries to five groups (C1-C5) based on factors such as levels of poverty and inequality, productivity and innovation, political constraints and dependence on external flows a more nuanced understanding of developing countries and their characteristics develops and unique countries' needs along with their resources and capabilities can better be taken into consideration (Vázquez and Sumner, 2012; 2013; 2015). We go beyond use of single metric such as GDP and use these five clusters of countries that each have specific developmental characteristics and issues, a summary of the work by Vázquez and Sumner developed by the author is presented in Table 1.

Crowdsourcing and sharing economy proponents focus on the positive aspects of these It-mediated technologies and promise of positive societal transformation through facilitation of connecting, interacting and exchanging information, goods and services and currency with others. While initially the focus has been on the introduction of these technologies in the developed countries, developing countries can benefit from them as well. It is argued that peer-to-peer sharing networks can boost the service sectors in developing countries, because relatively speaking they are not as heavily reliant on capital investments and can also reduce overhead costs, and also facilitate matching consumers and suppliers and solve informational problem in developing countries (Ozimek, 2014).

Table 1 Different types of Developing Countries –based on Vázquez & Sumner groupings of developing countries (2012; 2013; 2015)

	Poverty	Income inequality	Productivity	Innovation	GDP	Political Freedom	Governance	CO2 Emissions	External Flow
Type C1 -High poverty rate countries with largely traditional economies E.g. (2005-2010): Sierra Leone; Ethiopia; Rwanda; Haiti; Bangladesh; Pakistan; India ;	Highest	Moderate	Lowest	Lowest	Lowest	Vey Low	Poor	Low	High
Type C2 Natural resource dependent countries with little political freedom. E.g. (2005-2010): Vietnam; Tajikistan; Yemen; Cameroon Angola; Chad; Congo;	High	Low	Low	Low	Low	Low -	Poor	Low	Moderate
Type C3 External flow dependent countries with high inequality E.g. (2005-2010): Bolivia; Indonesia Thailand; Peru; Colombia; Ukraine; Sri Lanka; Kenya	Moderate	High	Moderate	Moderate	Moderate	High	High	Moderate	High
Type C4 Economically egalitarian emerging economies with serious challenges of environmental sustainability and limited political freedoms E.g. (2005-2010): Iraq; Egypt; China; Jordan; Azerbaijan; Venezuela	Moderate /Low	Lowest	High	High	High	Lowest	Poor	High	Low
Type C5 Unequal emerging economies with low dependence on external finance, E.g (2005-2010): Turkey; Brazil; Mexico; Argentina; South Africa; Malaysia	Lowest	High	Highest	Highest	Highest	Highest	Highest	Highest	Lowest

Along this positive view of the crowdsourcing and sharing economy, as a pathway towards sustainability others warn of the potential for grave negative consequences. Proponents argue that these IT-mediated technologies can increase social capital and income, give voice to consumers in the society and in general increase reciprocity while others warn that these platforms reduce tax bases and accountability, discriminate agent

individuals, destroy jobs and underpay them and result in domination of markets by multinational corporations (Heinrichs 2013; Martin 2016; Reeves 2015; Edelman & Luca 2014).

Developing countries, often have lower GDP, levels of productivity, innovation, governance and political freedoms and have higher rates of poverty, income equality, and dependence on external flows of cash. Given the illustrated differences among developing countries, a one-size-fits-all approach to adoption of it-mediated technologies is not feasible. Below we focus on some of the challenges of different types of developing countries in addressing crowdsourcing and sharing economy focusing on governance and regulatory dimensions.

An important requirement for success of the operation of crowdsourcing and sharing economy platforms is having access to communication networks to facilitate exchange of information, and transactions among participants in these platforms.

According to Table 1, C1 and C2 countries have higher level of poverty, and lower levels of labour productivity and innovation capacity, They deal with severe poverty issues and have more difficulty in implementing such technologies, as the data from World Bank indicators on access to internet, cellular subscriptions per 100 people, and cell phone diffusion by country groupings suggest (World Bank 2015, 2016). The most important difference between C1 and C2 countries is in terms of level of dependency on external finance and quality of democracy (higher in C1), and primary exports (much higher in C2) (Vázquez and Sumner 2013). C1 and C2 countries also have a higher

proportion of contribution from agricultural sectors but more importantly the portion of population that in these countries have difficulty in using platforms is higher (relative to C3-C5 countries that have higher levels of urban population). This is because carrying out more sophisticated tasks online such as participating in TC and VLMs require higher capacity and access to computers rather than mobile phones that facilitate local (mobile) sharing economy activities.

Finally, research currently suggests developed countries disproportionately hire more individuals from crowdsourcing and sharing economy platforms than developing countries to conduct online and local tasks (Codagnone, Abadie, Biagi 2016). Aside from issues relating to discrimination between individuals (discussed below), here again the transfer of higher skilled and higher paying jobs within developing countries is not equal. C4 and C5 countries that generally have higher levels of productivity and innovation are more likely to get the better paying jobs such as programming and engage in specialized forms of IT-mediated technology such as tournament based crowdsourcing. While C1-C3 countries will attract low to medium skilled work. Even in this case C1 countries are at a massive disadvantage as often individuals in these countries might not have the ability to provide verifiable personal information or show lack of criminal record that might bar them from participating in online platforms. Therefore, although certain level of outsourcing from developed countries to developing countries is happening, the economies that have moved away from traditional agriculture and are more advanced will benefit more which in turn can further increase the gap between C4 and C5 countries with their C1-C3 counterparts.

Developing countries often suffer from inefficiency in delivery of vital public services, inappropriate allocation of resources that often result in acute problems (e.g. in healthcare) as well as inefficient revenue systems, and poor transparency (Shah, 2005; Berglof and Claessens 2006; Asante, Zwi and Ho 2006).

Poor governance and ineffective regulatory regimes combined with weak property rights in developing countries increases the difficulty of attracting investments required for building large companies with high reputational capital (Ozimek, 2014). Thus in an absence of good governance practices, crowd-based rating systems facilitate the existence of an effective services industry and reduce/bypass the need for regulations as the users will trust peer-based reputation systems that can inform them about quality of goods/services and help them in avoiding fraud more than government endorsed companies (Ozimek 2014). However, Aloisi (2015) highlight that these ranking systems and approval ratings transfer the traditional role of management to be delegated to the users of the platforms and suggest that with this transfer of the role now recipients of such reviews in the platforms are more prone to external manipulations. In addition, considering that the majority of crowdsourcing and sharing economy companies are commercial and seek profits (with the exception of some OC platforms and non-commercial peer-to-peer sharing networks) Ozimek's claim seems optimistic.

Codagnone, Abadie & Biagi (2016) already document litigations in United States in regards to these platforms concerning cost reimbursements, violation of labour standards, employee benefits, incorrect classification as contractors, and minimum wage and overtime payments. Stiff competition can result in price reductions by the firms for

attracting more costumers and increasing volume of business but this can for instance in the case of ridesharing also result in hurting private hire drivers (Straits Times 2016). If such issues are surfacing so quickly in developed countries such as United States and Singapore with strong governance and effective regulatory regimes, and effective enforcement mechanisms, the counter argument that given the governance and regulatory deficits in developing countries a stronger and stricter enforcement and oversight of these platforms is needed also seems plausible.

Firms such as TaskRabbits, Uber and Lyft have made adjustments to their business models in response to some of these legal challenges in developed countries. However, without adequate regulations in place, C1, C2, and C4 countries are susceptible to firms entering their markets and dominating them while passing risks to workers, contractors and consumers (e.g. not having third party insurance in ridesharing platforms or protecting privacy and financial information in crowdsourcing and sharing economy platforms that carry out currency exchange due to lack of regulations) and then dealing with litigations afterwards perhaps after a long period in which they took advantage of the situation. This is further worsened because these countries (particularly C1 and C2) are less capable of monitoring these platforms and ensuring correct record keeping which can result in reduction of tax payments to the state.

Codagnone, Abadie, & Biagi, (2016) and Aloisi, (2015) focus on work related challenges of IT-mediated platforms and meticulously unpack issues such as workplace health and safety, discrimination, and social arbitrage. To address exploitation using these platforms and facilitate employment online (e.g. Amazon MTurk) or locally (e.g.

Taskrabbit) they suggest developing restriction for maximum hours of work, minimum wage, avoiding clauses in contracts that restrict works to a particular platform, provision of health and liability insurance, developing guarantees to avoid algorithmic discrimination and developing systems that allow portability of workers reputation and performance across platforms.

Many of the suggested remedies are challenging and are yet to be addressed in the developed countries, which further increase the concern in regards to developing countries. All of the developing countries can benefit from improving their standards of governance relative to developed countries which facilitate addressing such issues. As highlighted in Table 1 C1, C2 and C4 countries have the highest levels of governance deficit which is further exacerbated by effects of corruption and restrictions on political freedom which demonstrates the challenges in addressing issues raised by Codagnone, Abadie, & Biagi, (2016) and Aloisi, (2015).

Concerns about Uber due to excessive charges from surge-pricing algorithm (Li, Taeihagh and de Jong 2018) for instance and drivers being accused of assault, resulted in blanket ban in some cities, as Uber initially was not subject to strict regulations for pricing, and licensing unlike the traditional Taxi industry (Gobble, 2015). However, studies suggest that although firms such as Airbnb and Uber try to hold on to their generic business models as much as possible, these firms have adapted their business models when faced with regulatory constraints (van den Broek, 2015, Li, Taeihagh and de Jong 2018).

This highlights the need for active participation and effective regulation of the affected sector by the governments in developing countries in order to gain benefits from the IT-mediated platforms as highlighted earlier and avoiding negative consequences such the violations of the labour laws, discrimination, and infringements on privacy.

C3 and C5 with higher governance capacity are more likely to be able to work with firms and impose restrictions on them and encourage adoption of positive practices. In addition, given the higher level of productivity in C4 and C5 countries, they can utilize pull mechanisms to direct innovation in IT-mediated technology and provide funding and support to companies that follow best practices. In addition, focusing on developing local technological capabilities is more successful than provision of incentives to firms for technology transfer to developing countries (Sadoi 2008). As such C1-C3 countries should not just open markets to external corporations, they should exert control and focus on improving levels of productivity and innovation and perhaps set stricter control mechanism relative to C4 and C5 counterparts that have higher governance capacity¹.

5 Conclusion

This paper examined crowdsourcing and sharing economy and highlighted various types of each phenomenon. Afterwards, given the similarities of crowdsourcing and sharing economy in use of information technology, relies on crowds, monetary exchange, use of

¹ Some forms of crowdsourcing platforms, particularly OC rather than receiving support might be restricted in developing countries with lower levels of political freedom (C4, C1 and C2) or actively be used for reducing political freedom as the empirical research by Asmolov (2015) demonstrates.

reputation systems and the gap in the literature in regards to their nuanced differences, sharing and crowdsourcing were systematically compared along several dimensions. Moreover, we examined the use of crowdsourcing and sharing economy in developing countries.

Rather than categorizing developing economies based on GDP, we used the multi-dimensional clustering system for differentiation among developing countries and examined some of the challenges that these different groups of developing countries face in addressing crowdsourcing and sharing economy. We focused on the governance and regulatory dimensions, highlighting the differences in applicability of IT-mediated technologies in specific development contexts. We hope that this research facilitates more nuanced examination of crowdsourcing and sharing economy in different types of developing countries and encourages researchers to study them more rigorously in future.

References

- Allen, D., & Berg, C. (2014). The sharing economy. How over-regulation could destroy an economic revolution. Institute of Public Affairs, Australia.
https://ipa.org.au/portal/uploads/Sharing_Economy_December_2014.pdf
- Aloisi, A. (2015). Commoditized Workers: Case Study Research on Labour Law Issues Arising from a Set of 'On-Demand/Gig Economy' Platforms (July 1, 2015).
<http://ssrn.com/abstract=2637485>
- Anderson R. (2016). How some big firms are learning to share as well as sell, BBC
<http://www.bbc.com/news/business-35362199>

- Arribas, G. V., Steible, B., & De Bondt, A. (2016). Cost of non-Europe in the sharing economy: legal aspects.
- <http://www.eipa.eu/files/FINAL%20REPORT%20for%20EIPA%20web.pdf>
- Asante, A. D., Zwi, A. B., & Ho, M. T. (2006). Equity in resource allocation for health: A comparative study of the Ashanti and Northern Regions of Ghana. *Health Policy*, 78(2), 135-148.
- Asmolov, G. 2105. “Vertical Crowdsourcing in Russia: Balancing Governance of Crowds and State–Citizen Partnership in Emergency Situations.” *Policy & Internet* 7 (3): 292–318.
- Belk, R. (2014). You are what you can access: Sharing and collaborative consumption online. *Journal of Business Research*, 67(8), pp.1595-1600.
- Benkler, Y., 2004. Sharing nicely: On shareable goods and the emergence of sharing as a modality of economic production. *Yale Law Journal*, pp.273-358.
- Berglöf, E. and Claessens, S. (2006). “Enforcement and good corporate governance in developing countries and transition economies”, *World Bank Research Observer*, Vol. 21 (1), pp. 123-150.
- Botsman, R., & Rogers, R. (2010). What’s mine is yours. *London: Collins*.
- Brabham, D. C. (2008). Crowdsourcing as a model for problem solving an introduction and cases. *Convergence*. 14(1), 75-90.
- Brabham, D. C. (2013). Using Crowdsourcing In Government. IBM Center for The Business of Government.
- <http://www.businessofgovernment.org/sites/default/files/Using%20Crowdsourcing%20In%20Government.pdf>

- Burt, S., & Sparks, L. (2003). E-commerce and the retail process: a review. *Journal of Retailing and Consumer Services*, 10(5), 275-286.
- Cannon, S., & Summers, L. H. (2014). How Uber and the Sharing Economy Can Win Over Regulators. *Harvard business review*, 13.
- Clewlow, R. R. (2016). Carsharing and sustainable travel behavior: Results from the San Francisco Bay Area. *Transport Policy*, 51, 158-164.
- Codagnone, C. and Abadie, F. and Biagi, F. (2016). The Future of Work in the ‘Sharing Economy’. Market Efficiency and Equitable Opportunities or Unfair Precarisation? Institute for Prospective Technological Studies, Science for Policy report by the Joint Research Centre. <http://ssrn.com/abstract=2784774>
- Crump, J. (2011). What are the police doing on Twitter? Social media, the police and the public. *Policy & Internet*, 3(4), 1-27.
- De Winter, J. C. F., Kyriakidis, M., Dodou, D., & Happee, R. (2015). Using CrowdFlower to study the relationship between self-reported violations and traffic accidents. Proceedings of the 6th International Conference on Applied Human Factors and Ergonomics (AHFE). Las Vegas, NV. Available at <http://ssrn.com/abstract=2592903>
- Demary, V. (2015). Competition in the sharing economy (No. 19/2015). IW policy paper.
- Edelman, B. G., & Luca, M. (2014). Digital discrimination: The case of airbnb. com. Harvard Business School NOM Unit Working Paper, (14-054).
- Ert, E., Fleischer, A., & Magen, N. (2016). Trust and reputation in the sharing economy: The role of personal photos in Airbnb. *Tourism Management*, 55, 62-73.

- Fialho, D., & Van Bergeijk, P. A. (2016). The Proliferation of Developing Country Classifications. *The Journal of Development Studies*, 1-17.
- Fraiberger, S. P., & Sundararajan, A. (2015). Peer-to-peer rental markets in the sharing economy. NYU Stern School of Business Research Paper. Chicago
- Gansky, L. (2010). *The mesh: Why the future of business is sharing*. Penguin.
- Glaeser, E. L., Hillis, A., Kominers, S. D., & Luca, M. (2016). Crowdsourcing City Government: Using Tournaments to Improve Inspection Accuracy. *The American Economic Review*, 106(5), 114-118.
- Gobble, M. M. (2015). Regulating innovation in the new economy. *Research-Technology Management*, 58(2), 62-64.
- Goudin, P. (2016). The cost of non-Europe in the sharing economy: Economic, social and legal challenges and opportunities. European Parliament, January.
- Guttentag, D. (2015). Airbnb: disruptive innovation and the rise of an informal tourism accommodation sector. *Current issues in Tourism*, 18(12), 1192-1217.
- Hamari, J., Sjöklint, M., & Ukkonen, A. (2015). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science and Technology*.
- Heinrichs, H. (2013). Sharing economy: a potential new pathway to sustainability. *GAIA-Ecological Perspectives for Science and Society*, 22(4), 228-231.
- Hendrickson 2013, Lining Up to Dine With Strangers: EatWith Pairs Local Hosts With Diners From All Over the World, *Wall Street Journal*,
<http://www.wsj.com/news/articles/SB10001424127887324085304579007092945525>
- [818](#)

- Howe, J. (2006). Crowdsourcing: A Definition. Crowdsourcing.com.
Retrieved May 30, 2014, from
http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html
- Ikkala, T., & Lampinen, A. (2015, February). Monetizing network hospitality: Hospitality and sociability in the context of AirBnB. In Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing (pp. 1033-1044). ACM.
- IMF (2016). World Economic Outlook (WEO), International Monetary Fund,
<http://www.imf.org/external/pubs/ft/weo/2016/01/index.htm>
- Jeppesen, L. B., & Lakhani, K. R. (2010). Marginality and Problem-Solving Effectiveness in Broadcast Search. *Organization Science*, 21(5), 1016–1033.
- Koch, S. (2015). From poverty reduction to mutual interests? The debate on differentiation in EU development policy. *Development Policy Review*, 33(4), 479-502.
- Lakhani, K., Garvin, D. A., & Lonstein, E. (2010). Topcoder (a): Developing software through crowdsourcing. Harvard Business School General Management Unit Case, (610-032).
- Li, Y., Taeihagh, A., & de Jong, M. (2018). The Governance of Risks in Ridesharing: A Revelatory Case from Singapore. *Energies*, 11(5), 1277.
- Luz, N., Silva, N., & Novais, P. (2015). A survey of task-oriented crowdsourcing. *Artificial Intelligence Review*, 44(2), 187-213.
- Martin, C. J. (2016). The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism?. *Ecological Economics*, 121, 149-159.

Michel, F., Gil, Y., & Hauder, M. (2015). A virtual crowdsourcing community for open collaboration in science processes. In Americas Conference on Information Systems (AMCIS).

Morrissey J. (2015), Sharing Economy Goes Hyperlocal With a Growing Market for Household Items, NY Times
http://www.nytimes.com/2015/09/03/business/smallbusiness/sharing-economy-goes-hyperlocal-with-a-growing-market-for-household-items.html?_r=0

Nafziger E. W. (2005), Economic Development 4th Ed., Cambridge University press: Cambridge.

Narula, P., Gutheim P., Rolnitzky, D., Kulkarni, A. & Hartmann, B. (2011).
MobileWorks: A Mobile Crowdsourcing Platform for Workers at the Bottom of the Pyramid. In Proceedings of HCOMP.

Ordanini, A., Miceli, L., Pizzetti, M., & Parasuraman, A. (2011). Crowd-funding: transforming customers into investors through innovative service platforms. Journal of service management, 22(4), 443-470.

Ozimek, A. 2014. The Sharing Economy and Developing Countries. *Forbes Business*.
<http://www.forbes.com/sites/modeledbehavior/2014/08/04/the-sharing-economy-and-developing-countries/#7a936cac56a4>

Prpić J., Melton J., Taeihagh A., and Anderson T. (2015). MOOCs and crowdsourcing: Massive courses and massive resources First Monday, Volume 20, Number 12 - 7, doi: <http://dx.doi.org/10.5210/fm.v20i12.6143>

Prpić, J. & Shukla, P. (2013). The Theory of Crowd Capital. Proceedings of the 46th Annual Hawaii International Conference on System Sciences. Hawaii, January 7-10, Computer Society Press.

- Prpić, J., Taeihagh, A., & Melton, J. (2014). Experiments on Crowdsourcing Policy Assessment. Proceedings of IPP 2014. Oxford Internet Institute.
- Prpić, J., Taeihagh, A., & Melton, J. (2015). The Fundamentals of Policy Crowdsourcing. *Policy & Internet*. 7(3).
- Quattrone, G., Proserpio, D., Quercia, D., Capra, L., & Musolesi, M. (2016, April). Who benefits from the sharing economy of Airbnb?. In Proceedings of the 25th international conference on world wide web (pp. 1385-1394). International World Wide Web Conferences Steering Committee.
- Rauch, D. E., & Schleicher, D. (2015). Like Uber, But for Local Governmental Policy: The Future of Local Regulation of the “Sharing Economy”. George Mason Law & Economics Research Paper, (15-01).
- Reeves, R. (2015). The free worker forlorn hope? (2015). *Management Today*, 36.
<http://search.proquest.com/docview/1673409805?accountid=28662>
- Richards, T. J., & Hamilton, S. F. (2018). Food waste in the sharing economy. *Food Policy*, 75, 109-123.
- Rogstadius, J., Vukovic, M., Teixeira, C. A., Kostakos, V., Karapanos, E., & Laredo, J. A. (2013). CrisisTracker: Crowdsourced social media curation for disaster awareness. *IBM Journal of Research and Development*, 57(5), 1-4.
- Sadoi Y (2008). Technology transfer in automotive parts firms in China. *Asia. Pacific. Bus. Rev.*, 14(1): 147-163.
- Shah, A. (2005). Public services delivery. World Bank Publications.
- Straits Times (2016). Fare cuts by Uber, Grab will hurt sector: Taxi body
<http://www.straitstimes.com/singapore/fare-cuts-by-uber-grab-will-hurt-sector-taxi-body>.

- Taeihagh, A. (2017). Crowdsourcing: a new tool for policy-making?. *Policy Sciences*, 50(4), 629-647.
- Taieb, S. B., & Hyndman, R. J. (2014). A gradient boosting approach to the Kaggle load forecasting competition. *International Journal of Forecasting*, 30(2), 382-394.
- Tanz, J. (2014). How Airbnb and Lyft Finally Got Americans to Trust Each Other. *Wired Magazine*, <http://www.wired.com/2014/04/trust-in-the-share-economy/>
- The White House (2010). Guidance on the Use of Challenges and Prizes to Promote Open Government. https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-11.pdf
- Thompson, M. (2015). Sharing economy makes it pay to work on your own. *CNBC*. <http://www.cnbc.com/2015/07/01/sharing-economy-makes-it-pay-to-work-on-your-own.html>
- UN (2016). What are least developed countries, Development Policy and Analysis Division, United Nations. http://www.un.org/en/development/desa/policy/cdp/ldc_info.shtml
- van den Broek, D. (2015). An exploratory research on the adaptation of sharing economy business models in different institutions, Master's thesis, University of Amsterdam.
- Vázquez, S. T., & Sumner, A. (2012). Beyond Low and Middle Income Countries: What if There Were Five Clusters of Developing Countries?. *IDS Working Papers*, 2012(404), 1-40.

- Vázquez, S. T., & Sumner, A. (2015). Is the 'Developing World' Changing? A Dynamic and Multidimensional Taxonomy of Developing Countries. *European Journal of Development Research*.
- Vázquez, S.T., & Sumner, A. (2013). Revisiting the meaning of development: A multidimensional taxonomy of developing countries. *Journal of Development Studies*, 49(12), 1728-1745.
- Welsum, D. V. 2016. Sharing is Caring? Not quite. Some observations about the 'sharing economy'. *World Development Report 2016*, World Bank Group.
- World Bank (2012). What is a developing country?
<http://go.worldbank.org/E954XKGHN0>
- World Bank (2015). The little data book on information and communication technology. Washington D.C
<https://openknowledge.worldbank.org/bitstream/handle/10986/22554/9781464805585.pdf>
- World Bank (2016). Country and lending groups.
<http://data.worldbank.org/about/country-and-lending-groups>
- World Bank (2016). The little data book. Washington D.C
- Zervas, G., Proserpio, D., & Byers, J. W. (2017). The rise of the sharing economy: Estimating the impact of Airbnb on the hotel industry. *Journal of Marketing Research*, 54(5), 687-705.
- Zhang, N., Datta, S., & Kannan, K. N. (2014). An Analysis of Incentive Structures in Collaborative Economy: An Application to Crowdfunding Platform. Available at SSRN 2518662.