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New routes to cashlessness? ICTs, demonetisation, and the Indian informal economy

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VERSION

SMUR (Submitted Manuscript Under Review)

PUBLISHER STATEMENT

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REPOSITORY RECORD

Masiero, Silvia. 2019. "New Routes to Cashlessness? Icts, Demonetisation, and the Indian Informal Economy". figshare. <https://hdl.handle.net/2134/26371>.

**New routes to cashlessness?
ICTs, demonetisation, and the Indian informal economy**

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Information poverty, resulting from limited and distorted provision of relevant information on important matters, has increased the vulnerability of India's poor to the crisis initiated by the announcement of demonetisation in November 2016. In this paper we draw on a study of digital finance providers and informal street sellers in Bangalore, conducted in the immediate aftermath of demonetisation. Using the theoretical lens of information poverty, we argue that technologies such as India's biometric identification system (Aadhaar) do in principle help unbanked citizens obtain the digital identity that is needed to transact in a cashless economy. However, several design-reality gaps exist between extant financial technologies and the needs of informal street sellers, and digital tools seem to contribute only minimally to their integration in the new cashless system. Still, the marginalised communities affected by cashlessness hold highly valuable knowledge about the consequences of demonetisation, and use their first-hand information to enact a set of dynamic coping strategies.

1. Introduction

On November 8, 2016, Indian Prime Minister Narendra Modi addressed the nation in a televised announcement, stating that “the 500 rupee and 1000 rupee currency notes presently in use will no longer be legal tender from midnight tonight”. Such notes constituted 86% of the Indian currency in circulation, and were suddenly made unusable for all sorts of ordinary transactions. Abrupt and unexpected, the demonetisation move was designed to “break the grip of corruption and black money”, in a cash-intensive economy whose largely informal nature allegedly maximizes opportunity for corruption and leakage. In the immediate aftermath of the new policy measure, a government-led survey revealed some popular support for it, in the midst of critique by world-class economists as Amartya Sen and of severe disruptions to the nation's economic life (Ghatak, 2016; Nagarajan, 2016).

Just a few months after the announcement, the demonetisation move has generated a visible backlash. After the short-term shock, medium-term impact is reflected in small producers and shop owners

shutting down businesses all over the country, industrial dynamics becoming slower, and the ubiquity of consumption crunches across the nation (Kumar, 2017; Waknis, 2017). As observed in Lahiri (2016), cash shortage persisted after the announcement, and the effects on the economy, potentially as severe as a 2% GDP loss as former Prime Minister Manmohan Singh suggested, lead to fear that long-term impact will be profound. The poor and vulnerable, who conduct most of their transactions in cash, are likely to be hit with particular severity, unless proper specific measures are taken to help them cope with cashlessness (Umamaheshwari, 2016).

Information is a crucial good under crisis. Coining the notion of *information poverty*, Elfreda A. Chatman (1996, 1999) sustains that marginalised groups in a society are comparatively more vulnerable to crises, as their condition may make it harder to obtain the information necessary to tackle problems. In a crisis or emergency, information is needed on what has happened, which short-term measures should be adopted, and what strategies can be used to cope with medium- and long-term consequences. Information, Chatman continues, is even more relevant when the crisis is sudden and affects core dimensions of people's lives, which is in fact what happened post-demonetisation to the many unbanked Indians who conduct their transactions in cash.

Information and communication technologies (ICTs) are designed to help information flow better and cater to greater numbers of people. This is why ICT-based mechanisms are at the core of discussion in emergency management, due to their potential in quickly transmitting relevant communications and organising early recovery (Tusiime & Byrne, 2011). Given their quick diffusion in the developing world over the past two decades, ICTs and especially mobile technologies are increasingly owned and accessed by the poor and marginalised, affording types of intervention that could not be thought of or conducted before. This is why, at the onset of demonetisation, an idea of "demonetisation through digitalisation" emerged, arguing that the unbanked poor would be protected by use of mobile phones and ICT solutions tailored to their post-demonetisation needs (Ghunawat, 2016).

In this paper, we assess the viability of the "demonetisation through digitalisation" proposition with a study of the effects of the move on street sellers, a high share of whom are part of the large unbanked population of India. The study has been conducted in the immediate aftermath of demonetisation in Bangalore, through interviews conducted with sellers in informal street markets and with state and non-governmental providers of digital finance. Having formed a core idea of the problem, further interviews have been conducted with citizens affected by demonetisation, politicians and members of volunteer organisations, who after demonetisation have engaged in helping unbanked communities using financial technologies. These sources have been triangulated with press and social media reports on demonetisation and its consequences, which have proliferated on Indian and international platforms for several months after the announcement.

Based on interactions with street sellers, our study reveals that technologies such as India's biometric identification system (Aadhaar) do in principle help unbanked citizens obtain digital identity. This type

of identity is needed to transact in a cashless economy, and acquiring it is positive for the unbanked. However, several design-reality gaps (Heeks, 2002) exist between extant financial technologies and the needs of informal street sellers, in terms of technology ownership, access to informational networks, and infrastructural readiness for a switch to cashlessness. These gaps, emerging from respondents' narratives and observed in the field, result in serious issues with the idea that digitality helps street sellers join the new cashless system. At the same time, the study reveals street sellers' valuable knowledge on the impact of demonetisation, and shows how they enact coping strategies in response to the hardship encountered due to disappearance of cash.

The intended contribution of this paper is twofold. First, the study has been conducted in the immediate aftermath of demonetisation, and provides an account of the immediate consequences of such historical moment on the Indian informal economy. Second, it problematises the relation between digitalisation and formalisation of the economy, providing the perspective of street sellers grappling with a suddenly cashless world. As a result, it adds to existing knowledge on digital finance for the poor, problematising the logic of formalisation and examining its effect on the actors involved.

The paper is structured as follows. First, we look at information poverty as the main construct that informs our work, and we apply it to the condition of street sellers in post-demonetisation India. We then describe the study, including our work in the street markets as well as with providers and promoters of digital finance. We then detail findings on the effects of new financial technologies, and highlight the gaps that prevent ICT from helping unbanked street sellers as it was supposed to. Having reflected on our findings, we state the contributions of the study to the field of ICT and financial inclusion.

2. Demonetisation and Information Poverty

The focus of Chatman's theory of information poverty (1996, 1999) are the means through which people at the margins of the society acquire and handle information. Chatman's interest is in "the information needs of people who live precariously within the brutal, marginalized world" that they live in (Chatman, 1999: 207). The origin of such focus lies in evidence that existing theories of information do not adequately deal with the needs of the marginalised, and with the brutality and exclusion that often characterise their worlds. As a result, specific theories are devised to understand the information reality of diversely marginalised communities.

Existing discourses on information technology and development are inspired by technology transfer, the social embeddedness of technology in its reality, or the transformative role of ICT in a developing reality (Avgerou, 2008). A discourse centred on technology transfer tends to be associated with a deterministic view, arguing that technology concurs to modernisation and is, therefore, needed by developing countries to "catch up" with industrialised ones (Akpan, 2003). Such approach fails, however, to account for how technology is entrenched in the lived reality of developing subjects, and

how it is appropriated by citizens interfacing with diverse types of ICTs in light of their own needs and values. Diversely, theories of information poverty take the developing subject as their focus, and observe how information (received through diverse means) is handled by them in their daily lives.

In particular, theories of information poverty acquire a socially embedded nature (Avgerou 2008, 2010) for two reasons. First, through her studies of women prisoners and other settings, Chatman shows that marginalised communities suffer comparatively deeper consequences from lack of access to relevant information. This is because loss of relevant information, or the lacking capability to access the world of “insiders, heightens a condition of fragility that already exists for “outsiders”, as it perpetuates isolation and limitation of opportunities” (Chatman 1996: 198). If information is itself socially embedded, the type and nature of information sought will depend on the characteristics of the community, as well as those of the social, economic, and political context in which it flows.

Secondly, the value of information is not equal across time and space. Not only is it greater for communities that suffer from marginalisation, but it increases in situations of crisis, in which the normal reality is altered by transformative events as humanitarian emergencies. While information plays determinant roles in emergency management, these roles vary according to the phase of the emergency, the communities affected, and the levels of information already into place (Tusiime & Byrne, 2011). The assumption of homogeneity of the value of information is challenged by theories of information poverty, which show that information is even more relevant when a crisis or emergency is sudden, and its depth and consequences affect core dimensions of people’s lives.

A core contribution of this paper is that theories centred on the information worlds of the poor and marginalised offer important tools to understand the reality of the poor in post-demonetisation India. The announcement came unexpected, which was functional to the main objective of the move – that of eliminating black money from the system, making it compulsory to deposit old 500- and 1000-rupee notes into valid bank accounts. This could not have been achieved if the move was pre-announced, as holders of black money would then have had the time to convert it into legal tender through illicit means. While on the one hand the suddenness of the move was an integral part of the anti-corruption measure, effects on vulnerable communities (slum dwellers, rural villagers, people at the margins of the economy) have been severe, since these communities transact predominantly in cash and are generally excluded from formal finance.

The exclusion of below-poverty-line (BPL) Indians from formal finance has two roots primarily. First, infrastructural readiness for banking, mobile and Internet connections is not homogeneous across the country. In particular, 24% of the Indian population lives without electricity (compared, for example, to 0.2% in China),¹ and gaps in electrical and mobile coverage are concentrated in rural and tribal areas. Hence construction of a cashless economy cannot be based on an existing backbone, but would need to take place largely from scratch, in a short time given the suddenness of the government’s move.

¹ <https://www.washingtonpost.com/graphics/world/world-without-power>

Second, collateral is needed to enter the formal financial system, and it is a type of requirement that is not easily at hand for the large majority of the Indian poor. Reliance on informal finance, which often acquires the nature of exploitative moneylending (Mohan, 2006), is due to complications of entering formal finance, even just by opening a bank account in the absence of proper documentation. This reduces the opportunity for the BPL to be active part of the banking system, and leads to a situation in which the large majority of transactions in the country occur in cash. By inducing a nationwide switch to cashless means of transaction, demonetisation induces a switch to a digital economy which increases the traceability of money flows, but does not automatically include weaker communities.

However, an idea of “demonetisation through digitalisation” has pervaded political speeches since shortly after the move. This is grounded on the assumption that ICT would constitute the main infrastructure of the new Indian economy, since transactions would be moved from the material to the digital domain. The role of digitalisation, in this newly imagined system, would be one of inclusion of the poor and vulnerable: this is because new tools, specifically designed for their inclusion, would have made an easier transition for them into the cashless system.

To sum up, information is a crucial good under crisis, and the Indian poor and marginalised suffered from a sudden need for information and connectivity after demonetisation. It is hence important to ask, has a digital inclusion system mitigated the effects of demonetisation for the poor?

3. Methods

Our study has begun in the immediate aftermath of demonetisation, with observations conducted in Indian street markets from just two weeks after the move was announced. The choice of the city of Bangalore could, in principle, constitute a limitation, given the comparatively low concentration of poverty in the city (in relation, for example, to most parts of rural India) and its good levels of digital connections, due to the high development of the software industry. However, two factors have led us to pick Bangalore as our research site, the first one being the high diffusion in the city of street markets that live and operate in conditions of informality. Second, conducting fieldwork in Bangalore has made it easier to access some of the multiple digital finance providers operating on a national scale, both at the level of government and at that of non-governmental organisations, providing credit to the poor through digital means since before the demonetisation move was taken. The authors’ previous knowledge of the field site has helped the design of the research and access to key informants in the short time imposed by the suddenness of the announcement of demonetisation.

Interviews with key informants including informal street sellers, digital finance providers, citizens (of diverse backgrounds) affected by demonetisation, politicians, members of local civic associations, and volunteers helping the poor to handle technological change have been conducted during three field trips

between November 2016 and April 2017. The first field visit, held in the immediate aftermath of demonetisation, has focused mainly on observation in street markets and interviews with informal sellers, trying to grasp the main problems being faced and the coping strategies enacted in response to them. The two following visits, held respectively in January and April 2017, have been conducted in order to form a clear picture of the digital instruments involved, and in particular the technologies being used for the purpose of inclusion of street sellers in the formal economy. Field data have then been integrated with press and social media on demonetisation and its consequences, which have become very frequent in the months after the announcement.

The corpus of data obtained from fieldwork and secondary sources has been subjected to thematic analysis, intended as the examination of content through categories clustered around thematic units (Riessman, 2008). In particular, several thematic units on ICTs, demonetisation, and the informal economy have been identified, to understand the extent and ways in which digital technologies have become entrenched in the response to the sudden cash crisis. A particular form of thematic coding (Boyatzis, 1998), in which codes are designed to explain a phenomenon rather than just describe it, has been adopted in line with the explanatory nature of our question. As a result, all data have been subjected to multiple rounds of analysis, first to identify relevant themes and then to relate them to the particular historical, geographical and political setting in which fieldwork was conducted.

4. Digital Finance Infrastructures Before and After Demonetisation

Pre-existing financial infrastructures, such as bank accounts and digital means of transaction, acquired a new importance in the post-demonetisation scenario. This is because newly-induced cashlessness, making it compulsory to deposit old 500- and 1000-rupee notes into bank or post office accounts, made it important for those who didn't have one to get it, and to find ways to transact through advanced means such as mobiles (digital wallets) and credit-card transactions. Informal street sellers, many of whom were not equipped with such instruments, faced the sudden pressure to become familiar with them, facing obstacles that put many businesses at risk of closure.

At the same time, instruments already developed for financial inclusion were tailored to the needs of the poor and marginalised hit by demonetisation. In particular, a set of tools developed for anti-poverty programmes were used to facilitate poor people's transition into the system. Informal street sellers, while often unbanked, displayed awareness of these tools in our interviews. The anti-poverty tools developed in this respect belong to the areas of bank accounts, biometric identification, and mobile transactions.

In the area of bank accounts, the *Pradhan Mantri Jan Dhan Yojana* (most commonly known as Jan Dhan only) is a financial inclusion scheme launched by the current government, whose objective is that of enabling low-income earners and otherwise marginalised people to open zero-balance bank

accounts. According to World Bank data, only 53% of the Indian population has a bank account,² and numbers drop in rural and tribal areas where financial institutions are not easily at hand. Against this backdrop, the current National Democratic Alliance (NDA) government of India has launched Jan Dhan to increase financial inclusion, lowering the requirements to open a bank account and hence making it accessible to poor people. On the day of the programme's launch, 15 million accounts were created, arguably connecting an equal number of families to the formal economy.³

On biometric identification, India runs the biggest system in the world, known as the Unique Identity Project or Aadhaar (meaning "foundation" in several Indian languages). Launched in 2009 by an authority created specifically for this, the Unique Identification Authority of India (UIDAI), Aadhaar is a voluntary and free scheme which provides a 12-digit identification number and the capture of biometric details to all those enrolled. Conceived as the greatest biometric identification project worldwide, Aadhaar aims at transforming access to the public sector, by substituting a plethora of documents (often hard to obtain) with simple biometric access to all government schemes, including the provision of social benefits to the poor (Srinivasan & Johri, 2013). On paper enrolment in Aadhaar is voluntary, but as a result of the request for an Aadhaar number to obtain the large majority of government services, over 99% of Indians aged 18 and above had been enrolled in Aadhaar by July 2017. This includes the banking system, since an Aadhaar number is now required by most financial institutions to open a bank account, and to perform any type of digital transactions.

Finally, mobile services have been entrenched in the financial system for the last few years. As in most other countries, mobile numbers can be connected to bank accounts and mobile banking can be enabled by most financial institutions. However, one innovation that characterises India specifically is that of digital wallets: these are devices that allow individuals to make transactions through their mobile phones, receiving and disbursing money from the bank account through the mobile. These systems require a mobile phone device endowed with mobile Internet, and normally work through an app that, when downloaded, allows money flow to run through the mobile and normal transactions to be conducted by a text message or the capture of a QR code.

The so-called JAM trinity (Jan Dhan, Aadhaar, mobile phones) was already into place before demonetisation, as an anti-poverty strategy aimed at making it easier for the poor to receive social benefits (Government of India, 2015). However, our fieldwork revealed that all the components of JAM have had a specific use during demonetisation. This came across from the narratives of street sellers, who were induced by the new situation of cashlessness to switch to the world of digital transactions, opening bank accounts and enabling digital wallet transactions for their businesses. This is how the logo of Paytm, the main digital wallet in India for volume of transactions, appeared on many informal

² <http://indianexpress.com/article/india/india-news-india/in-india-bank-account-penetration-surges-but-43-dormant>

³ <http://economictimes.indiatimes.com/news/economy/policy/pm-jan-dhan-yojana-launched-1-5-crore-bank-accounts-opened-in-a-day/articleshow/41093413.cms>

shops in Indian cities and villages, and became an ubiquitous presence in the street markets in which our research was conducted, as well as the logos of other digital wallet companies.

So designed, digital finance infrastructures have transformed the way of conducting normal transactions in the aftermath of demonetisation. This has changed normal business for informal sellers, and required adoption of tools with which many were not familiar before the advent of a cashless system. Our question, in terms of the ability of digital tools to generate inclusion of poorer people in a cashless economy, finds answers in the ways in which informal sellers have coped with the new system, and adopted (or attempted to adopt) new means of transaction.

5. Findings

With descriptions of the JAM trinity, we have outlined the digital infrastructures that participated in the system of transactions after demonetisation. In this section we observe the benefits of these on unbanked street sellers, as well as the design-reality gaps that the research revealed between the design of technology and the lived reality of street sellers.

5.1. Aadhaar and the Creation of a Digital Identity

After the demonetisation policy was announced, political judgements and points of view on the move proliferated all over the country. Our research of social media and public platform posts about the topic reflected the political debate around the move: overall, “pro-demonetisation” actors supported the move in the light of the overarching objective of getting rid of black money, and reducing perceived corruption in the country. Some of the street sellers we interviewed, while admitting to have had their business damaged by the sudden lack of cash, put forward a proud pro-demonetisation stance, depicting it as an occasion in which all countrymen should be united in the common struggle against black money. For such common struggle, some respondents argued, it is worth to suffer damage to business for one month or two, in the light of the major goal of eliminating corruption.

Diversely, an “anti-demonetisation” stance has been taken by many commentators and civic activists, concerned with the backlash of the move on the bulk of poor people who conduct their transactions in cash. On the one hand, some civic organisations and NGOs organised workshops and training for the adoption of formal finance, going to slums and villages to explain the procedures needed to open bank accounts or enable mobile banking on basic devices. Others, however, criticised the work of such organisations, based on the fact that they would abide by the new system rather than opposing the forced adoption of digital finance by informal street sellers. While varying degrees of depth are present in anti-demonetisation stances, all are grouped by characterisation of it as ineffective in the purpose of

fighting black money, and seriously problematic for poor people who suddenly found themselves unable to perform even the most basic transactions.

A similar divide existed, before demonetisation, on the Aadhaar project, which was a flagship scheme of the United Progressive Alliance (UPA) government before being appropriated by the NDA. While pro-Aadhaar commentators point to the huge simplification of access to government services and pro-poor effects, critics of the scheme point to its implications for privacy and surveillance, and the distortions it would induce by substituting existing benefits (food rations, employment guarantees) with cash transfers. As our days in Bangalore and analysis of social media revealed, anti-Aadhaar stances surfaced very powerfully after demonetisation, as cashlessness was seen as an additional measure to coerce people into Aadhaar registration. Enrolment in Aadhaar, the argument goes, was the only way for poor people to open bank accounts, and hence be recognised as part of the formal economy.

While debate around these matters is fervent, all the street sellers we interviewed were already registered with Aadhaar before demonetisation was announced. Aadhaar identification was already required for most government services, and crucially for the reception of food subsidies under the Public Distribution System (PDS), India's main food security scheme. Informal street sellers, many of whom qualify for receiving food subsidies, already obtained their Aadhaar number, however not all of them had used it to open a bank account. But the operation of opening one, as narrated by those that did so as a result of demonetisation, was simplified by possession of Aadhaar, which simplified the identification procedure for citizens for whom documents are not easily at hand (e.g. slum dwellers).

As a result Aadhaar acted, in the post-demonetisation scenario, as a means for informal actors to acquire the digital identity that is needed in the new cashless system. This was very important for the creation of bank accounts, and for enabling digital transactions through Paytm or the other digital wallets whose popularity increased with demonetisation. Hence, the thesis according to which Aadhaar did help poorer people join the cashless economy finds support in the data, and so does the argument that the JAM trinity (in particular, Jan Dhan bank accounts) was relevant in this respect. In the light of this, it is important to recognise the benefits that digitality has brought in this context.

5.2. Technology Ownership

While JAM technologies, and Aadhaar in particular, enabled poorer people to overcome the backlash of demonetisation, several gaps are identified between the needs of the surveyed population and the way technology was designed. The concept of information poverty, and theories developed around it, provide an important perspective to fully understand such gaps.

It should, in the first place, be observed that ownership or not of basic technologies has significantly impacted the way the announcement was received by different social strata. The announcement by

Prime Minister Modi was made in a live televised address at 8.15pm in the evening, and having stated that the 500- and 1000-rupee notes in use would cease to be legal tender by midnight that day, the Prime Minister made the point that “persons holding old notes of 500 or 1000 rupees can deposit these notes in their bank or post office accounts from 10 November till close of banking hours on 30th December 2016 without any limit”. This would ensure that cash circulating at that time would not lose its value if stored in existing financial institutions. The announcement then specified, among other points, a set of special arrangements taken for humanitarian reasons, for example that old notes would be accepted by government hospitals and other primary-need facilities for the first 72 hours.

However, many citizens of India did not learn the news from the televised announcement as it occurred. Possession of a TV set is not universal in the nation, for example in the state of Bihar only 14.5% households owns a television (Census of India, 2011). Neither is mastery of Hindi or English, the two languages in which the text of the announcement was originally conveyed. Many of our respondents learned the news through text messages or word of mouth and in their social networks: complex and unexpected, the announcement has arrived to many recipients in misleading forms, imbued with views that caused shock and panic. The announcement explained that old notes could be deposited in bank and post office accounts, but reached many respondents in the form of the distorted idea that old 500 and 1000 rupee notes would lose all their value.

Beyond panic among informal sellers, given the cash-based nature of most of their transactions, this conceptual alteration led to tragic events too. The story of Kandukuri Vinoda, a 55-year-old woman from Telangana state who committed suicide thinking all her cash had lost its value, illustrates the point dramatically, as the several people reported to have been hit by heart attacks just closely after the announcement. ICTs, supposed to help spread information properly, have instead been at least partially complicit of the mistake: reportedly, many distortions of the Prime Minister’s message reached people on Internet-based services such as WhatsApp or Facebook, factually fuelling the panic wave. Simplified and translated across many languages, the announcement made its way in a misleading form to many people, resulting into a range of dangerous misunderstandings.

5.3. Systemic Lack of Operational Information

As noted above, Prime Minister Modi’s announcement pertained to the need to deposit old notes into bank or post office accounts, and explained the special arrangements adopted for humanitarian reasons. While important, this explanation of the move lacked a core dimension: the announcement, and the communications that followed it, gave no hint on *how* to open a bank or post office account, needed by the unbanked to deposit old notes and transact in a newly cashless economy. Disproportionately affected by lack of this vital information are the undocumented poor, who transact in cash given the lack of documents needed to open a bank account. In many cases, street sellers lacked the basic documentation needed, and were suddenly faced with the need to obtain it.

At the announcement of demonetisation, many poor and marginalised individuals faced the immediate necessity to change the modes of saving and transacting to which they were used. Their cash, stored in banknotes for many years, would now need deposit in a formal financial institution to remain valid. This is where information poverty emerged: many people, as the deadline for depositing old notes approached, were still left clueless on the procedures to open a bank account, and the scattered information they received from multiple sources was often conflicting. Street sellers reported disparate document requests coming from banks, and reports of people being turned down after long hours in line became frequent. Shadowing an illiterate woman in the attempt to open a bank account, one of our fellow researchers reported on the 16-page form in English language handed to the applicant, ultimately denied a debit card as unable to provide a written signature on documents.

As it has been constructed, the newly created cashless economy forces the unbanked to switch to formal banking, with the declared objective of eliminating corruption and black money. However the information they receive on how to do so is often confusing, conflicting, incomplete, and often results in applicants being turned down at the end of long, extenuating waits. As it emerged again from street sellers, the documents requested (certificates of birth, residence, and similar) cannot be obtained easily, and in effect the information missed by many applicants is exactly on how to obtain these supporting documents. While ICTs are making their way through Indian bureaucracy, paperwork still dominates, and digitalisation cannot alone provide the information needed for these basic steps.

5.4. Increased Vulnerability to Exploitative Finance

High-interest moneylending is a diffused practice in India, and reliance on it is renowned to be very high in the informal economy. Lack of documents, and of operational information on how to obtain them, makes a plethora of unbanked street sellers simply ineligible to apply for credit at a bank or formal institution. Previous conversations with recipients of microloans made the point clearly: even in dire and problematic situations, banks will not agree to lend money without guarantees, and it is a type of guarantees that the undocumented poor cannot easily obtain. Small business owners and people in need are hence often left with the only option of moneylenders, who charge high interest rates and force borrowers to prompt repayment through illicit means. Abusive and leading to many suicides of farmers and small business owners over the years (Mohanty, 2005), vulnerability to exploitative moneylending is entrenched in the nation's economy, and needs radical measures to be tackled.

When demonetisation comes into play, our field data reveal that this form of vulnerability is made more acute by two factors. The first one lies in the suddenly increased need for cash by the unbanked, who need small notes as transactions based on credit cards or digital means are not an option for them. If an unbanked street seller needs immediate cash, in the absence of better alternatives, a broker or

moneylender is relied upon for a loan, or for dispensing small notes under payment of a high commission in the black market. While peer-to-peer lending platforms are making their way in the country, their coverage is still far too low to constitute a real alternative for the unbanked masses (Srinivasan, 2017). And even if their coverage was substantially higher, isolated communities unreached by microfinance institutions or self-help groups would still have a difficult time adjusting to a newly-created condition of cashlessness.

The second factor lies in the discretionary power of moneylenders, which increases as a result of being the only option left for many of the poor. Brokers wanting to increase their repayment rates find an ideal contextual factor in demonetisation, as desperate need of borrowers leaves them with substantially greater freedom to dictate conditions. Not requiring documents or paperwork, exploitative moneylending flourishes under the current scenario, where complex and unknown bureaucratic procedures prevent many of the poor from accessing banks. Yet, as it emerged from our interviews with social workers, their lack of alternatives increases the bargaining power of brokers at levels even higher than before (Thomas, Adavi & Sreenivasa, 2017).

The running argument is that digital technology bypasses the problem, by making money accessible for normal transactions through digital wallets. What the argument misses, however, is the infrastructure that lies behind the very idea of a digital wallet. Not only is the possibility of digital transactions based on ownership of a mobile phone or smartphone, but also of a bank or post office account, where the money for transactions is stored. It is here that two additional problems emerge: first, the great majority of digital payment operations requires a smartphone or advanced feature phone, and cannot be performed with a basic mobile phone as it is, for example, in the renowned m-PESA model, which made mobile money easy to access and use by many citizens in Kenya and other countries (Morawczynski & Miscione, 2008). Second, the problem of limited possibilities for the unbanked poor to access banking services comes back, because in the absence of a physical repository such as a bank or post-office account, it is impossible for digital wallets to operate.

In addition, when digital wallets are called into play, access to the cashless economy is dependent on access to the Internet, which in India is geographically limited. The International Telecommunications Unit (ITU) calculates an ICT Development Index (IDI) for 175 countries, using it to monitor technology developments worldwide. Based on India's IDI data (ITU, 2017), Internet access still represents a problem: the country is ranked 138 worldwide, behind nations (for example Gabon, Nigeria, Zimbabwe) that rank significantly lower on economic and human development. The problem lies especially in the presence of inequality between computerised megacities and large unconnected peripheries, drastically limiting the possibility for the latter to plan incorporation into digital networks of any sort. This relegates many isolated communities outside the post-demonetisation infrastructure, making it hard for them to reverse the economic exclusion generated in this way.

6. Discussion and Conclusion: Geographies of Exclusion and Coping Strategies

When Chatman coined the notion of information poverty, she did so to encompass groups (prisoners, the elderly, disadvantaged women) which are already framed as vulnerable in society, and become more so due to asymmetric or distorted information on important matters. Our field data, collected in the aftermath of demonetisation, reveal that street sellers in India have been placed into such situation: already marginalised, they risk to become more so as a result of inability to cope with a cashless economy. Subjected to distortion of the original announcement, deprived of vital information on how to open a bank account or transact in cashless ways, informal sellers find themselves depending on brokers that have full discretion on rates and commissions, increasing criticality of their equilibria. While effects of demonetisation on curbing black money will only be observable in the longer run, the hardship brought on the lives of the vulnerable is sadly visible to the present day.

The experience of the last months reveals deep problems with the argument that adoption of ICTs by the poor and marginalised can abate the issue. Inclusive technology should be a source of information to the poor, aimed at overcoming distortions and incompleteness. But the orthodoxy is challenged by problems of technology ownership as well as content: as of a recent survey by the Pew Research Centre, only 17% of Indian citizens own smartphones (Ananth, 2016), which cuts a substantial portion of the population out of the digital transactions landscape. Operationally usable content on how the undocumented poor can be integrated in the digital economy is scarce, which makes it difficult even for dedicated volunteers to help the marginalised move to the banking universe.

At the same time, the phenomenon under discussion is one of which poorer people, affected by cashlessness from the very immediate aftermath of the Government's move, have a better and more direct knowledge than everyone else in Indian society. When talks of demonetisation spark in academic circles, it is the voices of the disadvantaged that are most often cited: "*my maid* told me black money is in the market", "*my driver* found where to change the old notes", were sentences that were heard commonly in the first weeks. Street sellers are holders of important information, resulting from networks and direct experience: very often they know the rates charged by moneylenders, the ways demonetisation actually affects small businesses and producers, and the real consequences of the phenomenon on their lives. Acquired in direct ways, from the hardship experienced in their human and economic existence post demonetisation, their knowledge is first-hand and invaluable.

It is on the basis of pooled, experiential knowledge that otherwise marginalised street seller communities organise themselves. For example, in a street market in south Bangalore, vegetable sellers formed a security net through which, in the immediate aftermath of the announcement, they systematically helped each other meet the need for cash. In slum communities observed in diverse parts of the city, informational exchange is constant: crucially, information seems to be sought not so much in the online world, but in the social networks experienced and embedded in people's everyday lives. In the aftermath of such a drastic move, knowledge on demonetisation starts from the street,

rather than from the web or mobiles: the technology of communication seems to lie, by and large, in lived community networks rather than phones or computers. Doing so, the poor become the most important information holders on the force that is reshaping the country's economy.

In conclusion, as we observe this scenario, ongoing humanitarian problems should not be neglected. Writing on *The Lancet*, Nagarajan (2016) remarks how demonetisation is affecting access to medical care, by limiting the possibility to purchase essential and life-saving medicines and accessing clinical services. This increases the need to find ways to formally tap the knowledge of marginalised communities, creating systems of interaction that can convert their experience into collectively helpful outcomes. We have already observed how all over the nation, NGOs and volunteer associations are organising workshops for training the poor to take part in formal banking: these should be accompanied by consultations on the coping strategies adopted by vulnerable groups, to generate explicit knowledge on how to reduce information poverty under crisis.

In sum, information poverty comes with critical factors that worsen the position of unbanked street sellers facing demonetisation. But the information that they gain through lived experience, and that they validate in the social public sphere, is invaluable for many others. We conclude by suggesting, as a result of this, that community volunteers working with informal street sellers have a crucial role in ensuring that such knowledge does not remain untapped, and is instead leveraged upon for helping vulnerable communities throughout the nation.

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