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# E-formality and data justice: the individualization of street trade in Recife, Brazil

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## ABSTRACT

Informal street trade has historically been seen by local authorities as backward, inefficient, and detrimental to urban areas and thus, has been subject to formalization policies. This paper reports on an ethnographic study of a project that sought to formalize street trade in Recife (Brazil). Street trade was presented by the City Council as hindering urban mobility, unhygienic and detrimental to the development of the city. A spreadsheet was developed to record, license and enforce the formalization of street trade. The spreadsheet and its classification scheme expanded the possibilities of control over individual street vendors. We will argue that formalization requires street traders to be rendered objects and subjects of knowledge. What this does is to individualize and discipline street trade. More substantially, we argue that the regulations and classification scheme shaped understandings of street trade as becoming individualized and this led to some contradictory implications for urban street trade.

## KEYWORDS



Classification;  
governmentality;  
formalization; e-formality;  
data justice

## 1. Introduction

Informal street trade, the focus of this paper, is a widely prevalent feature of cities and towns across the Global South. It is an activity that comprises:

the production and exchange of legal goods and services that involve the lack of appropriate business permits, violation of zoning codes, failure to report tax liability, non-compliance with labour regulations governing contracts and work conditions, and/or the lack of legal guarantees in relations with suppliers and clients. (Cross, 1999, p. 580)

Critics argue that informal street trade is associated with low working conditions and is only undertaken when there is no alternative (Dibben et al., 2015; Evers & Seale, 2015). Many see it as being backward, inefficient and detrimental to the development of urban areas (Bromley, 2000; Cross, 2000; Seligmann, 2001; Smith, 1996) for the following reasons. First, informal street trade is claimed to hinder pedestrian and traffic mobility. Donovan (2008) highlights that informal street trade often leads to increased pedestrian and vehicular congestion, which not only hinders movement around urban areas but also impedes emergency vehicles and results in increased traffic accidents (Smith, 1996). Second, informal street trade is claimed to threaten the livelihoods of formal

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traders (Duneier & Carter, 1999). Informal street traders often sell products at lower prices than formal traders. This is possible due to lower costs associated with the absence of rent, mortgages, statutory employment contributions, or taxes (Williams, 2017). Further, avoiding tax leads to the charge of not contributing financially to the development of the city. Third, informal street traders are criticized for selling contraband and sometimes unsafe products (Loukaitou-Sideris & Ehrenfeucht, 2009; Williams, 2017). Fourth, informal street trade is seen as contrary to the modernist perceptions of what a city should look like and how commerce and tourism should function (Williams, 2017). Consequently, informal street trade is in opposition to many countries' and municipalities' visions of security, orderliness and development – aspects that normatively constitute a modern civilized city (Turner & Schoenberger, 2012).

Governments have thus tried to 'solve' the problem of informal street trade by developing formalization policies and regulations that seek to control and enforce what is sold, who is selling, and where trade can be conducted. Through these policies, informal street traders are often relocated to government-built malls or given fixed positions in streets (Bromley, 1998). However, commentators have argued that formalization policies often fail to achieve their objective of taking informality out of the streets. Further, critics argue that its implementation can marginalize and disempower informal workers and in doing so, formalization reinforces the existing structures of inequality (Benjaminsen et al., 2006). Moreover, findings show that informal trade is often associated with the local production of society and culture (Mete et al., 2013); enables urban participation and community building (Nurudeen & Usman, 2010; Singerman, 1995; Williams & Windebank, 2002), resilience and social capital (Lyons & Snoxell, 2005; Watson, 2009) and helps with the regeneration of deprived urban areas (Middleton, 2003). The reason why this broad spectrum of developmental possibilities is left invisible in formalization programs is because these programs are anchored in modernist understandings of 'development' (Cross, 2000; Hart, 2006; Scott, 1998; Williams, 2005). Moreover, to achieve this, formalization requires governments to know their population by creating records and by classifying formal and informal street traders (Miraftab, 2007). This is facilitated by classification technologies that allow for licenses to be issued (Dibben et al., 2015; Henman & Dean, 2010). It is thus important to critically question the role of classification schemes in the formalization of street trade. This is the focus of this paper. Specifically, we investigate the relationship between formalization regulations and classification schemes and how both relate to the local enactment of formalization.

Literature that looks at the link between technology and development (ICTD) has a long tradition (Avgerou, 2008; Brown & Grant, 2010; Walsham, 2017). In relation to informality, some studies have looked at how technologies are associated with non-standard forms of work (ILO, 2016). Others have looked at how informality relates to digital innovation (Cozzens & Sutz, 2014; Kaushik & Rahman, 2016) and appropriation (Chen, 2016), while others have looked at how it relates to productivity (Cáceres et al., 2012), entrepreneurship (Link et al., 2020) and participation within formal-informal businesses (Kleine et al., 2012; Rangaswamy & Nair, 2012). Additionally, examining the link between technology and the formalization side of informality, recently the International Labour Organization (ILO) coined the term 'e-formality' to describe policies where technologies are designed and implemented to aid a transition from informality to formality and identified four pathways to formalization which can be facilitated by technologies: productivity, regulations, incentives and enforcement (Chacaltana et al., 2018). While the study sees potential in how technologies can help in achieving a just and fair formalization, it also points out how new technologies are drastically impacting the very definition of 'formality' in the ways in which in some countries it is increasingly being referenced as 'registration' (Chacaltana et al., 2018, p. 11). To be 'formal' is to be properly 'registered.' Thus, we might add that being properly 'registered' implies a classification scheme that signals what is to be considered as 'formal' and 'informal.'

Classification schemes are useful in the conduct of government because they categorize and record populations, enable analysis, and are often the basis for resource allocation for citizens (Hayes et al., 2018; Mosse & Whitley, 2009). Classification thus reduces the complexity associated

with analyzing and resourcing citizens' requirements (Nyberg, 2012). Without classification, all people and things are unique and individuals thus are difficult to control (Mosse & Whitley, 2009). Classification enables governments to develop enforceable actions and decisions (Henman & Dean, 2010). At the same time classification schemes are highly political and are inextricably interlinked with the exercise of power (Jacob, 2004; Mosse & Whitley, 2009; Nyberg, 2012). Formalization, through classification, is thus a power-constituted process which shapes the developmental scope of populations as it involves the constant negotiation of what is to be considered as 'appropriate' or 'inappropriate' street trading activity (Cross, 2000).

Critical literature that looks at classification can be positioned within the nascent field of critical data studies (Dalton et al., 2016) as part of a growing trend towards the adoption of critical approaches to ICTD that question issues of data justice associated with power, representation and subjectivity (De et al., 2018; Zambrano, 2021; Zheng et al., 2018). This critical ICTD research looks at the various practices associated with the production and analysis of data and their implications for development, also known as 'data for development' – D4D (Hilbert, 2016; Leonelli & Beaulieu, 2021), with a specific focus on 'data inequalities' associated with access to data, control of data, and what is represented by data (Cinnamon, 2020). Our study adds to these discussions by critically inquiring on the relationship between formalization regulations and classification schemes.

As discussed, classification is greatly facilitated by modern information technologies (IT), which can store, retrieve, and distribute records of individual street traders (Jacob, 2004). However, the literature to date has not explicitly considered the role of classification schemes in formalizing street trade in the Global South. This is the specific focus of this paper. Our empirical setting is based in Recife, the Northeast capital of the state of Pernambuco, Brazil. It reports on an ethnographic study of Recife's city council and its ongoing implementation of a formalization program that seeks to regulate informal street trade. Formalization was done by stipulating the locations that traders could sell from and by specifying the products that they could sell. This contrasted with the unregulated forms of street trade that had operated in the center of Recife for decades. The technology for enacting this classification was a spreadsheet developed by the city council to record, license and enforce the formalization of street trade. The spreadsheet's classification scheme comprised of categories such as the name of the stall holders, their location and the products that they sold. These categories were crucial for dispensing licenses, monitoring compliance and issuing fines.

Our theoretical lens draws from Foucault's writings on power (Foucault, 1980, 1982). Foucault (1982) contrasts a sovereign view of power from a relational view. A sovereign view conceives of power as being in laws, people, the hierarchy and their access to resources to monitor and enforce compliance. In contrast, the relational view conceives of power as being enacted relationally. Power thus is never in the hands of a person or in laws as a commodity, it is enacted through relations (Petraiki et al., 2009). It is this relational view that our paper adopts and, specifically, in relation to the ways in which the formalization regulations, through its implementation on the spreadsheet's classification scheme, were implicated in the exercise of power relations. Our paper asks the following research questions: First, how are classification schemes implicated in the formalization of street trade in the Global South? Second, how do classification schemes shape the practices of street traders and government officials?

In answering these questions, we will highlight how the classification scheme provided for new and expanded possibilities of control. We will argue that classification schemes render traders visible and marks them out from each other. In doing so they become an object of knowledge. This allows for street trade to be examined, ordered and disciplined. Most substantially, we will argue that the formalization regulations, and the apparently mundane classification scheme in the spreadsheet, shaped how the people involved conceived of themselves and others (Hayes et al., 2018). It normalized the everyday practices of all actors to focus on the city council's agenda of rendering informal street trade as problematic, and on a recognition of what it should become – formalized trade.

The paper is structured as follows. The next section outlines the theoretical underpinnings of this paper. Here we outline literature on classification, power and governmentality. We then discuss our research methods. Section four presents our case and ethnographic data. Section five develops our argument about the ways in which classification schemes are operationalized in the formalization of street trade. In section six we describe the implications of our study for the formalization of street trade in the Global South. Finally, we conclude our paper.

## 2. Theoretical underpinnings: classification, formalization and governmentality

In this section, we outline our theoretical underpinnings, namely the notion of governmentality and related literature on classification. Governmentality can be understood as ‘processes of tactics, techniques and procedures of governments to define and direct individuals and populations’ (Nyberg, 2012, p. 1672). Foucault (1982) argues that the state operationalizes power by putting in place systems to collect and develop analytical knowledge of the population and of the individual. Classification schemes are central to the operationalization of power as they provide for the categorization of people and entities. Such modes of enquiry objectify the individual, thus allowing for the individual to be examined and disciplined. The discursive framing of classification schemes provides for individuals to become the subject of power. Governmentality, thus relates to the ways in which freely acting and responsible subjects come to regulate their own actions within a wider system of meaning, and within defined categories and conventions (Henman & Dean, 2010; Miller, 2001). Governmentality then is understood as the conduct of conduct (Miller, 2001, 2008; Rose & Miller, 1992). How do we conceive of formalization and classification through the lens of governmentality? We argue that governmentality leads us to view street traders and city officials as both the object and subject of knowledge as we outline below.

First, viewed through the lens of governmentality, classification schemes provide for the development of knowledge of the population as well as of specific individuals (Henman & Dean, 2010). What this does is to make individuals the object of knowledge. Townley (1993, p. 527) highlights that classification schemes develop this knowledge through partitioning taxonomies. She argues that ‘partitioning imposes an order by constructing a rational classification of living beings.’ Townley (1993, p. 533) highlights that classification schemes are used so that ‘individuals may become objects of enquiry through being made the subjects of scientific study.’ Townley (1993, p. 534) goes on to explain that through rendering the individual visible, as an object of knowledge, individuals can ‘become compartmentalised, measured, and reported, for administrative decision making.’

Second, formalization, understood through the lens of governmentality, suggests that while all actors are acting freely, they act in terms of how they understand what formalization is and what it will become. The problem of informal street trade is tightly framed by contrasting it to its ‘formal counterpart’ in what Cross (2000) defines as ‘formalomorphism.’ It frames informality not in relation to what it is, but in relation to what it is not (non-licensed, non-regulated, not clean, not human, etc.). By doing this, it becomes difficult to conceive of a solution to informal street trade outside of formal trade.

We draw on these two core notions of governmentality to consider how formalization regulations and the classification scheme made all actors in urban Recife (traders, government staff and citizens) both the object and subject of knowledge.

## 3. Methods

The primary data collection for this research was undertaken by the first author between April and October 2014, as part of a broader ethnographic study on informal street trade in Recife. Specifically, our study focused on the formalization program that the Department of Mobility and Urban Control (CSURB) within Recife’s City Council, introduced in 2014. Our research design and methods were informed by previous ethnographic studies of informal urban street trade (Dovey, 2012; Evers,

2015; Evers & Seale, 2015), of informality in Brazil and Recife (Araújo et al., 2012; Barroso, 2008; Coletto, 2010; Costa & Pintaudi, 2003; Pinheiro-Machado, 2009; Silva, 2009) and of formalization of informal trade in Brazil (Carrieri & Murta, 2011; Kopper, 2012). The inquiry had two aims: First, to uncover the perceptions of CSURB officials and traders concerning informal trade and the formalization program. Second, to examine how the formalization program was implemented. Specifically, we studied how CSURB made use of a spreadsheet to record, monitor, license and enforce the formalization program.

Primary data was gathered through ethnographic observations. This was aided by field notes, audio recordings, pictures and enhanced by interviews and informal conversations (Creswell, 2008). These were supplemented by official CSURB documentation such as the action plan associated with the formalization program as well as paper forms associated with the registering of traders and licenses of traders.

The observations consisted of roughly six hours a day, primarily on weekdays and either between 8am and 2pm or 1pm and 7pm. In total, 25 interviews were conducted. Eight with enforcement officers, two with supervisors, one with a senior official, four with licensed traders, five with unlicensed traders and five with citizens. In relation to audio recordings, a total of 88 audios were recorded corresponding to 25 recordings of interviews and/or conversations, 10 of soundscapes and 43 of personal notes/memos/observations. Roughly four A5-sized paper notebooks were written with field notes and more than a hundred pictures were taken during fieldwork. All this data was daily arranged into a fieldwork diary.

Primary participants interviewed were of two kinds. The first were the CSURB officials, mainly enforcement officers, supervisors and a senior official. The second were licensed and unlicensed street traders. Eight enforcement officers were interviewed. They were responsible for registering the information pertaining to the street traders' activities into paper forms. Two supervisors were interviewed. They were responsible for managing the enforcement officer's processes and specifically, for transcribing the data from paper forms into the spreadsheets. One senior official was interviewed, who was responsible for the overall management of the program. Five unlicensed and four licensed street traders were interviewed. Interviews with street traders focused on their opinions about the formalization program and informal street trade in Recife. They followed an open structure so to give space for the actors' own narratives to emerge. The structure of interview templates evolved towards it being less and less structured as the ethnographic fieldwork progressed and as new topics emerged from observations. This offered the richest data to be covered in interviews and/or conversational interactions. Reducing the imposition of structure gave space for 'flexibility, improvisation, and openness' (Myers & Newman, 2007, p. 14) which translated into freeing the stories to naturally emerge and unfold and make changes to the relevance of topics accordingly. Initially, interviews were focused on the governing officials' opinions about the formalization program and informal urban street trade. However, the interviews evolved towards unfolding their rationales for the legitimacy to the formalization program or gathering their opinions about their usage of spreadsheets and paper forms. In addition, extensive notes were taken during unstructured interviews and conversations with street traders, enforcement officers and citizens.

The ethnographic observations were focused on the processes associated with formalization as these took place within the CSURB office and on the streets of Recife's city center. They evolved from being semi-participant (Musante & DeWalt, 2010), associated with following governing officials in their daily tasks, to non-participant *flâneur* (Jenks & Neves, 2000), associated with the ethnographic descriptions of city life and informality (Lewis & Russell, 2011). In the CSURB office, the observations focused on the usage of the spreadsheets, specifically observing how information was transcribed from paper forms into the spreadsheets, the mismatches the transcription produced, and how these were analyzed. Observations on the streets focused on (a) following the enforcement officers' as they registered information associated with street traders into paper forms; (b) how enforcement officers monitored the traders' compliance with the formalization rules; and (c) how street traders interacted with customers and enforcement officers. The observations where CSURB



officials were present had to be carefully planned and scheduled. Seven visits to the CSURB office occurred. Four were associated with following enforcement officers' activities on the streets. On the other hand, the observations of traders' activities on the streets were more emergent and casual, and conducted throughout the duration of fieldwork as events unfolded. Participants' reactions to the observations were varied. CSURB officials were open and enthusiastic about sharing information about their managerial skills. Informal street traders, on the other hand, showed some suspicion as to what they perceived could be yet another form of surveillance. In the case of CSURB, observations were registered in a notebook. In the case of traders, a mobile phone audio recording was mostly used to enable non-intrusiveness. Both the notes and the recordings were focused on rich descriptions of events and conversations between the ethnographer and traders, between traders, or between them and customers or enforcement officers. All notes (written and recorded) were taken in real-time as events unfolded or soon afterwards, when it was impossible to do it in real-time.

Analysis was undertaken by recording and comparing the themes that emerged (Miles & Huberman, 1994). This was shaped by a 'proximal view' of the data and an inductive theme analysis (Cooper & Law, 1995). Field notes were grouped daily into a themed research diary which was populated with the main happenings of the day listed through the interviews, informal conversations, observation notes, audio notes, and pictures taken. This proved useful for the day-to-day analysis and continuous tightening and focusing of the inquiry in relation to emergent themes which were later compared with the interview transcripts. QSR software NVivo was used to aid this process (Beekhuizen et al., 2010). However, as the inquiry evolved, the role of the fieldwork diary also grew as the primary on-the-fly analysis tool.

## 4. Recife's formalization program

In this section, we describe how the process of formalizing informal street trade occurred in Recife. We start by introducing the context and background of street trade in Recife. Then, in the second sub-section, we show the motivations and strategies for formalizing and in the third sub-section, the specific roles the spreadsheet played in the formalizing processes.

### 4.1. Context and background

Recife provides a distinctive and relevant empirical setting to investigate our research questions because it has a rich historical association with both informal street trade and formalization. The city was formed around its seaport and thus trade has been endemic since its inception. It is the fourth highest urban agglomerate in Brazil, after São Paulo, Rio de Janeiro and Belo Horizonte. Its population was 1.54 million in 2010 and the most recent estimate was its number increased to 1.63 million in 2016 (IBGE, 2017). Data available from 2010 indicates that Recife's Human Development Index, which is a composite statistic of life expectancy, education, and per capita income indicator, was 0.734, positioning it as the highest among the Northeast cities of the country. While 64.8% of the population were economically active, 12.1% were registered as unemployed (UNDP, 2013). Further, among those considered economically active, around half were associated with informal work, meaning, without a signed contract (17.74%) or self-employed (19%), of which informal street traders constitute a big part (Gomes, 2016).

Informal street trade in Recife came under specific scrutiny in the 1990s. At this time, there was a rise in the number of informal street traders as a consequence of the financial crisis. This resulted in conflicts erupting between formal and informal street traders and led to Recife's City Council, like other municipalities throughout Brazil, implementing formalization policies. These policies aimed to achieve an 'urban revitalisation' by disciplining informal street trade and reallocating these traders into specially-built shopping malls. This required the specification of what formal trade

was, what it was not, what was sold, where it was sold, who sold it etc. It thus required a classification scheme.

#### 4.2. Motivations and strategies for formalizing

Informal street trade is prevalent across Recife's popular squares and streets – as illustrated in [Figure 1](#) – where informal street traders are found selling food, drinks, cell phone accessories, illegal copied CDs, etc. (as illustrated in [Figure 2](#)). These come at low prices and thus reach a wider population that includes the poor. Such trade provides an income not only for the informal street traders but also for the local producers of food, crafts and music, who use informal street trade as their main distribution platform. Given this, it is important to question how informal street trade came to be framed as a problem in Recife and how CSURB's formalization program came to be perceived as its solution. This will be the focus of this sub-section where we will describe three key rationales associated with the legitimacy of the formalization program. These were first, associating informal street trade *with* the deficient infrastructure and pedestrian and traffic mobility of Recife and *against* the aesthetic imaginary of a modern economic urban center; second, responding to the threat of illegitimate trade and unfair competition; and lastly, promising the reallocation of licensed traders to purpose-built malls.

CSURB's formalization program spoke to concerns of Recife's population associated with the deficient urban infrastructure and pedestrian and traffic mobility in the city center. It did this by positioning informal street trade as a main contributing factor adding to these issues. An enforcement officer said: 'They [informal street traders] complain but we need to ensure pedestrian and traffic mobility.' Interestingly, some traders also shared CSURB's concerns. An informal street trader said: 'I know I speak against myself but it's true. I mean, look at that [overcrowded sidewalk with stalls], it's chaos.' But although traders could add to this chaos, they were also often responsible for solving what the city council failed to, such as fixing broken pavements, adding 'public seats' to the sidewalks or sunshades for the elderly, etc. This was observed, for instance, in relation to a street trader who had a stall on the pavement in front of a national bank: 'The elderly [clients of the bank] use his plastic chairs as the queue expands [from the bank to the pavement outside]. Bellow his sun umbrella, they're drinking water and eating his chicken snacks.' Notwithstanding this, CSURB also blamed traders for much of the dirt and rubbish that littered the streets, even though that was, in a large part, due to the poor infrastructure as well. A supervisor said: 'We will remove them to leave the sidewalks clean.' Moreover, it was also observed that traders often organized collectively for cleaning and infrastructural maintenance and repairs in their sites. Thus, the rationale for eliminating informal street trade seemed more to do with an aesthetic understanding of modernity and progress which positioned street vending as backward and dirty (Bromley, 2000; Cross, 2000), rather than with the logic of actually cleaning up the streets. Indeed, some of the population, especially those that did not live in the urban center, saw informal street trade as one of the



**Figure 1.** Informal commerce in Recife's city centre.





**Figure 2.** Street traders selling in Recife's city centre.

more aesthetically unpleasant aspects of Recife. Sarcastically, a middle-class citizen said: 'Look! [pointing at the stalls]. This is our "order and progress" ["order and progress" is written on the Brazilian flag].' This not only positioned informal street trade as an obstacle hindering commercial progress but also, and more strikingly, as inhuman, as an enforcement officer mentioned: 'Our plan is to humanise the streets.' Not surprisingly, informal street traders were not happy with this as one said: 'A person worthy of his work need not be mistreated. But the city council doesn't want to know that.'

The formalization program was also relevant to formal vendors, who considered informal trade unfair and damaging to their business. First, because the formal shop owners, unlike the informal traders, had to pay taxes on products sold, for their building and permits as well as for purchasing products through official supply channels. Second, because informal street trade was associated with counterfeit products. A CD shop owner had this opinion: 'they don't want to [be formalised]. They prefer the streets. They just don't want to pay taxes.' But formal vendors also saw positive aspects of informal street trade. For example, a national bank claimed an informal street trader was valued by their staff and customers and thus, prevented his registering by CSURB by stating he was working on their private space outside and not on a public pavement. There were also formal shops which claimed informal street traders attracted clients, or coffee shop owners who liked the music stalls being nearby as it entertained their customers: 'If they're less, less clients get inside [the coffee shop]. If they're there, they attract clients which can come in.' On the other hand, a clothes shop owner said: '(...) if we let them, they abuse, but if we don't let them, we miss them.' Thus, common to most formal vendors was the idea that informal street trade could benefit from a better organization but, at the same time, that such organization did not have to be associated with their complete removal from the streets.

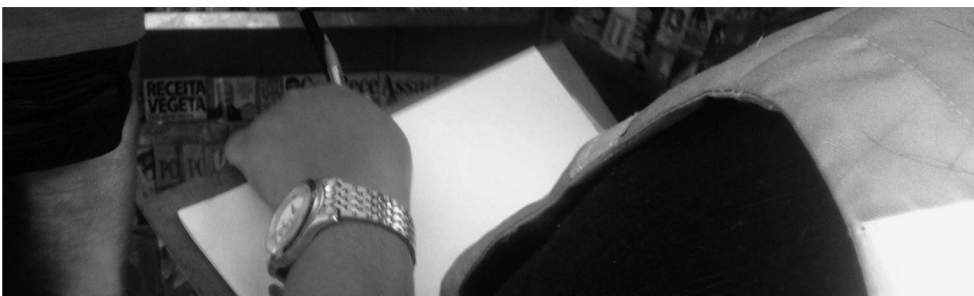
The formalization program aimed to reallocate traders to specially-built shopping malls known as Camelódromos. A specific Camelódromo had been built over a decade before with the same intent but the ones associated with this formalization program were yet to be built. While these were yet to be built, licenses were temporary and issued in relation to 'disciplined sites,' i.e. streets where only licensed traders could work. Traders saw the Camelódromos as an opportunity to expand their business while having a better workspace infrastructure and mostly, not being continuously harassed by authorities. As an informal street trader said: '(...) a toilet, a cleaned space, organised, instead of this ... never knowing when they'll come [enforcement officers] and put us away.' But some believed the promised infrastructures would never be built. Moreover, the planned locations of the malls were not attractive for them and the experience of a previously built Camelódromo a few decades ago had not been positive for street traders: 'Who would go there [to a Camelódromo] to buy this [grabbing a coconut]? No one goes to a mall for this (...) Look at the old Camelódromos. Everyone sells outside, not inside.' They were also suspicious towards CSURB's true purposes as an informal street trader mentioned: 'They say: "You're out today!"; "Tomorrow we're gonna take it away!"; "After tomorrow you'll get a notification!" – You see? It's this psychological pressure.' Indeed, as a supervisor mentioned, these reallocations would greatly help CSURB control the

streets: '(...) they're very scattered. This [reallocating them] makes it easier to monitor. [Easier] To do everything.' Additionally, CSURB believed this would facilitate the progressive limiting of the licenses available for traders, as noted by a supervisor: 'It's a palliative measure. Once in the Camelódromo, no new licenses will be issued.' Thus, reallocations could be read as an interim strategy to remove all signs of street trade from Recife. The formalization program was to facilitate this. The spreadsheet was developed to record and capture the licensing of informal street trade.

#### **4.3. Formalizing through the spreadsheet**

This subsection will focus on the spreadsheet which provided the central record of all traders. Further, licensing decisions were based on its classification scheme. The scheme mirrored the formalization rules, which specified that a trader could only be licensed for one specific commercial activity, one location, and one stall and, if licensed, no other family member of the trader could be registered under the formalization program. On the spreadsheet, this rule was mirrored by the fact that its classification scheme only permitted the registering of one-to-one relations between the categories of identification of stall owner, product category sold and site location. We will next describe four important aspects associated with the use of the spreadsheet in this context which we briefly outline now. First, the use of the spreadsheet's printed forms on the streets facilitated the traders' own self-reporting. Second, the mismatch between the forms' structure and the reality of the streets made for trader's activities to be registered on the spreadsheet as 'deviances' to the formalization rules. These deviances needed to be addressed or 'fixed' by pressuring traders to change their behavior, issuing fines, confiscating products or revoking licenses. Third, in those sites where 'deviances' were high, formalization was slow or even not enforced while in the 'disciplined sites,' licensed traders helped enforcement officers with surveying and reporting any suspicious activities. Lastly, spreadsheets were also used by enforcement officers to help friendly informal street traders targeted by disciplinary measures.

Every morning, enforcement officers printed off the forms and spreadsheet relevant to the area that they were to patrol. When walking with these documents in their hands – as illustrated in [Figure 3](#) – they would often become the center of attention. As observed while accompanying enforcement officers on their patrols, street traders would often approach them, look at the forms and ask: 'Is my name there?'; 'What about my brother?'; 'When are you issuing the licenses?'; 'When is the Camelódromo gonna be built?'. Traders didn't question the accuracy of the records or the authority of the enforcement officers. Driven by fear and/or expectations of a better life, they would run after them when noticing they were collecting data for the licensing process. An informal street trader said: 'It's their job. I'm nice to them and I never had any problem. I would just like if they could be faster in giving me the authorisation, you know?! My license.' Traders too believed some change was needed, but whether the change offered by the formalization program was appropriate wasn't questioned. They were either unaware or didn't believe that the one family member per stall rule would



**Figure 3.** Enforcement officer collecting data from street traders.



activities visible as ‘deviances’ and thus, candidates for elimination when disciplinary measures had to be taken so to ensure the formalization program’s success. As one supervisor said: ‘Why change the “other column”? That’s where we find out everything.’

While ‘deviances’ persisted on the spreadsheets, supervisors pressured enforcement officers to ensure the traders’ compliance with the formalization rules. Thus, contrary to the licensing patrols, the principal objective of the enforcement officers was to survey the streets for known ‘deviances’ and apply disciplinary measures accordingly. In these cases, enforcement officers would purposefully not use the official forms and the printed spreadsheets but instead, hand-write the information regarding the locations and the names of the traders they were to check, as this would draw less attention from traders wishing to register or ask questions about the formalization program. As an enforcement officer said: ‘They don’t bug me this way.’

Moreover, some locations had a high concentration of unlicensed traders or a high number of ‘deviances’ registered and it could be unsafe to make overt the official forms or enforce the regulations. As one enforcement officer said: ‘There’s still too many here [unlicensed street traders]. It’s too risky.’ Informal street traders became aware of this, and where there were many of them, they would sell openly. One informal street trader said: ‘They’ll [enforcement officers] never risk coming here. This is ours!’. On the other hand, at the ‘disciplined sites,’ enforcement officers had the help of licensed traders who believed they were responsible for their sites’ compliance with the program and thus would survey and pressure unlicensed traders to move away or even report them to the enforcement officers. As a licensed street trader said: ‘If anyone out there puts a stall here, I’ll report it. I’ve worked too hard for this [for the license] No one is gonna take that away from me.’

Enforcement officers were often local residents. Not only did they know the traders, but they also frequently purchased from them. Informal traders thus often queried enforcement officers about issues registered against their names or of their friends and family. During such instances, enforcement officers sometimes showed sympathy for the informal traders. For instance, we observed one enforcement officer saying this to an informal trader who asked him about another informal trader: ‘Seu Leo? Who told you that? There is nothing here on him [checking the spreadsheet for the trade’s name]. (...) I’ll ask around, but don’t worry, nothing will happen to him.’ By checking the spreadsheets for relevant information, at the request of those informal traders with whom they had developed relations, enforcement officers could implicitly alert them to issues and allow them to take care of them. Thus, along with enforcing formalization, in keeping with the relational cultural fabric of the local social context, enforcement officers also showed support for informal traders and saw them as an integral part of the daily life of Recife and of its social and economic infrastructure.

## **5. Discussion: formalization through classification**

In this section, we draw on our theoretical underpinnings and the empirical data to consider how classification schemes are implicated in the formalization of street trade. What we will argue is that the classification scheme acted on traders, officials and citizens, and in doing so, individualized their conduct and understandings of street trade. In the first subsection, we will argue that formalization, operationalized through a classification scheme, disciplines the activities of individual traders by making them an object of knowledge. In the second subsection, we will suggest that what the formalization regulations and the classification scheme did was to shape the subjectivities and imaginations of all actors about what informal street trade was and what it was to become under the formalization program.

### **5.1. Classification and knowing individual street traders**

The ‘problem’ that the formalization program sought to respond to was that informal street trade was diffuse and uncontrollable. The formalization regulations addressed this by requiring that

individual stall holders, their location and their products were disclosed. However, what our case highlighted was that to operationalize the regulations, and to discipline informal street trade, a classification scheme was required. The classification scheme operationalized the formalization of informal street trade by making individual traders an object of knowledge. Classification is an important disciplinary apparatus. It provides for the possibility to know, order and control the activities of individual street traders and gather knowledge about the population of street traders. Individual street traders become an object of knowledge in the following four ways.

First, the classification scheme *partitioned* traders in terms of stall ownership, location and product. This allowed for individuals and specific dimensions of street trade to be known. What this did was to render the individual traders visible and in doing so they became an object of knowledge. By making the individual street traders an object of knowledge and by partitioning their activities, the classification scheme provided for the population of street traders to be divided up into governable subsets (individuals, locations, products, legal or illegal). By rendering individual traders visible (as an object of knowledge), this provided for their conformity with the regulations to be examined (Gitlemen et al., 2013). The more complete the details were pertaining to an individual trader, the more they were rendered visible and the more they could be known and disciplined (Foucault, 1982).

Second, the classification scheme provided for the *examination* of street trade. It allowed for office staff to review if the formalization project was on track and if certain districts or areas should be subject to more targeted intervention. It allowed for the planning and control of the population *en masse*. For this examination and disciplining of informal street traders to be possible, it required the individual records to be perceived of as being accurate and objective (Introna & Whittaker, 2004). As previous research has highlighted, accounting information such as tax and pensions are relatively impenetrable to average people and take on the appearance of being objective and accurate (Graham, 2014). This is despite figures often being merely best estimates (Hayes et al., 2018; Miller, 2001). Similarly, in Recife, the accuracy of the records was assumed by traders and enforcement officers alike. The classification scheme allowed for the objective and unquestioned specification of what trade was being conducted, where and by whom. It led to the knowledge claims of enforcement officers, on behalf of the city council, being accepted as objective and true (Hayes & Westrup, 2012). Thus, through knowing, partitioning and examining the population's activities in these ways, the classification scheme transformed individual street traders from being a unique and unknowable population into a manageable and ordered population (Foucault, 1977/1979, p. 148). Classification schemes transform 'confused, useless or dangerous multitudes into ordered multiplicities' (Foucault, 1977/1979, p. 148). To paraphrase Foucault (1977/1979, p. 143), the classification scheme was put in place to eliminate the effects of imprecise distributions of traders, their uncontrolled trading activities and their diffuse circulation. As has been emphasized in the accounting literature (Miller, 2001), spreadsheets, as Ilcan and Phillips (2010, p. 849) highlight are, 'far from neutral objective tools, the mundane accounting procedures associated with audit and economic assessment are powerful mechanisms for shaping social and economic life.' The classification scheme thus, was far from neutral. It disciplined individual traders through attaching individual accountability and responsibility for aligning with the regulations (Cheney-Lippold, 2011; Cohen, 2018).

Third, *auditing expertise* was fundamental in the objectification of street trade. Studies have highlighted that the apparent objectivity of records and analysis is predicated on the assumed expertise of those that construct, audit and analyze records (Graham, 2014). Those in positions and roles of auditors are able to make claims of knowledge that are unquestioned (Introna & Whittaker, 2004). Auditing expertise is fundamental to the exercise of power (Miller, 2001). However, claims of expertise in Recife were not equal. The city council had access to information technology, spreadsheets, and qualified staff (relatively) who could audit the records, and issue licenses or fines accordingly. City Council staff, due to their position as expert auditors, became the ones who could distinguish between formal and informal street trade (Cashmore & Morgan, 2014; Richardson & Cashmore, 2011).



This placed the city council as being in a powerful position. In the Global South, expert knowledge such as that related to auditing and analyzing formal and informal street trade takes on special significance (Hayes & Westrup, 2012). Street traders, largely being the urban poor, were not able to question the classification scheme or records in the spreadsheet (Banerjee & Linstead, 2004). This is despite the spreadsheet not being especially sophisticated. Many traders only had a basic level of education and were unfamiliar with spreadsheets and information technology more generally. There is a significant discrepancy in expertise between those that are governing and those being governed (Richardson & Cashmore, 2011). The possibility to participate in shaping street trade in the Global South is thus unevenly distributed. Those with access to expertise and information are better placed to shape the future of street trade (Miller, 2001).

Fourth, classification was central to the expanding possibilities of control through the *panoptic effect* it led to amongst traders. As we saw in the case, when enforcement officers were seen reviewing the printout of the spreadsheet on the streets, it was a visible reminder to traders of the legitimacy and authority of the enforcement officers. The daily patrols of enforcement officers led to traders seeking to find out more about what was required to voluntarily register themselves and their families. Alternatively, others would seek to avoid detection. The Panopticon has been discussed extensively within the literature, and we will not rehearse the argument here (Knights & McCabe, 2003; Zuboff, 2015). However, this panoptic effect was necessarily incomplete. In our case, this was noticeable when enforcement officers feared being assaulted by traders in locations where unlicensed traders were in high numbers, due to their sympathy with traders. What we see in Recife, and in the literature that has examined informal street trade in the Global South (Little, 2015; Turner & Schoenberger, 2012), is that the governing of informality is intrinsically related to the legal ambiguity and negotiable enforcement of laws (Devlin, 2011; Tucker & Devlin, 2019). The state often ignores the flouting of some formal regulations, as 'political costs of imposing regulation may greatly outweigh the benefits of intervening' (Dibben et al., 2015, p. 387).

## **5.2. Formalizing as an individualizing governing rationality**

In this second subsection, we will highlight that the individualizing strategy needs to be understood as operating within a governing rationale that shaped the imaginations and practices of all actors. Formalization had a moral basis. It was tied to claims of cleanliness, urban pedestrian and traffic mobility, licensed trading and other desired esthetics of formalization and progress associated with the future prosperity of the population. These are the values by which all actors consider their own activities and the activities of others against. Informal street trade was seen as detrimental to achieving this vision. As the literature on governmentality has highlighted (Miller, 2008), such moral rationales are hard to question and come to construct the ways of thinking and acting. This focusses the attention away from the problem (whether formalization was necessary) and instead offers reformatted solutions (licensing and enforcement). Formalization thus becomes hard to question, as all actors assume that formalization is the appropriate way in which trade should be conducted and that the ways to be a successful trader or government official are already known (Hayes et al., 2018; Ilcan & Phillips, 2010). Thus, key to formalization was the normalization of the moral basis and expectations for formal street trade.

Formalization provided for the self-examination of the practices of traders and enforcement officers, and thus was akin to what Ilcan and Phillips (2010) refer to as a key instrument 'that privilege and oblige particular conceptions ... [encouraging] certain individuals, groups and places to reinvent themselves.' As studies of accounting and calculative practices have highlighted, classification schemes such as those in spreadsheets have been central in connecting responsibility to the political rationalities of the day (Graham, 2014, p. 1627). Classification schemes are mundane but crucial technologies that enroll traders in formalization programs. They come to recognize themselves as requiring change, for them to align with the regulations, and to be responsible for their own future and the future of the broader population. This was perhaps most evident in the ways that traders were



responsible for registering themselves, specifying the individual owner of the stall, the location they trade from and the products they sold. It also led to them reporting unlicensed traders to enforcement officers. Such acts of confession saw them defining themselves, in terms of the formalomorphist rationale. Enforcement officers were required to elicit who the owner of the stall was, and to explain the licensing and regulation process to traders (even though this was often difficult). Enforcement officers too were individually accountable for demonstrating that more licenses and fines were being issued. The active participation of enforcement officers and traders was thus central to the individualizing strategy of formalization.

The classification scheme, operating within this governing rationale, was performative (Gitlemen et al., 2013; Zuboff, 2015). The classification scheme acted on traders and enforcement officers to shape the capacities and conduct of all actors. It constructed the subject positions of government officials, traders and enforcement officers as being responsible for their own future and the future of the broader population (Cheney-Lippold, 2011; Noble, 2018). For government officials, formalization came to be explained by their success in completing the forms in detail, in issuing licenses and fines and in the absence of urban congestion and cleanliness of the streets. As Graham (2014, p. 1627) argues we 'understand ourselves reflexively in relation to who we were and who we will become.' Even on those occasions when enforcement officers would ignore and advise rather than enforce regulations, they did not question formalization as a governing rationality, purely the speed and way in which it was implemented. As such the formalizing rationale, operationalized through the classification scheme, was fundamental in conducting the conduct of government officials. The formalizing discourse recast understandings of informal street trade by contrasting it with what it was not – clean, unhindered pedestrian and traffic mobility, regulated products etc. Informal street traders came to understand themselves as part of the problem and that their activities needed to change for the betterment of the city and /or to maintain their possibility of being a trader. Thus, success as good traders and citizens was defined by aligning their trading practices to the regulations, seeking out information about when they may be able to move into a mall, and reporting other traders that were not in compliance. Not all traders aligned themselves with such an image of what street trade would become. However, formalization, and the classification scheme, also acted on them, as it led to them avoiding detection and sanctions.

Finally, what about the citizens themselves? While we do not have detailed empirical data on the views and practices of citizens in Recife, based on our interactions with citizens, and the literature, we might suggest that it partitioned citizens between those that welcomed formalization as being urban desirables from those that did not align with the formalizing rationale as being urban undesirables (Swanson, 2007, p. 709). Thus, in line with other cities in the Global South, it not only placed informal street traders as backward and hindering the development of Recife, but also the citizens who purchased goods from them (Bromley, 2000; Seligmann, 2001; Turner & Schoenberger, 2012). However, such a partitioning was partial and unclear. There were long-established norms around community and lifestyle in Recife. Shopping, eating, drinking, friendship, music as well as low prices were all fundamental aspects of the street scene of Recife and the day-to-day activities of all citizens. Indeed, such a community understanding of informal street trade is pervasive across the Global South (Carrieri & Murta, 2011; Nogueira, 2020; Nogueira, 2021; Nogueira & Shin, 2022). As Schindler (2017) suggests, the urban community, and particularly the middle-class citizens, through their consumption habits, often act as power brokers that shape the daily governance of informality. It is thus not entirely surprising that in Recife both the middle-class residents that lived in the suburbs (those citizens that the formalization appeared to privilege) and the enforcement officers continued to purchase products from informal street traders, enjoy the music that came from the music stalls while drinking coffee and eating food in the bars, etc. This revealed contradictory implications concerning notions of trade and citizenship. It exposed contestation between the individualistic mentality of rule and the collective and community understanding of citizenship. It highlighted the partiality of the formalizing regime of governance amongst citizens.

## 6. Implications for urban street trade in the Global South

Several important implications arise from this argument about the individualizing of street trade in the global south. Most fundamentally, it recasts and transforms notions of citizenship and community. Formalization of trade does much more than merely issue and enforce licenses. Community and street scene for many in the Global South is fundamental to their everyday lives. Formalization thus threatens to transform the long-established notions of kinship which shape the urban population's 'forms of living (Millar, 2018) and disrupt a well-functioning popular economy' (Nogueira, 2020; Nogueira, 2021; Nogueira & Shin, 2022). As Crossa (2016) argues, formalization policies encounter resistance because they are aligned with neoliberal logics of homogenized trade which are contrary to the diversity of informal practices that characterize street trade and urban life. Indeed, as Carrieri and Murta's (2011) study of formalization in Belo Horizonte (Brazil) found, the move from informal street trade to formalized trade in malls resulted in a shift from a community and cooperative trading ethos to an individualized and competitive view of trade. Similarly, our case highlights that formalization was dependent of individual accountability and this conflicted with the community norms pertaining to street trading. It reveals the ongoing tensions between the formalomorphist mentality of rule, operationalized through the apparently mundane classification scheme, and the long-established community and family-based understandings of informal street trade. Informal street traders provide services and products that are valued by all citizens. They create identity and community through the local products, foods and music that they sell and promote (Crossa, 2016). They also provide products at much-reduced prices and an income for many extended family members. Marginalization is problematic in the Global South as informal street trade provides a safety net for the poor in the absence of developed welfare systems (Bromley, 2000; Millar, 2018).

Critical ICTD scholars have brought attention to a broad range of issues associated with data justice which affect its developmental potential. These are associated with, for instance, who gets access to and is able to retrieve value from data (Boyd & Crawford, 2012), what are the mechanisms which enable the control over personal data (Cohen, 2018; Zuboff, 2015) and how is the production of data representative of the world and how it shapes it (Introna et al., 2019; Gitlemen et al., 2013) specifically in relation to collective and individual subjectivities (Cheney-Lippold, 2011; Noble, 2018; Viera Magalhães & Coudry, 2021). In Brazil, several ICTD scholars have suggested that the increased use of digital technologies to assist governing policies comes attached to an imagery of modernity and progress (Cavalheiro & Joia, 2016; Ferreira et al., 2016; Malaquias et al., 2017; Nemer, 2016). Cavalheiro & Joia (2016) adds that the government's move towards digitalization is intended to appeal to a general belief that this shift brings more transparency and accountability to governments. In doing so, this serves the aim of making governments more trustworthy to their citizens (Avgerou et al., 2009). However, Hayes and Rajão (2011) point out that the developmental impact of any ICT-mediated project is always emergent and contested. It is the momentary outcome of ongoing disputes between different institutional logics. There is also reasonable consensus among critics that see the increasing interplay between governing and digitalization being mostly shaped by a technological determinist logic which often fails to appreciate the inequality that Brazilians face both in terms of access to resources and education (Nemer, 2016, 2018; Poveda & Roberts, 2018). Critical studies have further highlighted that rather than increasing trust and accountability, many ICT-led government interventions fail to provide the space necessary for the active participation of populations in shaping their own developmental futures (Ferreira et al., 2016; Nemer, 2018).

Our case speaks to these concerns and has highlighted the centrality of data justice and inequality, most specifically in terms of access to resources and claims of expertise between informal street traders and City Council officials. With the requirement of auditing expertise, even basic expertise as evidenced in this case, opportunities for traders in the Global South to question the operationalization of formalization are also curtailed, especially when most urban citizens and traders lack the education to actively question the knowledge claims of government officials. How might street traders

intervene and question the transformations taking place in their city and trade when they are individualized and divided through calculation and classification? Over time, we might anticipate this inequality being increased as classification schemes become more extensive and sophisticated through an individualized institutional logic which is ontologically distant and even contrary to the community-based values that are shared by street traders and intrinsic to the cultural and socio-economic development of these communities. There is thus a danger that the disciplining of street trade shapes urban centers such as Recife to become framed through the interests of the dominant classes and understood as their attempt to tame the wild city and bring it under their control (Swanson, 2007).

## 7. Conclusion

Our paper has highlighted that formalization is a power-constituted process which involves the direct and indirect intervention in the activities of street traders, government officials and citizens alike. What we have thus highlighted is that the operationalization of the classification scheme renders individual street traders as being more amenable to the intervention of the state. Seen through governmentality, formalization casts informal street trade as being uncitizen-like (Brown et al., 2015). It does this by contrasting informal street trade with what it is not (unhindered pedestrian and traffic mobility, hygienic streets, etc.). A formalomorphist governmentality then frames the problem and offers the solution. It shapes the imaginations and aspirations of all actors about 'appropriate' or 'inappropriate' economic behavior (Cross, 2000). This leads to contradictory implications. It is done in the name of community – for the betterment of all (in relation to pedestrian and traffic mobility, hygiene, economic development, etc.). However, it challenges the existing understandings of community/family ownership of stalls, space, infrastructure, ambience, etc. The alignment with this formalomorphist governmentality renders the population of street traders as being subject to intervention and management. All actors come to see themselves as being individually accountable, and thus participated in this self-regulation and identity formation through their acts of confession, which included self-registering and/or reporting others.

Classification schemes are not neutral; they act on people as political instruments of rule. We have shown that classification acts on the actions of others by structuring the possibilities available to individuals. Classification schemes do much more than merely order and discipline life, they actively shape the performativity of actors (Contu & Girei, 2013; Hayes et al., 2018; Introna et al., 2019). This is the panoptic effect of the classification schemes. They configure the practices of those enforcing formalization, those seeking to comply with formalization, those that are unaware of the requirements of formalization, and those that seek to avoid formalization. The regulations, through the classification scheme, frame what is conceived of as a good street trader, enforcement officer or citizen. What this Foucauldian-inspired analysis highlights is that mundane accounting technologies such as spreadsheets act on people. By this, we mean that they come to create roles and identities and govern what people consider to be important and appropriate (Cheney-Lippold, 2011; Henman & Dean, 2010; Viera Magalhães & Couldry, 2021). This is the political dimension of classification. In our case, classification is fundamental in establishing the problem of informal street trade as self-evident and hard to question and, through its panoptic effect, enforcing the subjectivities of all actors to align with the objective of formalization.

Some limitations of this study derive from the challenges in producing and communicating thick ethnographic work. This aligns with the growing voices within critical ICTD that ask for more thick ethnographic work (De et al., 2018; Zheng et al., 2018) aligned with critical perspectives on power and subjectivity (Stratton & Nemer, 2020). However, any in-depth study contains in itself the cost of being harder to generalize findings. The challenge of aligning these findings with a Foucauldian-inspired literature on governmentality, classification and critical data studies meant that what was gained in theoretical cross-reference between the fields might have come with the cost of it having slightly less theoretical depth in each specific theoretical domain. On the other hand,

because formalization and street trade is a highly contested domain, as governing officials became aware of our growing familiarity with street traders, they also became suspicious of our intentions and less welcoming to their facilities or answering our requests. If this wasn't the case, we could have potentially gathered more data about other knowledges, materials and technologies used in the realm of formalization and assessed their alignment/contestation to the ones of traders. A potential strategy to cope with this could be to investigate more deeply on the role of mediators, such as workers' unions or NGOs. This could offer a wider picture of these issues and help on maintaining access to both sides of such a highly contested space.

In relation to future research that considers the important yet under-researched relationship between formalization and classification, we suggest several possible lines of future development. First, we argue that there is a need for similar in-depth studies in different cities in the Global South that can help us surface the ways in which formalization programs are put in place with different regulations, cultural conditions, infrastructures etc. Second, that future studies should focus on mundane classification schemes to further understand why formalization works itself out in the ways that it does. While our spreadsheet at first glance looked like a very basic technology, and thus potentially uninteresting, we discovered that it had profound effects in understanding issues of regulation, trade and community. We would encourage further reflection on the ways in which classification schemes operate within a formalomorphist governing regime, and shape, in this case, the conduct of conduct of government officials, street traders and citizens.

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## References

- Araújo, M. C. B., Silva-Cavalcanti, J. S., Vicente-Leal, M. M., & da Costa, M. F. (2012). Análise do comércio formal e informal na Praia de Boa Viagem, Recife, Pernambuco, Brasil. *Revista de Gestão Costeira Integrada-Journal of Integrated Coastal Zone Management*, 12(3), 373–388. <http://doi.org/10.5894/rgci329>
- Avgerou, C. (2008). Information systems in developing countries: A critical research review. *Journal of Information Technology*, 23(3), 133–146. <https://doi.org/10.1057/palgrave.jit.2000136>
- Avgerou, C., Ganzaroli, A., Poullymenakou, A., & Reinhard, N. (2009). Interpreting the trustworthiness of government mediated by information and communication technology: Lessons from electronic voting in Brazil. *Information Technology for Development*, 15(2), 133–148. <https://doi.org/10.1002/itdj.20120>
- Banerjee, B., & Linstead, S. (2004). Masking subversion: Neocolonial embeddedness in anthropological accounts of indigenous management. *Human Relations*, 57(2), 221–247. <https://doi.org/10.1177/0018726704042928>
- Barroso, P. (2008). Etnografia de Rua na "Voluntários da Pátria": fotografando ambulantes no Espaço Público. *Revista Ensaios*, 1(1), 23–34. <https://doi.org/10.22409/re.v1i1.62>
- Beekhuyzen, J., Nielsen, S., & Von Hellens, L. (2010, November 29–30). *The Nvivo looking glass: Seeing the data through the analysis*. 5th Conference on qualitative research in IT, Brisbane, Australia.
- Benjaminsen, T. A., Holder, S., Lund, C., & Sjaastad, E. (2006, May 16–19). *The emerging formalisation agenda and some empirical evidence from Africa* [Paper presentation]. To symposium, at the Frontier of land issues: Social embeddedness of rights and public policy, Montpellier, France.

- Boyd, D., & Crawford, K. (2012). Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon. *Information, Communication & Society*, 15(5), 662–679. <https://doi.org/10.1080/1369118X.2012.678878>
- Bromley, R. (2000). Street vending and public policy: A global review. *International Journal of Sociology and Social Policy*, 20(1), 1–28. <https://doi.org/10.1108/01443330010789052>
- Bromley, R. D. (1998). Informal commerce: Expansion and exclusion in the historic centre of the Latin American city. *International Journal of Urban and Regional Research*, 22(2), 245–263. <https://doi.org/10.1111/1468-2427.00138>
- Brown, A., Msoka, C., & Dankoco, I. (2015). A refugee in my own country: Evictions or property rights in the urban informal economy. *Urban Studies*, 52(12), 2234–2249. <https://doi.org/10.1177/0042098014544758>
- Brown, A. E., & Grant, G. G. (2010). Highlighting the duality of the ICT and development research agenda. *Information Technology for Development*, 16(2), 96–111. <https://doi.org/10.1080/02681101003687793>
- Cáceres, R. B., Agüero, A., Cavero, M., & Huaroto, C. (2012). The impacts of the use of mobile telephone technology on the productivity of micro-and small enterprises: An exploratory study into the carpentry and cabinet-making sector in Villa El Salvador. *Information Technologies & International Development*, 8(4), 77–94.
- Carrieri, A., & Murta, I. B. D. (2011). Cleaning up the city: A study on the removal of street vendors from downtown Belo Horizonte, Brazil. *Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de L'Administration*, 28(2), 217–225. <https://doi.org/10.1002/cjas.207>
- Cashmore, M., & Morgan, R. (2014). The impact assessment “arms race” and visions for the future. *Impact Assessment and Project Appraisal*, 32(1), 25–26. <https://doi.org/10.1080/14615517.2013.872850>
- Cavalheiro, G. M. D. C., & Joia, L. A. (2016). Examining the implementation of a European patent management system in Brazil from an actor-network theory perspective. *Information Technology for Development*, 22(2), 220–241. <https://doi.org/10.1080/02681102.2014.910634>
- Chacaltana, J., Leung, V., & Lee, M. (2018). New technologies and the transition to formality: The trend towards e-formality. ILO Employment Policy Department Working Paper, 247.
- Chen, M. A. (2016). Technology, informal workers and cities: Insights from Ahmedabad (India), Durban (South Africa) and Lima (Peru). *Environment and Urbanization*, 28(2), 405–422. <https://doi.org/10.1177/0956247816655986>
- Cheney-Lippold, J. (2011). A new algorithmic identity: Soft biopolitics and the modulation of control. *Theory, Culture & Society*, 28(6), 164–181. <https://doi.org/10.1177/0263276411424420>
- Cinnamon, J. (2020). Data inequalities and why they matter for development. *Information Technology for Development*, 26(2), 214–233. <https://doi.org/10.1080/02681102.2019.1650244>
- Cohen, J. E. (2018). The biopolitical public domain: The legal construction of the surveillance economy. *Philosophy & Technology*, 31(2), 213–233. <https://doi.org/10.1007/s13347-017-0258-2>
- Coletto, D. (2010). *The informal economy and employment in Brazil: Latin America, modernization, and social changes*. Palgrave MacMillan.
- Contu, A., & Girei, E. (2013). NGOs management and the value of “partnerships” for equality in international development: What’s in a name? *Human Relations*, 67(2), 205–232. <https://doi.org/10.1177/0018726713489999>
- Cooper, R., & Law, J. (1995). Organization: Distal and proximal views. In *For Robert Cooper* (pp. 207–243). Routledge.
- Costa, K., & Pintaudi, S. (2003). *O centro de Recife e suas formas comerciais: transformações e persistências*. Instituto de Geociências e ciências exatas. Universidade Estadual Paulista.
- Cozzens, S., & Sutz, J. (2014). Innovation in informal settings: Reflections and proposals for a research agenda. *Innovation and Development*, 4(1), 5–31. <https://doi.org/10.1080/2157930X.2013.876803>
- Creswell, J. (2008). *Research design: Qualitative, quantitative and mixed method approaches*. Sage.
- Cross, J. (1999). Informal sector. In *Encyclopedia of political economy* (pp. 580–582). Routledge.
- Cross, J. (2000). Street vendors, modernity and postmodernity: Conflict and compromise in the global economy. *International Journal of Sociology and Social Policy*, 20(1/2), 29–51. <https://doi.org/10.1108/01443330010789061>
- Crossa, V. (2016). Reading for difference on the street: De-homogenising street vending in Mexico City. *Urban Studies*, 53(2), 287–301. <https://doi.org/10.1177/0042098014563471>
- Dalton, C. M., Taylor, L., & Thatcher, J. (2016). Critical data studies: A dialogue on data and space. *Big Data & Society*, 3(1), 2053951716648346. <https://doi.org/10.1177/2053951716648346>
- De, R., Pal, A., Sethi, R., Reddy, S. K., & Chitre, C. (2018). ICT4D research: A call for a strong critical approach. *Information Technology for Development*, 24(1), 63–94. <https://doi.org/10.1080/02681102.2017.1286284>
- Devlin, R. T. (2011). ‘An area that governs itself’: Informality, uncertainty and the management of street vending in New York City. *Planning Theory*, 10(1), 53–65. <https://doi.org/10.1177/1473095210386070>
- Dibben, P., Wood, G., & Williams, C. (2015). Pressures towards and against formalization: Regulation and informal employment in Mozambique. *International Labour Review*, 154(3), 373–392. <https://doi.org/10.1111/j.1564-913X.2014.00014.x>
- Donovan, M. (2008). Informal cities and the contestation of public space: The case of Bogota’s street vendors, 1988–2003. *Urban Studies*, 45(1), 29–51. <https://doi.org/10.1177/0042098007085100>
- Dovey, K. (2012). Informal urbanism and complex adaptive assemblage. *International Development Planning Review*, 34(4), 349–368. <https://doi.org/10.3828/idpr.2012.23>
- Duneier, M., & Carter, O. (1999). *Sidewalk*. Farrar, Straus and Giroux.



- Evers, C. (2015). Pengpu night market. Informal urban street markets. In C. Evers, & K. Seale (Eds.), *Informal urban street markets: International perspectives* (Vol. 40, p. 95). Routledge.
- Evers, C., & Seale, K. (2015). *Informal urban street markets: International perspectives*. Routledge.
- Ferreira, S. M., Sayago, S., & Blat, J. (2016). Going beyond telecenters to foster the digital inclusion of older people in Brazil: Lessons learned from a rapid ethnographical study. *Information Technology for Development*, 22(suppl 1), 26–46. <https://doi.org/10.1080/02681102.2015.1091974>
- Foucault, M. (1977/1979). *Discipline and punish* (A. Sheridan, Trans.). Vintage. (Original work published 1977), 191.
- Foucault, M. (1980). *Power/knowledge: Selected interviews and other writings, 1972–1977*. Vintage.
- Foucault, M. (1982). The subject and power. *Critical Inquiry*, 8(4), 777–795. <https://doi.org/10.1086/448181>
- Gitelman, L., Jackson, V., Rosenberg, D., Williams, T. D., Brine, R. K., Poovey, M., Stanley, M., Garvey, E. G., Krajewski, M., Raley, R., Ribes, D., Jackson, S. J., & Bowker, J. C. (2013). Data bite man: The work of sustaining a long-term study. In L. Gitelman (Ed.), *“Raw Data” Is an oxymoron* (pp. 147–166). MIT Press. <https://doi.org/10.7551/mitpress/9302.001.0001>
- Gomes, M. (2016). Public policy of employment and income in Recife, Brazil: Territory’s use and citizenship. *Revista Movimentos Sociais E Dinâmicas Espaciais*, 5(2), 211–229.
- Graham, C. (2014). The calculation of age. *Organization Studies*, 35(11), 1627–1653. <https://doi.org/10.1177/0170840614550730>
- Hart, K. (2006). Bureaucratic form and the informal economy. In *Linking the formal and informal economy: Concepts and policies* (pp. 21–35). Oxford University Press. <https://doi.org/10.1093/0199204764.003.0002>
- Hayes, N., Introna, L. D., & Kelly, P. (2018). Institutionalizing inequality: Calculative practices and regimes of inequality in international development. *Organization Studies*, 39(9), 1203–1226. <https://doi.org/10.1177/0170840617694067>
- Hayes, N., & Rajão, R. (2011). Competing institutional logics and sustainable development: The case of geographic information systems in Brazil’s Amazon region. *Information Technology for Development*, 17(1), 4–23. <https://doi.org/10.1080/02681102.2010.511701>
- Hayes, N., & Westrup, C. (2012). Power/knowledge and impact assessment: Creating new spaces for expertise in international development: Power/knowledge and impact assessment. *New Technology, Work and Employment*, 27(1), 9–22. <https://doi.org/10.1111/j.1468-005X.2012.00274.x>
- Henman, P., & Dean, M. (2010). E-government and the production of standardized individuality. In V. Higgins, & W. Larner (Eds.), *Calculating the social* (pp. 77–93). Springer.
- Hilbert, M. (2016). Big data for development: A review of promises and challenges. *Development Policy Review*, 34(1), 135–174. <https://doi.org/10.1111/dpr.12142>
- IBGE. (2017). *Brazil municipalise basic information search portal*.
- Ilan, S., & Phillips, L. (2010). Developmentalities and calculative practices: The millennium development goals. *Antipode*, 42(4), 844–874. <https://doi.org/10.1111/j.1467-8330.2010.00778.x>
- ILO. (2016). *Non-standard employment around the world: understanding challenges, shaping prospects*.
- Introna, L., & Whittaker, L. (2004). Truth, journals, and politics: The case of the MIS quarterly. In B. Kaplan, D. Wastell, A. Wood-Harper, & J. DeGross (Eds.), *Information systems research, IFIP international federation for information processing* (pp. 103–120). Springer US.
- Introna, L. D., Hayes, N., & Al-Hejin, Z. (2019). The negotiated order and electronic patient records: A sociomaterial perspective. *Journal of Information Technology*, 34(4), 333–349. <https://doi.org/10.1177/0268396219870548>
- Jacob, E. (2004). Classification and categorization: A difference that makes a difference. *Library Trends*, 52(3), 515–540. <https://hdl.handle.net/2142/1686>
- Jenks, C., & Neves, T. (2000). A walk on the wild side: Urban ethnography meets the Flâneur. *Journal for Cultural Research*, 4(1), 1–17. <https://doi.org/10.1080/14797580009367183>
- Kaushik, A. K., & Rahman, Z. (2016). Are street vendors really innovative toward self-service technology? *Information Technology for Development*, 22(2), 334–356. <https://doi.org/10.1080/02681102.2015.1052359>
- Kleine, D., Light, A., & Montero, M. J. (2012). Signifiers of the life we value?—Considering human development, technologies and Fair Trade from the perspective of the capabilities approach. *Information Technology for Development*, 18(1), 42–60. <https://doi.org/10.1080/02681102.2011.643208>
- Knights, D., & McCabe, D. (2003). Governing through teamwork: Reconstituting subjectivity in a call centre. *Journal of Management Studies*, 40(7), 1587–1619. <https://doi.org/10.1111/1467-6486.00393>
- Kopper, M. (2012). Do Camelodrómo à “nova classe média”: dinheiro, trabalho e moralidades em reconfiguração. *III Encontro Internacional de Ciências Sociais*.
- Leonelli, S., & Beaulieu, A. (2021). *Data and society: A critical introduction*. SAGE Publications. <http://digital.casalini.it/9781529766783>
- Lewis, S., & Russell, A. (2011). Being embedded: A way forward for ethnographic research. *Ethnography*, 12(3), 398–416. <https://doi.org/10.1177/1466138110393786>
- Link, G. J., Kowal, J., & Qureshi, S. (2020). Open source in development: Enabling business and services. *Information Systems Management*, 37(1), 52–74. <https://doi.org/10.1080/10580530.2020.1696548>
- Little, W. (2015). Urban economies and spatial governmentalities in the World Heritage City of Antigua. *Economic Anthropology*, 2(2), 42–62. <https://doi.org/10.1002/sea2.12017>
- Loukaitou-Sideris, A., & Ehrenfeucht, R. (2009). *Sidewalks: Conflict and negotiation over public space*. MIT Press.



- Lyons, M., & Snoxell, S. (2005). Creating urban social capital: Some evidence from informal traders in Nairobi. *Urban Studies*, 42(7), 1077–1097. <https://doi.org/10.1080/00420980500120865>
- Malaquias, R. F., de Oliveira Malaquias, F. F., & Hwang, Y. (2017). The role of information and communication technology for development in Brazil. *Information Technology for Development*, 23(1), 179–193. <https://doi.org/10.1080/02681102.2016.1233854>
- Mete, S., Tomaino, L., & Vecchio, G. (2013). Tianguis shaping ciudad. Informal street vending as a decisive element for economy, society and culture in Mexico. *The Journal of Urbanism*, 26(1), 1–13.
- Middleton, A. (2003). Informal traders and planners in the regeneration of historic city centres: The case of Quito, Ecuador. *Progress in Planning*, 59(2), 71–123. [https://doi.org/10.1016/S0305-9006\(02\)00061-2](https://doi.org/10.1016/S0305-9006(02)00061-2)
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Millar, K. M. (2018). *Reclaiming the discarded: Life and labor on Rio's garbage dump*. Duke University Press.
- Miller, P. (2001). Governing by numbers: Why calculative practices matter. *Social Research*, 68(2), 379–396. <https://www.jstor.org/stable/40971463>
- Miller, P. (2008). Calculating economic life. *Journal of Cultural Economy*, 1(1), 51–64. <https://doi.org/10.1080/17530350801913643>
- MirafTAB, F. (2007). Governing post-apartheid spatiality: Implementing city improvement districts in Cape Town. *Antipode*, 39(4), 602–626. <https://doi.org/10.1111/j.1467-8330.2007.00543.x>
- Mosse, B., & Whitley, E. (2009). Critically classifying: UK e-government website benchmarking and the recasting of the citizen as customer. *Information Systems Journal*, 19(2), 149–173. <https://doi.org/10.1111/j.1365-2575.2008.00299.x>
- Musante, K., & DeWalt, B. R. (2010). *Participant observation: A guide for fieldworkers*. Rowman Altamira.
- Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17(1), 2–26. <https://doi.org/10.1016/j.infoandorg.2006.11.001>
- Nemer, D. (2016). Online favela: The use of social media by the marginalized in Brazil. *Information Technology for Development*, 22(3), 364–379. <https://doi.org/10.1080/02681102.2015.1011598>
- Nemer, D. (2018). Wired mobile phones: The case of community technology centers in favelas of Brazil. *Information Technology for Development*, 24(3), 461–481. <https://doi.org/10.1080/02681102.2018.1478383>
- Noble, S. U. (2018). *Algorithms of oppression*. New York University Press.
- Nogueira, M. (2020). Preserving the (right kind of) city: The urban politics of the middle classes in Belo Horizonte, Brazil. *Urban Studies*, 57(10), 2163–2180. <https://doi.org/10.1177/0042098019872167>
- Nogueira, M. (2021). "I Voted Bolsonaro for President": Street vending and the crisis of labour representation in Belo Horizonte, Brazil. In W. Monteith, D.-O. Vicol, & P. Williams (Eds.), *Beyond the wage* (pp. 233–254). Bristol University Press. <https://doi.org/10.51952/9781529208948.ch010>
- Nogueira, M., & Shin, H. B. (2022). The "right to the city centre": political struggles of street vendors in Belo Horizonte, Brazil. *City*. Advance online publication. <https://doi.org/10.1080/13604813.2022.2126208>
- Nurudeen, A., & Usman, A. (2010). Government expenditure and economic growth in Nigeria, 1970–2008: A disaggregated analysis. *Business and Economics Journal*, 2010(4), 1–11.
- Nyberg, D. (2012). You need to be healthy to be ill: Constructing sickness and framing the body in Swedish healthcare. *Organization Studies*, 33(12), 1671–1692. <https://doi.org/10.1177/0170840612457615>
- Petrakaki, D., Hayes, N., & Introna, L. (2009). Narrowing down accountability through performance monitoring technology: E-government in Greece. *Qualitative Research in Accounting & Management*, 6(3), 160–179. <https://doi.org/10.1108/11766090910973911>
- Pinheiro-Machado, R. (2009). *Produção e circulação de mercadorias no circuito China-Paraguai-Brasil* [Doctoral dissertation]. Universidade Federal do Rio Grande do Sul. <https://www.lume.ufrgs.br/handle/10183/16895>
- Poveda, S., & Roberts, T. (2018). Critical agency and development: Applying Freire and Sen to ICT4D in Zambia and Brazil. *Information Technology for Development*, 24(1), 119–137. <https://doi.org/10.1080/02681102.2017.1328656>
- Rangaswamy, N., & Nair, S. (2012). The PC in an Indian urban slum: Enterprise and entrepreneurship in ICT4D 2.0. *Information Technology for Development*, 18(2), 163–180. <https://doi.org/10.1080/02681102.2011.643211>
- Richardson, T., & Cashmore, M. (2011). Power, knowledge and environmental assessment: The World Bank's pursuit of "good governance". *Journal of Political Power*, 4(1), 105–125. <https://doi.org/10.1080/2158379X.2011.556344>
- Rose, N., & Miller, P. (1992). Political power beyond the state: Problematics of government. *The British Journal of Sociology*, 43(2), 173–205. <https://doi.org/10.2307/591464>
- Schindler, S. (2017). Beyond a state-centric approach to urban informality: Interactions between Delhi's middle class and the informal service sector. *Current Sociology*, 65(2), 248–259. <https://doi.org/10.1177/0011392116657296>
- Scott, J. C. (1998). *Seeing like a state: How certain schemes to improve the human condition have failed*. Yale University Press.
- Seligmann, L. J. (2001). *Women traders in cross-cultural perspective: Mediating identities, marketing wares*. Stanford University Press.
- Silva, M. A. (2009). "This isn't contraband, I'm clean." A study of borders of incorporation and exclusion among Chinese immigrants in Pernambuco. *VIBRANT-Vibrant Virtual Brazilian Anthropology*, 6(1), 152–169. <https://www.redalyc.org/articulo.oa?id=406941907007>

- Singerman, D. (1995). *Avenues of participation: Family, politics, and networks in urban quarters of Cairo*. Princeton University Press.
- Smith, N. (1996). *The new urban frontier: Gentrification and the Revanchist City*. Routledge.
- Stratton, C., & Nemer, D. (2020). ICTD research in Latin America: Literature review, scholar feedback, and recommendations. *Information Technology for Development*, 26(4), 692–710. <https://doi.org/10.1080/02681102.2019.1701970>
- Swanson, K. (2007). Revanchist urbanism heads south: The regulation of indigenous beggars and street vendors in Ecuador. *Antipode*, 39(4), 708–728. <https://doi.org/10.1111/j.1467-8330.2007.00548.x>
- Townley, B. (1993). Foucault, power/knowledge, and its relevance for human resource management. *The Academy of Management Review*, 18(3), 518–545. <https://doi.org/10.2307/258907>
- Tucker, J. L., & Devlin, R. T. (2019). Uncertainty and the governance of street vending: A critical comparison across the north/south divide. *International Journal of Urban and Regional Research*, 43(3), 460–475. <https://doi.org/10.1111/1468-2427.12792>
- Turner, S., & Schoenberger, L. (2012). Street vendor livelihoods and everyday politics in Hanoi, Vietnam: The seeds of a diverse economy? *Urban Studies*, 49(5), 1027–1044. <https://doi.org/10.1177/0042098011408934>
- UNDP. (2013). *United Nations Development Programme – HDI per municipality and state*.
- Viera Magalhães, J., & Couldry, N. (2021). Giving by taking away: Big tech, data colonialism and the reconfiguration of social good. *International Journal of Communication*, 15, 343–362. <https://ijoc.org/index.php/ijoc/rt/metadate/15995/3322>
- Walsham, G. (2017). ICT4D research: Reflections on history and future agenda. *Information Technology for Development*, 23(1), 18–41. <https://doi.org/10.1080/02681102.2016.1246406>
- Watson, V. (2009). Seeing from the south: Refocusing urban planning on the globe's central urban issues. *Urban Studies*, 46(11), 2259–2275. <https://doi.org/10.1177/0042098009342598>
- Williams, C. (2017). Tackling employment in the informal economy: A critical evaluation of the neoliberal policy approach. *Economic and Industrial Democracy*, 38(1), 145–169. <https://doi.org/10.1177/0143831X14557961>
- Williams, C. C. (2005). *A commodified world: Mapping the limits of capitalism*. Zed Books.
- Williams, C. C., & Windebank, J. (2002). Why do people engage in paid informal work? A comparison of higher- and lower-income urban neighbourhoods in Britain. *Community, Work & Family*, 5(1), 67–83. <https://doi.org/10.1080/13668800220120182>
- Zambrano, R. (2021). Digital technologies and public policy: Chasing human development. In H. Zafarullah & A. S. Huque (Eds.), *Handbook of development policy* (pp. 366–377). Edward Elgar. <https://doi.org/10.4337/9781839100871.00041>
- Zheng, Y., Hatakka, M., Sahay, S., & Andersson, A. (2018). Conceptualizing development in information and communication technology for development (ICT4D). *Information Technology for Development*, 24(1), 1–14. <https://doi.org/10.1080/02681102.2017.1396020>
- Zuboff, S. (2015). Big other: Surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, 30(1), 75–89. <https://doi.org/10.1057/jit.2015.5>