

Informality and Consumption: Navigating Marketplaces in Bangalore, India

by

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ABSTRACT

Sadar Patrappa (SP) Road, a crowded 1 km stretch of road in the city of Bangalore, India, has been the primary location for buying and repairing technology goods in the region since the late-1960s. Even with the influx of formal retail stores and electronic commerce, this traditional marketplace remains an important shopping destination and plays an important role in extending access of technology goods and services to low and middle-income consumers.

This thesis investigates the underlying social and technical infrastructures along with the role of informality in organizing and regulating this marketplace. Informality allows marketplaces such as SP Road to be flexible in adapting to environmental changes and finding informal workarounds around formal regulations. Applying the lenses of informality and practice theory, I assess the role of institutions and practices in sustaining such traditional marketplaces along with shaping the consumption of technology goods and services. I argue that the persistence of marketplaces is a result of the inertia of existing practices, with the success of a new technology contingent on its ability to integrate into practices.

The thesis further looks at the high-profile entry of online marketplaces and their impact on traditional marketplaces. I outline the institutional, infrastructural, and cultural forces that shape the use and non-use of online marketplaces by buyers. In contrast to the view of the 'non-user' as not being innovative or tech-savvy enough, use and non-use are instead related to the ability (or inability) of a technology artefact or service to integrate itself with the practices of everyday life. The entry of new technologies, such as online marketplaces, is further accompanied by ambiguity and communication channels play an important role in the negotiation of technologies by local communities. I argue that informal communica-

tion, such as rumors, are attempts at collective sensemaking. Further, through highlighting the relationship of institutional trust with informality, this thesis discusses how studying in-formality can help in understanding technology adoption and use in the face of differential power relations.

CHAPTER 1

Introduction

The following is an excerpt from my field notes on June 16, 2015 during my first week of fieldwork at Sadar Patrappa (SP) Road, a traditional marketplace for technology goods in Bangalore, India:

June 16, 2015 3 pm: I have been given permission to sit on a stool outside a shop and observe the vendors as they go about their daily activities. The shop is located at the western entrance of SP Road. It's a small shop, about 10' x 6'. Like many other shops on the road, the shop signage indicates that the shop sells "computer hardware, peripherals, and consumables" along with logos of an extensive list of brands available for purchase. Inside the shop, the vendors - the owner Raj (name changed) and his 2 attendants - stand behind a glass counter that separates them from the customers. The sound of the fan fills the shop as the vendors sweat in the summer heat. There is a steady flow of vehicular traffic on the roads. From my seat outside the shop, I see multiple customers, mostly male, moving from shop to shop.

In the last 4 hours (from 11 am to 3 pm), I have counted 8 customers entering the shop. I ask Raj, the owner, about the flow of customers. He tells me it (SP Road and his shop) used to be more crowded a few years ago.

Raj: *"The change is like between night and day. Before we didn't get time to take a break, now we can nap, and it wouldn't make a difference. Online has*

made all the difference.”

A customer enters the shop and asks for a memory card. He is quoted a price by Raj. Customer says it was lesser on Snapdeal (an online e-commerce portal).

Raj to the customer: *“If you want to take it from Snapdeal, take it from there. No point hanging out in this market. All prices on Snapdeal are 500 lesser than prices here.”*

The customer leaves; Raj turns to me and laughs: *“This is how it is.”*

Me: *“So how will you compete with the online shops”.*

Raj: *“What competition, we will have to close this shop.”*

Me: *“Are the prices online so less?”*

Raj: *“It’s about 500-600 lesser than this market. Forget wholesale, it is lesser than what the companies sell it at.”*

Me: *“How is that possible?”*

Raj: *“They run on losses. If we run at that much loss, we will have to go back to the village. No one will even give us alms, they will laugh at us.”*

The vendors generally seemed pessimistic, with one of the attendants giving SP Road 2 more years before it was unsustainable to run a business here“

The expansion of online shopping in Indian metros since the mid-2000s has been one of the major challenges faced by traditional marketplaces such as SP Road. Competition is not new to vendors at these marketplaces. Over the last 3 decades - since the 1990s - India’s policies aimed at economic liberalization have led to the entry of powerful new retail players such as branded showrooms and shopping malls. However, traditional marketplaces have been able to co-exist with them, and at times, even out-compete them. Online shopping, in contrast, has proven to be a more difficult adversary, as we see in the above excerpt.

Backed with investor funding, e-commerce companies continue to spend considerable resources in their attempts to disrupt the brick-and-mortar retail ecosystem. For many at the SP Road marketplace, the future seemed bleak, with many pessimistic about their chances in the face of powerful players who were not competing on profitability.

However, as I wrapped up my fieldwork two years later in December 2017, the SP Road marketplace had still not been driven out of business. While customer traffic has decreased, the marketplace continues to exist with market players adapting to the challenge of online marketplaces.

This thesis will discuss the persistence of traditional marketplaces in the face of powerful external competition - both branded showrooms and online marketplaces. Broadly, through the case study of SP Road, it will outline the phenomenon of traditional marketplaces, how market actors navigate them, and their role in shaping consumption. This thesis will broadly contrast two perspectives encountered during fieldwork:

1. With increasing digital literacy, partly driven by government efforts at digitization, SP Road (and traditional marketplaces, in general) will eventually be driven out by modern commercialized retail stores and online marketplaces, and
2. Such marketplaces are a consequence of specific environmental needs and constraints, have substantial inertia, and will remain an integral part of the social and economic fabric for a section of the population.

In doing so, it will bring into focus the infrastructures and institutions that enable traditional marketplaces to function while also mapping existing practices that structure how sellers and buyers navigate these market spaces. While this thesis discusses the persistence of traditional marketplaces in the face of online marketplaces, the findings are relevant to how communities respond to the entry of digital technologies in general.

1.1 Traditional marketplaces

Traditional marketplaces – i.e. public spaces where vendors sell goods and services - are active sites of social and economic activity in urban landscapes around the Global South, largely catering to the needs of low and middle-income customers. In most of the Global North they have slowly been replaced by supermarkets and malls over the last few decades. However, in much of the Global South, they continue to play an integral role in the market participation of social groups - both marginalized and privileged.

As shopping environments, traditional marketplaces evolve within and have long-standing relationships with local communities. Often strategically located at nodes of trade and commerce, they are shaped by local histories and community structures. Their configurations - both spatial and social - and the organizational culture that structure market activities are a direct consequence of local environmental conditions. These are public spaces of shopping and consumption, that organically evolve over time, driven by local entrepreneurial communities and can be contrasted to the highly controlled, often private, environments of formal retail, such as shopping complexes and multibrand retail stores.

While many traditional marketplaces in the Global South continue to remain ‘bazaar economies’ (Geertz, 1978), with small profits and little capital accumulation, others, like SP Road, have adapted to a more diverse range of economic organizational structures that allow a mix of formal and informal economic activities. What remains consistent across traditional marketplaces around the Global South are the importance of personal relationships and the public nature of market space (Goss, 1996). I argue that the role of intra-community bonds and interpersonal trust in the execution of informal contracts is a thread common to the functioning of most traditional marketplaces. It is the historical nature of such informal institutions, shaping market exchanges and transactions, that allow these spaces to be thought of as “traditional” (Egbert, 2007).

In this thesis, I will build on the understanding that shopping is more than just shoppers

buying goods from sellers – it is a cultural, social, and economic phenomenon that structures the public domain and the everyday lives of citizens (Falk and Campbell, 1997). With the consumption of goods also reproducing class distinctions (Bourdieu, 2013), shopping preferences are also intrinsically tied to notions of identity. The spaces of shopping can range from the organic chaotic streets of traditional marketplaces to the constructed sanitized spaces of shopping malls, each with their own cultural and spatial practices (Shields, 2003). The nature of these spaces structure relationships and exchanges - both economic and social. Further, they also determine how power is distributed and how differentials in information access are negotiated by market actors.

This thesis primarily focuses on traditional marketplaces selling technology goods, such as SP Road, that dot urban landscapes across the Global South and where a large proportion of low-income technology consumption happens. Such marketplaces are a relatively recent phenomenon and a direct result of local actors tapping into the economic potential of new information and communication technologies. Previous studies on local technology goods marketplaces have highlighted the entrepreneurial and creative practices present in these informal spaces. For example, Ilahiane and Sherry (2008) describe the enterprise culture in an informal technology goods market in Morocco that successfully bridges local demand with global technology products, especially for low and middle-income consumers.

Traditional marketplaces (used interchangeably in this thesis with ‘public marketplaces’) primarily consist of buyers, sellers, and goods intersecting in a space with a certain periodicity (Morales, 2011). The spatial and temporal properties of marketplaces differentiate them from the more abstract market concept (Slater and Tonkiss, 2013) or ‘the market’, that is detached from local settings or the ‘place’. Marketplaces are however more than just a location where buyers and sellers transact – they are public spaces of consumption, historical and imbued with cultural character. Zukin et al. (2015) bring to focus how they are complex neighborhood ecosystems that facilitate the creation of every day “networks of social, cultural, and economic exchanges” by market actors. Importantly,

these marketplaces are also a form of social organization (Griffith, 1998), encompassing a multitude of social actions at different levels. At one level, we have the relationships between the vendors themselves – adversarial collaboration that helps regulate and sustain the marketplaces. At another level, are social encounters and economic exchanges between buyers and vendors. Lastly, state regulation shapes the functioning of the marketplaces and the relationships between actors.

As relatively inclusive public spaces (in contrast to quasi-public or private properties such as shopping complexes and malls), they facilitate the “interactions of flows of people, goods, and information” (Janssens and Sezer, 2013), and are central to everyday economic activities. They are also directed towards the production of social life, which Chakrabarty (1991) describes as a central meeting point for communities, where practices emerge to deal with ‘strangers’. Further, they are often the locus of employment for many communities. Favero (2003) in the context of India, describes them as intersectional spaces where market actors participating in global economic exchanges blur boundaries between the local and global, as well as tradition and modernity. Marketplaces have been important engines in economic growth for much of history. For example, in India, Ray (1988) discusses how marketplaces laid the foundation of modern capitalism in the country since the colonial times and were important avenues that linked external trade and local industries. With respect to East Germany, Hüwelmeier (2013) discusses how post-socialist local marketplaces not only helped in the economic development and the transition from communism but also linked communities across national, religious and ethnic lines. Here, I would like to highlight the significant role that these traditional marketplaces play as a social space even in the Global North. For example, in the context of London, Watson (2009) details social encounters between shoppers and traders in the marketplaces along with its role in promoting social inclusion in less-affluent areas. Similarly, Morales (2011), in the context of the United States, outlines how public marketplaces, among other things, contribute to public safety by increasing intra- and inter-community interactions. The centrality of

marketplaces to urban landscapes makes them important sites of study, especially when studying consumption behavior.

[Simmel \(2012\)](#) argued that modernization and the ‘metropolis’ was tied to what he termed as the “money economy”, an economy of means which reduced relationships to a “quantitative level”, i.e. impersonal, rational and calculative. However, traditional marketplaces are evidence of how social relationships are still shaping everyday life in urban sites ([Watson, 2009](#)). The diversity of retail options also mean that urban consumers can choose the degree of sociality that they prefer. Eschewing formalist-substantivist debates [Polanyi \(1944\)](#), this thesis starts with the sociological premise that economic activities are embedded in social institutions ([Fligstein and Dauter, 2007](#); [Granovetter, 2005](#)). Moving away from looking at marketplaces solely from an economic perspective, the thesis assesses how the behavior of market actors is shaped by existing institutions.

While I refer to traditional marketplaces as ‘public spaces’, these sites have been contentious throughout history ([Chakrabarty, 1991](#)) and intertwined with the spatial politics of identity in India. [Fernandes \(2004\)](#) discusses how, in recent times, public spaces in Indian cities are being ‘claimed’ by the middle-class resulting in “spatial purification” that drive out informal vendors and squatters. On a related note, are debates about the rights of informal vendors – officially illegal – who are said to encroach upon public spaces like sidewalks ([Anjaria, 2006](#)). Since independence, development of public spaces has been driven by notions of order and organization (and the simultaneous dis-organization of existing structures). [Banerjee-Guha \(2009\)](#) discusses how recent urban development projects in India have been restructuring cities aimed at replacing old spatial configurations with new spaces aimed at meeting the needs of investors and developers while specifically catering to the consumption needs of the urban elite. This has resulted in the significant shifts in the retail landscape, such as the the entry of shopping malls. [Voyce \(2007\)](#) argues that this change not only negatively impacts existing small-time vendors but also insulates elite consumers from the unsavory dirty streets, and by extension, the poor and lower classes. Here,

the evolution of the retail landscape and creation of new consumption practices is directly related to the segregation of communities.

1.2 Evolution of Marketplaces

1.2.1 Traditional to Malls

The evolution of the retail landscape and its social/political impact has been well-documented in the Global North. The trajectory of marketplaces is intertwined with the processes of urbanization and industrialization. [Zukin \(2015\)](#) outlines the evolution of marketplaces: what initially started out as open-air bazaars moved indoors alongside shopping streets specializing in specific trades. As the production of consumer goods increased, larger (often specialized) stores began clustering around urban centers along with smaller stores. The entry of department stores and supermarkets also saw a major change in shopping behavior – on one hand, they made it easier to shop, on the other, they reduced individual interactions between shoppers and buyers.

[Cohen \(1996\)](#) further discusses how the suburbanization of consumer life – partly driven by car ownership – restructured marketplaces in the United States in the 1960s, with a distinct trend towards commercialization and privatization. While the primary motivation of consumers moving from downtown stores to shopping centers was convenience and cost, it led to many unintended political and social consequences. For example, it led to the shrinking of public spaces where constitutionally protected free speech and free assembly could take place. Further, it also led to a feminization of public space as these new spaces were built to specifically cater to women. While the shopping centers and malls away from the downtown irrevocably changed shopping patterns across the United States, another significant change was the entry of discount department stores (also in the 1960s) which rapidly expanded across the United States in the 1980s.

The arrangement of marketplaces in Western Europe were similar: the town centers

stocked goods that were less frequently used while the suburbs stocked convenience goods (Guy, 1998). Larger cities saw the establishment of intermediate shopping centers. The town center also became a cultural center and was symbolically important for local communities (which they continue to remain). On the other hand, suburban shops built close social bonds with the community. The entry of what Guy (1998) refers to as “large-scale ‘off-center’ shopping” disrupted most communal linkages and while it benefited the elite consumers, it had a detrimental effect on poorer mobility-impaired consumers. These larger retail stores, unlike smaller stores, could afford to decrease their profit margins on individual goods and be more efficient through operating at economies of scale. However, unlike in the United States, decentralization of retail has varied across Western Europe with some countries imposing stricter regulation to protect the interest of local business districts.

The entry of big department store chains such as Wal-mart and the displacement of traditional retail (or ‘mom and pop’) stores has been widely studied in the United States with the research (mostly macro-level) largely inconclusive on the true social and economic impact in terms of overall retail employment and retail entrepreneurship. Some studies have shown that there is indeed a loss of employment and a negative impact on mom and pop stores, especially to those in the same area (Haltiwanger et al., 2010). Others point to the welfare-enhancing policies of “creative destruction” where economic efficiency is increased through reallocation of resources (Sobel and Dean, 2008) – for example, the entry of new boutique stores replacing traditional retail. Relevant to this thesis is the second-round effects of changes in the retail landscape on consumers and communities. The findings have been mixed – while some research indicates that the entry of Wal-mart has indeed decreased social capital in communities, and subsequently impacted economic growth (Goetz and Rupasingha, 2006), others show how the reduction in time and decreased cost of goods encourage the growth of social capital (Carden et al., 2009). These studies are however limited by how social capital is measured, which is indeed a rather abstract and a much-debated construct (Portes and Landolt, 2000).

For much of the Global South, especially with respect to food retail, scholars have discussed the inevitability of modern food retail stories and the so-called “supermarket revolution”, displacing the more fragmented local stores (Reardon et al., 2003). However, evidence from the ground has shown a more complex retail ecosystem, especially in Asia, where both have coexisted and catered to different socio-economic groups (Si et al., 2016). Research on the retail sector in South-East Asia (Coe and Bok, 2014) show that while it is slowly becoming formalized, it is dependent on a multitude factors including consumer cultures, political conditions, existing retail infrastructures, and regulatory frameworks. This is relevant in India too, where existing institutions, infrastructures, and geography have meant that the retail landscape is very different from the West. Dholakia et al. (2012) outline the various factors that make India’s retail scene unique. Chiefly, the government has attempted to protect domestic retailers from foreign competition. Thus, while economic liberalization in the 1990s allowed the import of foreign goods, they had to be stocked in traditional domestic stores rather than by foreign retailers. Until 2011, policies deemed that front-end multi-brand retail stores had to be wholly Indian-owned. Reforms after 2012 allowed foreign retailers to hold 51 per cent stake in an Indian multi-brand retail company, but they have so far been slow in making inroads in urban cities.

The city infrastructure and relative lack of cars also make it harder to have off-city shopping malls as in the United States or Europe. Further, the affluence of consumers in many urban centers has been a relatively new phenomenon – traditional marketplaces and kirana stores¹ still play an important role in the shopping practices of most urban Indians.

1.2.2 The Entry of Online Markets

The next major shift in the retail landscape has been the growth of online shopping or the buying of goods via the Internet. These are virtual consumption spaces where economic exchanges between buyers and sellers are intermediated through e-commerce companies.

¹a small neighborhood retail store in the Indian subcontinent

While remote shopping using telephones and mail order catalogs had been around for many decades, the rise in Internet connectivity has precipitated market transactions enabled by information technology. The success of eBay and Amazon (founded in the mid-90s) has led to changes in the retail landscape as they have taken significant business from offline stores across the world.

However, online shopping has been criticized for failing to provide the sensual and social benefits of traditional retail. For example, [Underhill \(2009\)](#) identified 3 key things that online shopping does not provide: “touch, trial or any other sensory stimuli”, “immediate gratification”, and “social interaction”. While the lack of tangibility has been regarded to be an important barrier to the success of e-commerce, [González-Benito et al. \(2015\)](#) has argued that it can be moderated through an increased role of branding, especially for goods that are associated with a greater need to touch. Other barriers to e-commerce adoption include familiarity and ease with online shopping, the Internet, and technology in general ([Naseri and Elliott, 2011](#)). Most studies on e-commerce have been conducted in the Global North, with a focus on the United States. Compared to online buyers, non-internet buyers feel that the process of Internet shopping is hard, with transaction risks significantly explaining most contrasting behaviors between non-internet shoppers and online buyers ([Soopramanien and Robertson, 2007](#)). However, perceived risk in online shopping has been steadily decreasing and this risk doesn't differ across product categories ([Griffin and Viehland, 2011](#)). While some research finds that socio-economic variables don't moderate use and comfort of using e-commerce ([Hernández et al., 2011](#)), others show perceived risk in online shopping remains higher for lower-income individuals ([Griffin and Viehland, 2011](#)).

Studies also show that low prices are not necessary for online shopping to be successful since the sensitivity of price can be moderated by familiarity, reputation, and shopping pleasures ([Lee et al., 1999](#)). It is crucial to note that many studies indicate the importance of hedonistic pleasure in shopping online. For example, [Childers et al. \(2001\)](#) discuss how

any technology initiatives that treat online marketplaces as just information systems rather than “immersive, hedonistic environments” are bound to be unsuccessful. Researchers have also stressed upon the individualistic nature of online shopping (Kawaf and Tagg, 2017) with the shopping experience fluid, dynamic, and specific to each individual user. The social dimension has also been explored wherein buyers chat with friends while shopping or include them in their decision process (Trevinal and Stenger, 2014).

With e-commerce companies entering new markets, there is a call by researchers to pay more attention to cultural differences in the perceptions of websites as it impacts the adoption and use of e-commerce (De Angeli and Kyriakoullis, 2006). Cartographic analyses show how online marketplaces are far more textual in nature, relying more on language compared to offline marketplaces that rely on other factors such as sociality, body language, and conversation (Andersen and van Leeuwen, 2017). This has the consequence of excluding certain populations who are used to certain forms of literacies and market practices.

The perceived risks and uncertainty in online shopping have also been documented. Rahm (2014) points to the inability of consumers in judging quality online and the inherent risks that accompany online shopping (and are an important reason for fake goods being sold online). Among the many factors influencing buyer’s perspective of risk and uncertainty are unfamiliarity and lack of perceived online security with respect to electronic transactions (Vos et al., 2014) along with lack of transparency in the delivery process and accurate delivery of chosen products (Kim et al., 2008). The rise of Amazon and eBay have however seen them take on the role of intermediaries that facilitate trade between sellers and buyers, helping reduce some of the uncertainty in transactions – especially at the buyer’s end. The new retail landscape has thus been accompanied by the rise of institutions situated between the state and the market (Voyce, 2007) – from physical malls to virtual e-commerce companies. This is even as the western retail scene sees a resurgence of the traditional marketplace in the form of farmers’ markets where buyers and sellers directly meet and shopping is once again directed towards being socially engaging (Zukin, 2015).

1.3 Marketplaces and Institutions

Institutions refer to the “shared rules” that help actors organize, compete, and cooperate (Fligstein, 1996). These shared rules can be either be formal - consisting of codified rules, or informal - socially shared rules, enforced unofficially (Helmke and Levitsky, 2004). In marketplaces around the world - whether offline or online - these institutions shape how actors respond to local information problems. The design of markets (and marketplaces) has largely focused on individual decisions and formal institutions (such as legal frameworks) (Kollock and Russell Braziel, 2006). There is however a rich vein of research that has argued that trust-based relationships and extensive social networks (Fafchamps and Minten, 2001) play a very important role in sustaining markets.

Traditional marketplaces such as SP Road are institutionally hybrid, i.e. they are regulated by both formal and informal institutions. Market activities consequently operate both within and outside formal legal and regulatory structures. The informal side exists at the interstices of the formal (Laguerre, 2016), invisible and continuously adapting to remain unbounded from regulatory mechanisms. The formal and informal, however, do not exist exclusive of each other with the boundaries between them often blurring in everyday market practices.

There has been prior technology and development research that specifically analyze the nature of technology goods marketplaces and how they are intertwined with informal institutions. Early work on the intersection of informal markets and technologies focused on how small-scale technology operations, such as cyber cafes in India (Rangaswamy, 2007) and cabinas públicas de internet in Peru (Fernández-Maldonado, 2001), functioned in unregulated informal spaces and catered to the techno-social needs of low-income customers. Studies also highlighted the entrepreneurial and creative business practices present in local technology goods marketplaces. Rangaswamy and Nair (2010) study the mobile phone stores in the slums of Mumbai and find that social and business networks allow vendors to circumvent environmental constraints. On similar lines, Rangaswamy and Smythe (2012)

find that these networks allow informal mobile phone gray marketplaces in Mumbai and Bangalore to be durable and flexible in their ability to adapt to change.

1.3.1 The Informal Economy and the State

Essentially these marketplaces are part of what is known as the “informal economy”. The term “informal economy” was coined by economic anthropologist Keith Hart (1973) to describe the economic activities of the urban poor in Ghana who were without formal wage employment. The term helped explain activities across developing countries (or what was known as Third world countries at the time) that existed outside the official economy which traditional western models of economy were inadequate to understand or analyze. Hart’s definition has its origins in Weber’s theory of rationalization where the increasing formal nature of the economy was a result of the state attempting to impose its will on the irregularity of social life. This is visible in large parts of the Global South, where governments, shaped by foreign institutions and capital, attempt to regulate populations at economic or social peripheries. In this interpretation, the informal economy is simply the absence of state-imposed regularity. When the state is unable to (or chooses not to) enforce its regulatory systems on informal business practices, social regulation (Basile and Harriss-White, 2010) becomes the primary means by which business practices are regulated. This social regulation is a result of existing cultural and social structures; informal economies are subsequently embedded in networks of social relations and social institutions (Granovetter, 1985) such as gender, caste, ethnicity, etc., and these social ties become the primary means by which these economies self-regulate and function effectively.

Sociologists Centeno and Portes (2006) sketch out the various offices that the state manifests itself in and the informal economy seeks to avoid - the regulator, the policeman, and the tax collector. They, however, argue that the inverse relationship between a state’s regulatory capacity and the existence and proliferation of the informal economy is complicated by two factors – 1) How keen the state is to bring these sectors under formalized structures,

or the regulatory intent and 2) ‘the social structure and culture’ of those working in these informal economies. [Sassen \(1993\)](#) argues that the informal economy in part caters to the demands of low-income communities that are not able to buy goods from the mainstream economy. [Mylonas \(2011\)](#) further discusses how the formal regulation of economic activity seeks to protect the ‘free-market’ and consequently advances private institutions instead of public ones, leading more global inequality and exclusion. The entrepreneurial nature of informal economies ([Davis, 2006](#)) is therefore a means of survival in a competitive, social–Darwinian economic system.

The concept of informal economies is a powerful one that helps us refigure our perceptions of economic activity in developing countries. However, by “fail[ing] to adhere to the established institutional rules” ([Feige, 1990](#)), they are often perceived to be illicit by the state, if not illegal. Here, I use [Van Schendel and Abraham \(2005\)](#)’s interpretation of the terms ‘licit’ and ‘illicit’ to describe social perceptions of whether an activity is defined as ‘criminal’, irrespective of its actual legal status. The authors also coin the contracted term “(il)licit” to describe activities that are illegal and yet licit that correspond to many activities that take place in the informal economies.

[Castells and Portes \(1989\)](#) argue for a distinction between the formal, informal, and criminal through separating the processes of production and the final product. They describe an informal economy as one that produces licit goods but through a process of illicit production and distribution. They are thus distinguished from criminal activities where both the final product and process of production are illicit and formal economies where both are licit. However, this differentiation is harder in practice, because the boundaries between illicit goods and illicit production are hard to draw. Sociologists [Cross and Peña \(2006\)](#) alternatively argue for a differentiation based on the relationships between regulatory mechanisms and the economic activities. Thus, informal markets are regulated by informal or social-institutional means and can, on many occasions, appeal to the state or criminal organizations for assistance, while criminal economies are completely regulated

by criminal organizations. They conclude that an informal economy is different from a criminal one not by the nature of activity but rather if they can “negotiate a level of coexistence between legal (state) and extralegal forms of regulation”.

Studying traditional marketplaces points us to a crucial observation – as these marketplaces exist at the intersection of formal and informal economy, they operate in a unique regulatory space that exists along side and in tension with formal regulations. The informality of these marketplaces has allowed them to be flexible and offer goods and services that are unavailable in the formal economy but exist as an integral part of everyday life. For example, SP Road offers cheap low-cost electronic goods and services that can help in their repair and maintenance.

The intersection of these informal economies with the forces of globalization has led to what has been termed by development scholars as “globalization from below” (Mathews et al., 2012). Local actors tapping into the economic potential of globalization has created informal markets across the Global South that offer cheap goods and services that are otherwise inaccessible to a large percentage of the population. Traditional marketplaces, in effect, connect the informal economy of low-cost goods and services to the formal economy of branded products and warranties. In doing so, they provide employment (and income) to informal workers, while at the same lowering the costs of consumption for formal workers who choose to shop here. They also create a vibrant public space that caters to a wide spectrum of customers with respect to socio-economic status.

In this thesis I specifically define informality as a set of activities that operate outside legal and/or regulatory frameworks. In the context of marketplaces, informality thus consists of non-state actors leveraging informal means of social organization. Broadly, informality can also be seen as a form of organizing logic (AlSayyad, 2004). Herrle and Fokdal (2011) argue that ‘informality’ is in its essence about how power, legitimacy, and resources are negotiated by actors with respect to the State and capitalist entities such as corporations and investors. These definitions allow us to look beyond just a formal/informal dichotomy but

instead look at how everyday activities are shaped by both formal and informal structures in varying degrees.

1.3.2 Marketplaces, Institutions and Trust

Trust plays an important role in shaping transactions at marketplaces in a variety of ways. In this thesis, I use [Khodyakov \(2007\)](#)'s differentiation between thin interpersonal trust, thick interpersonal trust, and institutional trust. Thick interpersonal trust is a result of kinship ties and other tightly-knit networks that a social actor is part of. In contrast, thin interpersonal trust is riskier, and social actors often have to depend on intermediaries to help navigate this risk. This can lead to the evolution of reputation mechanisms that are community-driven and bottom-up. Finally, institutional trust (similar to system trust ([Luhmann, 2000](#))) relates to trust in formal institutions, such as existing rules and regulations that are enforced by the state or other formal authorities. These three constructs of trust are not mutually exclusive and influence each other in a diverse set of ways.

The relationship between informality and trust has been studied by sociologists. [Portes \(1994\)](#) argues that in the absence of formal institutions or when institutional trust is weak, interpersonal trust, rather organically, becomes the primary means of regulation. The informal side of most traditional marketplaces are dependent on this interpersonal trust to organize market exchanges, and this is often the consequence of historical social structures that allow actors to deal with uncertainty and risk ([Stiglitz, 2000](#)). The relationship between formality and informality invariably manifests itself in terms of the nature of the trust. [Misztal \(2002\)](#) argues that the process of formalization can reduce interpersonal trust in communities while increasing institutional trust, as individuals have little need to trust one another. Similarly, informality largely depends on interpersonal trust and is limited by bureaucratic attempts to establish more top-down hierarchical control.

Online marketplaces also have to deal with uncertainty and risk, with respect to market exchanges. This is especially challenging as market actors are spatially and temporally sep-

arated, and often anonymous. [Kollock et al. \(1999\)](#) describes an early study on shopping through Usenet newsgroups – a virtual and informal marketplace – where actors created their own reputation systems that encouraged trustworthiness and allowed them to manage trade effectively, with only a minority of users using third-party services to manage risks. He further details how online auction houses such as eBay have successfully institutionalized these reputation-based methods of risk management. Online marketplaces, in general, have attempted to create institutional through rules, regulations, and established accepted standards of practice.

1.3.3 Marketplaces and Intermediaries

In traditional marketplaces, there is conspicuous lack of certain external structures that we take for granted in formal markets – for example, advertising or fixed prices decided by external actors. Instead, we see practices that hinge on personal relations, repeated purchases, and interpersonal trust. However, the trajectory of the retail landscape - for example, shopping malls and branded showrooms - has seen an increase in impersonal marketplace transactions where goods and services are often exchanged without repeated interactions between buyers and sellers or built-up social capital.

With the advent of the Internet, marketplaces now exist in virtual spaces that are no longer localized. A question this thesis will attempt to answer is: how are actors navigating these new marketplaces and how does it differ from traditional marketplaces? [Datta and Chatterjee \(2008\)](#) argue that consumer uncertainty of online vendors is an important reason for the lack of trust in online shopping and that this creates a need for buyers to instead trust intermediaries such as Amazon, eBay or Flipkart. This is in stark contrast to early forecasts of online shopping that predicted the end of intermediary retail channels ([Benjamin and Wigand, 1995](#)). [Jin and Robey \(1999\)](#) discuss the various reasons why intermediaries persist in e-commerce, arguing that they provide value by bridging disparate customers, and fill structural holes in extended social networks. Further, they create new knowledge

– such as creating a history of past purchases or providing personalized recommendations. However, they stress that to maintain legitimacy, intermediaries must – to a certain degree – conform to the prevailing institutions of traditional retail stores. As e-commerce companies make inroads into the Global South, their success in bringing on customers steeped in traditional forms of retail will be determined by their ability to do so.

Another dimension that has been less studied is why sellers choose to go online over traditional retail – in the case of technology goods, these are vendors who need to choose between selling goods in physical marketplaces or on online marketplaces. Sun (2010) discusses how trust in intermediaries is crucial for sellers too and how the institutional mechanisms they depend on are different from those used by buyers. For example, sellers need protection from buyers who don't pay on time or return damaged goods. Further, policies of intermediaries are often different for buyers than for sellers - for example, asymmetrical ratings where only buyers get to rate sellers. Lastly, while buyers engage with purchases, sellers are not going through the same process they do in physical marketplaces, instead, they are now engaging solely through web pages.

1.4 Outlining the Thesis

The thesis details the various infrastructures and institutions that structure marketplaces such as SP Road and the actions of market actors. Here, I bridge institutions with individual agency through using the lens of practices, and use it to explain how marketplaces such as SP Road organize themselves, and persist in the face of formal retail alternative. I will then study the entry of new digital technologies such as online marketplaces and detail how both buyers and sellers have responded to them. The chapters will also discuss the broader implications of these findings, looking beyond just marketplaces to digital technologies and their relation to informality, along with how this informs HCI and ICTD research and design.

The following is an outline of the thesis:

- In Chapter 2, I discuss the theoretical frameworks used in the thesis. I broadly uses a practice theoretic lens to study how social and economic activity unfolds in traditional marketplaces such as SP Road, along with how these social practices shape technology consumption. I then outline how actors respond to the entry of new technology services such as online shopping. Through the lens of domestication theory, I discuss how new technologies integrate themselves into the practices of everyday life. Lastly, I discuss the role of communication channels in technology adoption, with a specific focus on informal communication.
- In Chapter 3, I describe the field site, SP Road, and outline the three phases of data collection along with methods used. The multiple phases of data collection allowed me to describe the evolution of the marketplace and how it has resisted and reacted to the entry of e-commerce companies. The data was primarily collected by means of participant observation and interviews - semi-structured and unstructured. The chapter will include further details about how I gained insider access to the marketplace. I further detail the the inductive, grounded theory approach that I used to analyze the field notes and transcripts which led to the emergence of categories and themes from the data and the development of theory.
- In Chapter 4, I describe the social and technical infrastructures underlying traditional marketplaces such as SP Road. Here, I will look at the informal institutions that regulate the market environment within which actors buy and sell goods and services. The chapter will further explore how actors in local markets adapt traditional communication technologies to successfully collaborate in sustaining the markets and their business practices. I detail the use of a landline telephone intercom system as the primary tool for business communication in the market. Through analyzing how the intercom system relates to informality, regulations and physical space, I parse out the

tensions between the formal and informal and the role of technologies in sustaining informality.

- In Chapter 5, I delve deeper into the market practices through which sellers and buyers navigate traditional marketplaces such as SP Road, and assesses how technology consumption unfolds within local practices. Building on social practice theory, I depict the role of materiality, relationships, and situated knowledge in the functioning of a traditional marketplace. I further discuss how this knowledge can expand our understanding of the evaluation of technology and technical expertise, and the persistence of these marketplaces despite the uptake of corporatized technology marketplaces.
- In Chapter 6, I investigate how new technologies such as online shopping integrates into the everyday practices of shoppers. Using the lens of domestication theory, I examine how the relationship between online shopping and shoppers is constructed. Beyond individual agency, I describes how institutional, infrastructural, and cultural forces shape the use and non-use of online marketplaces. By specifically studying non-use, I extend the understanding of the shortcomings of existing sites where technologies are encountered and of the potential considerations for future introductions of new technologies.
- In Chapter 7, I study the disruption of existing market practices due to the entry of online marketplaces and the Indian government's policy of demonetization. In this chapter, I characterizes informal communication such as rumors as attempts at collective sensemaking when a community is faced with ambiguous situations. Through highlighting the relationship of institutional trust with rumors, I argue that the study of rumors can help us identify the concerns of a community in the face of differential power relations. Further, rumors are a form of social bonding which help communities such as SP Road vendors make sense of their place in society and shape existing

practices.

- Finally, in Chapter 8, I conclude the thesis by presenting broader theoretical implications of the overall research project, and considers how a study of marketplaces and the underlying institutions informs Human-Computer Interaction (HCI) and Information and Communication Technologies and Development (ICTD) research. I specifically look at how informality relates to collaboration, resilience, technology access, and technology adoption.

CHAPTER 2

Theoretical Frameworks

Across the world, traditional marketplaces have evolved within closely-knit networks of communities. This thesis looks at these spaces as more than just economic constructs where markets decisions are driven by price signals. Rather, it studies them as a social phenomenon, driven by local relationships and shared meanings. [Granovetter \(1985\)](#) captures the social nature of markets in his notion of embeddedness, where social structures shape economic activity and market decisions can be based on non-economic motivations. Looking beyond marketplaces as just dyads of sellers and buyers, this thesis studies market behavior as shaped by broader social and cultural forces. In the context of traditional marketplaces, these forces are historical in nature, and a result of historical and shared experiences of market actors.

A representational model of marketplaces assumes pre-existing ahistorical market structures that actors engage in. A performative model instead argues that marketplaces are constructed through the practices that market actors engage in ([Araujo, 2007](#)). Such a model of marketplaces allows an analysis of the historical social relationships and shared meanings that shape market action, and further how these actions reproduce the marketplaces. Market practices thus precede market actors and existing behaviors and norms at the marketplace. Such an approach also allows inclusion of non-human entities such as objects, technological artefacts, and ideas into the analysis of marketplaces. It thus provides an important lens to assess the broader web of actors, relationships, and

interactions. Market practices reflect the specific local contexts where they are performed and help capture the situated context-specific nature of marketplaces and everyday activity. Using practice theory to study marketplaces such as SP Road also helps bring to focus the informality inherent in such spaces including the mechanisms, processes, and structures through which local actors navigate and create meaning. The ways communities creatively work around information problems and resist or adapt to formal regulations are embedded in the practices that constitute them.

The social and economic practices that exist at traditional marketplaces shape how local communities shop and consume goods. In simple terms, ‘practices’ refer to routinized actions or behaviors. Practice theory, as a strand of social and cultural theory, offers a conceptual framework that looks beyond the dichotomy of individual agency and social structures. Instead, it considers practices as the primary unit of analysis, with both individuals and artefacts acting as carriers of the practice. It thus shifts the analysis from the individuals to the practices that co-constitute individuals and their activities. In doing so, it also connects “individual, organizational and institutional levels of analysis” (Jarzabkowski et al., 2013) by showing how broader societal structures shape, and in turn are shaped by, individual actions. In such a framework, socio-cultural and socio-technical systems such as marketplaces can be regarded as dynamic configurations of intersecting practices. Practices are a useful lens to understanding the performative nature of social and economic life along with how it is affected by external shocks, such as the entry of new technologies.

2.1 Defining Practices and Practice Theory

While there are multiple strands of “theories of practice”, this thesis looks at practices from the perspective of social theory. Broadly, this thesis defines the relatively nebulous concept of practices as socially situated performances. Practice theory has its origins in Bourdieu’s “theory of practice” (Bourdieu, 2013, 1990) and Giddens’ “structuration theory” (Giddens,

1979, 1984), and has subsequently been extended by contemporary practice theorists. Both Bourdieu and Giddens attempt to find a middle ground between holism and individualism, giving primacy to practices over social structures or individual agency. Giddens uses the term “duality” to refer to how agency and structures exist in a deeply reciprocal relationship, with social practices or “regularized activities”, at the root of this duality. Social practices are performed by actors; they are however shaped by structures that manifest themselves as rules and resources. Further, it is through the performance of practices that “these structures are produced, reproduced, and transformed” (Nicolini, 2012). The regularized nature of everyday life plays an important role in how individuals navigate the social world that is created (and recreated) by these practices.

Bourdieu’s theory of practice similarly seeks to situate the analysis of social life in everyday activity and understand why practices exist in the forms that they do. Key to his analysis is the notion of habitus - stable internalizations of social structures that guide attitudes, tastes, and preferences, and form permanent dispositions. He uses the notion of capital (social, cultural, and economic) to describe how power and resources are distributed, and whose pursuit is shaped by habitus. Lastly, through the notion of fields, he describes the social and institutional spaces where agents compete for capital and reproduce habitus. Practices are shaped by habitus and capital, while constrained by fields. In doing so, fields are also continuously being reproduced and modified, which further shape practices.

A critique of both Giddens and Bourdieu is that they continue to privilege structure over agency, paying less attention to how actions are also constituted and reproduced by practices (Schatzki, 1997). They also do not consider the relationship of material artefacts with practices (Shove and Pantzar, 2005). Schatzki (2001) describes a practice as “embodied, materially mediated arrays of human activities centrally organized around shared practical understanding”. In this definition, he brings to fore how the material artefacts could be part of practices. This is further extended by other practice theorists to explicitly study how material artefacts and technologies co-constitute practices and how this relationship relates

to the construction of everyday life (Reckwitz, 2002b; Shove and Pantzar, 2005; Shove, 2007; Strengers and Maller, 2012).

Further, Bourdieu and Giddens do not explain in-depth the process(es) by which practices change over time (Schatzki, 2001). Schatzki does so by differentiating between “practice as a coordinated entity” (or practice-as-entity) and “practice as a performance” (or practice-as-performance). While practice theory scholars differ on the details, practices-as-entities, in general, refer to a recognizable set of activities that endure over space, time, and socio-cultural settings. Røpke (2009) defines them as a stable “set of bodily-mental activities held together by material, meaning, and competence”. Practices-as-performance capture how these practices are sustained, reproduced, and transformed through time. While individuals can draw upon practice-as-entities as possible resources, it is only through their performance, that practices get “actualized” (Schatzki, 1996) and sustained.

Schatzki (1996) further differentiates practices between integrative practices and dispersed practices: while dispersed practices “centre around a single type of action”, integrative practices are more complex and include “multiple actions”. Dispersed practices require an understanding of what the practices are and an ability to identify them. Examples of dispersed practices are following rules, explaining and imagining. These are usually woven into integrative practices, which constitute of bundles of activities and are “found in and constitutive of particular domains of social life”. Integrative practices further have a teleoaffective structure. i.e. ‘ends, projects, tasks, purposes, beliefs, emotions and moods’ and rules that need to be followed. This thesis will focus on integrative practices as they are the most relevant to the study of consumption.

Extending Schatzki, Reckwitz (2002b) looks at practices as routinized everyday behavior. Looking beyond just the social and instead, he stresses the interconnectedness of several elements including bodily and mental activities, tangible objects, states of emotion, and socially shared ideas. An individual’s behavior is a result of all the practices that he/she is embedded in and through interactions with all objects that are part of these intersecting

practices. He defines practices as:

a routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge.

Reckwitz (2002a), in his definition, includes the use of material objects, which makes it particularly relevant to studying consumption (Halkier et al., 2011). Previous studies on consumption - especially those looking at it from a cultural perspective - have given less importance to the affordances and use of material artefacts and technologies, and instead focused on their symbolic meanings (Warde, 2014).

2.1.1 Consumption and Practice Theory

Halkier et al. (2011) argue that practice theory allows a better understand of consumption, especially its entanglement "in webs of social reproductions and change". Practices show us the situated nature of consumption and how it at the intersection of multiple intersecting practices of everyday life. Practice theory and its relation to consumption have its origins in Bourdieu's notion of habitus, wherein it structures tastes, preferences, and subsequently, consumption. Drawing on Schatzki and Reckwitz, Warde (2005) argues that consumption is not a practice in itself, but is a process that transpires *within* practices. Thus, it is not an external act that is *shaped* by practices, rather, the objects or services being appropriated or used are integral components of the practices themselves. Consumption is thus not just a function of social classifications, as Bourdieu might have argued, but is an act "governed by considerations of efficiency and effectiveness in relation to the accomplishment of routine purposive tasks" (Warde, 2005). The multiplicity of practices - interweaving strands of routines - accounts for the diversity in consumption behaviors, and as practices change with time, so do consumption behaviors. Gronow and Warde (2001) have argued that the

focus on the symbolic role of consumption as markers of identity (ex. the theory of habitus) has led to insufficient focus on everyday ordinary consumption behaviors. The focus on routinized behavior makes practice theory a powerful tool to understand consumption in everyday social and economic life.

Practice theory de-emphasizes the centrality of the ‘consumer’ in the process of consumption. Røpke (2009) argues that we need to look at individuals as practitioners, rather than consumers to bring attention to the broader consequences of the practices that one is part of. With consumption unfolding within practices, we need to look beyond individual consumer choices. In doing so, practice theory doesn’t completely discount individual agency, because individuals are the carriers of practice. However, an individual is “not only a carrier of patterns of bodily behavior, but also of certain routinized ways of understanding, knowing how and desiring” (Reckwitz, 2002a). Practices supersede both individuals and objects historically, and individuals, to a certain extent, choose to participate in a practice. Røpke (2009), informed by Warde, rejects accounts of individuals have total control in choosing the routinized behaviors they engage in, instead arguing that the constraints of everyday life - institutional, temporal, spatial, etc. - shape what practices an individual can be a part of. There is also significant path dependency wherein past experiences determine both the resources that an individual has, as well as the practices they can carry out. Further, practices often involve an interplay between individuals (Røpke, 2009) - for example, many market practices involve at least a buyer and a seller. Spatio-temporal events could also involve actors interacting with each other, while each engage in different practices.

For the study of consumption, Warde (2005) categorizes the components of practices as understandings, procedures, and engagements, along with the objects of consumption. This thesis uses a refinement of these categories by Shove et al. (2012) and other practice theorists Magaudda (2011). Practices are the consequence of dynamic linkages between the following mutually non-exclusive dimensions – 1) the symbolic meaning of a practice to a user (or images), 2) technologies and objects that constitute the practice (or stuff), and

3) competences and ways (or skills).

- Images: Images refer to socially shared, often implicit, ideas that give meaning to a practice. These provide the symbolic significance to the practice that encourage it to be performed.
- Stuff: Stuff refer to the material objects, human bodies, and human-technology hybrids deployed within a practice.
- Skills: Skills refer to bodily and mental routines that are acquired. These are the forms of competences, procedures, or doings that allow a practice to be performed. These are socially shared through imitation, informal learning or more formalized education.

These linkages are maintained by the performance of these practices. While there is substantial inertia in practices (Warde, 2005; Gram-Hanssen, 2010), they are dynamic as they replicate and adapt to technological innovations and exogenous factors such as the economic conditions (Kuijer and De Jong, 2011). Further, new practices are informed by older related practices and there is a continuous interplay between existing practices as they influence each other. For example, Shove and Pantzar (2005) use the example of Nordic walking (or walking with sticks) to show how new practices are created through components connecting with each other in new configurations. The entry of new elements into the networks that constitute practices – such as technological innovations or health concerns – do influence behavior but only through diffusing into existing ‘homegrown’ practices (Shove, 2007).

Hargreaves (2011) in an analysis of sustainable consumption stresses on the need to look at “connections, alliances, and conflicts between practices”. Studying ‘bundles’ of practices in specific fields such as marketplaces, homes, etc. allow an analysis of the interaction of practices, along with outlining how practices shape the distribution of power, and how these power relationships sustain practices. He stresses that for understanding and

shaping consumption, we need an understanding of how practices are formed, and how are they subsequently reproduced, maintained, and terminated.

This thesis will focus on practices in marketplaces such as SP Road and how they shape the consumption of technology goods and services.

2.1.2 Practice Theory and Inertia

A practice theoretic lens does not presume either stability or change to be the default state (Feldman and Worline, 2016) of any system. Systems, such as marketplaces, are reproduced through recurring routinized actions, and in this act of reproduction, a system could either be stabilized or changed. As previously described, such an account decenters individual intentions - changes in individual behavior are not solely a result of personal choice, rather the decision is a consequence of the multitude of processes that reshape practices that an individual is a carrier of. Practices can be reshaped due to exogenous shocks (such as technology pushes or government policies) that lead to changes in social values or institutional structures. Everyday activities can also be the site of change as actors collectively respond in new ways to the uncertainties of daily life. In addition, we have changes in the social and physical environments that could also alter practices over time.

Warde (2005) argues that performances of familiar practices are “neither fully conscious nor reflective”, which creates inertia and resistance to change. This has similarities to the study of change in organizations that argues that inertia is a result of “webs of interdependent relationships, political coalitions, patterns of communication, and established routines” (Zenger et al., 2000) impeding change. The various entities that co-constitute practices - for example, the material world, habits, and social norms, could help stabilize them. Thus, inertia could be the result of habitual action (Gronow and Warde, 2001), wherein familiar environments lead to routinized and identical behaviors. Embodied skills, as learned behavior, can also resist change as re-learning takes significant resources and time. Further, local infrastructures and institutions constrain the evolution of practices

(Randles and Warde, 2006), leading to actions and behaviors being stable with time.

Stability or change is also related to how power asymmetries shape practices (Feldman and Orlikowski, 2011). At traditional marketplaces, the antagonistic relationships between the formal and informal play a crucial role in shaping what routines can be performed at the marketplaces, their stability over time, and how powerful formal structures attempt to reshape them.

2.1.3 Market Practices

A markets-as-practices approach focuses on the actual exchange of goods and services. In this approach, markets are not assumed to be pre-existing entities that are inhabited by self-interested and calculative economic agents (Callon, 1998); instead, they are ‘performed’ as a result of configurations of market actors engaged in market practices. Here market actors include “all parties that are active in the market” (Storbacka and Nenonen, 2011), including regulatory authorities and non-human actors such as material artefacts. Araujo (2007) summarizes market practices as: “bundles of practices including material arrangements that contribute to perform markets.”

Kjellberg and Helgesson (2006, 2007) differentiate between 3 kinds of markets practices: i) exchange practices, which facilitate transactions between actors; ii) normalizing practices, that establish the rules and norms of the market; and iii) representational practices, that generate shared images or meanings of the market. The diversity of markets around the world is a result of sets of practices belonging to these categories interlinking with each other in different configurations.

Market configurations are dynamic and evolve with the introduction of new elements. A markets-as-practices approach looks beyond market actors just ‘competing’ over profits but instead analyzes how actors influence existing configurations (Storbacka and Nenonen, 2011). For example, this helps explain market strategies where actors choose to collaborate. The value of goods or services at markets is also tied to practices, rather than solely

being the result of the dynamics of supply and demand. [Holtinen \(2010\)](#) argues that, in a practice-theoretic approach to markets, the creation of value is socially constructed by activities in the market that are a direct consequence of local conditions and existing practices. Prices are thus co-constructed by actors (and objects) taking part in interlinking practices (for example, bargaining and clientelization). [Andersson et al. \(2008\)](#) further outline how in markets, agency often unfolds in multiple ways - the same actor could have multiple figurations that vary with the practices they are part of.

2.2 Practice Lens to Technology Adoption and Use

Researchers have used the lens of practices to study technology use and the interaction of technologies with actors and structures. In organizational literature, [Orlikowski \(1999\)](#) draws on structuration theory and a practice lens to study “technologies-in-practice”, or how actors interact with technologies, and enact structures that, in turn, shape the use of technologies. Technologies-in-practice are however distinct from the actual technological artefacts. While a technology artefact has certain physical properties and has inscribed assumptions about the users and the world, it is only through the everyday practices of technology use that structures are constituted and reconstituted.

Related to consumption literature, scholars have used practice theory to broadly study how existing practices are transformed by the entry of new technologies. For example, [Magaudda \(2011\)](#) finds that the digitalization of music has failed to remove materiality from the ‘circuits of practices’ that shape music consumption, instead material artefacts continue to play an important role in shaping activities and social relationships. [Gramm-Hansen \(2009\)](#) studies changes in energy consumption through focusing on routines and technological configurations and finds that changes in energy consumption are the result of new technologies being introduced into existing practices.

Closely related to practice theory is the theory of domestication, which also studies

the symbolic, cognitive, and practical dimensions of technologies, and how technological artefacts align themselves with pre-existing routines (Hynes and Richardson, 2009). While practice theory studies the broad collective interplay of social processes and objects, domestication theory shifts the focus to *how* a technological artefact interacts and integrates itself with existing practices. The notion of ‘domestication’ refers to how, for it to become a part of everyday life, an unfamiliar technology has to be ‘tamed’ when it enters fields such as a household. Previous studies have attempted to combine practice theory and domestication theory to analyze the entry of new technologies into everyday life. For example, Ryghaug and Toftaker (2014) looks at existing driving practices, the entry of electric cars, and how these cars are ‘tamed’ to become part of everyday life. On similar lines, Nyborg (2015) outlines the domestication of a smart grid demonstration project through outlining the practices it was able to integrate itself with. Similarly, Enevold (2014) studies household practices of gaming, and the role of material artefacts in how play is domesticated in a household.

In this thesis, I use domestication theory to study the entry of ICTs such as e-commerce (or online marketplaces) into the everyday lives of shoppers. Practices are not contained within a specific geographical location when it comes to shoppers but are more broadly intertwined with domestic practices. With e-commerce moving shopping from traditional marketplaces to the homes, understanding why people choose to shop online or not, means shifting the focus of analysis from practices at the marketplace to looking at shopping practices of buyers more broadly. In the next section, I outline the process of technology adoption, and contrast domestication theory to other models of technology adoption.

2.3 Traditional Models of Technology Adoption and Use

Before outlining the various models that attempt to explain how and why users choose to use technology goods and services such as online shopping, it would be helpful to outline

the process of technology adoption. Technology adoption consists of users first becoming aware of a technology, assessing the technology, developing attitudes towards it, and subsequently deciding whether to adopt it or reject it. The continued use of a technology further involves users routinizing the technology or, in other words, integrating them into existing practices. Importantly, technology adoption is not often a linear process but a process of discovery (Ratliffe et al., 2012) where users learn and continuously re-assess their choices, along with the technology evolving in response to the users doing so. Studies on technology acceptance and adoption largely fall under three schools of thought: diffusion, technology acceptance models, and domestication theory, each looking at the process from different lenses.

2.3.1 Technology Diffusion Models

Technology diffusion models discuss the mechanisms through which knowledge of a technology spreads in society, and have been used to assess the deployment of new technologies in development contexts (Aleke et al., 2011; Kauffman and Techatassanasoontorn, 2006). According to these models, early adopters engage with new technologies and subsequently communicate their experiences with others. This results in a decrease in uncertainty with respect to the benefits and risks of a technology leading to less innovative users or ‘laggards’ adopting it. Rogers (Rogers, 2010), in his innovation diffusion theory, proposes a five-stage process of technology adoption - i) first, a person gains knowledge of a product/service, ii) they are persuaded of the need of using the product/service, iii) they decide to purchase a technology product or use a service, iv) they actually use the product/service, and v) they assess the choices made.

Criticisms of diffusion models include the notion of ‘innovativeness’ which is regarded as an innate characteristic of individuals, rather than something that is a result of individuals interacting with technologies (Peine et al., 2017). With users being categorized into ‘innovators’, ‘early adopters’, ‘early majority’, ‘late majority’, and ‘laggards’, this

invariably brings in stereotypes of how certain groups react to new technologies. For example, low-income communities and the elderly are often treated as less tech-savvy and therefore lacking in 'innovativeness'. It also has an inherent pro-innovation bias (Ruttan, 1996) wherein people who resist technologies and the reasons they do so are not given importance. The failure to adopt a technology instead focuses on the non-tech savviness of certain populations, which is regarded to be a negative trait (Greenhalgh et al., 2005). Further, these models do not often consider non-use as a voluntary and informed decision.

2.3.2 Technology Acceptance Models

Compared to technology diffusion models, Technology Acceptance Models (TAMs) are focused on relatively micro-level analysis. They place primary emphasis on individuals and use social psychology theories of decision-making to look at how adopters form perceptions of a technology. The basic TAM (Davis, 1985) examines how a technology's perceived usefulness (PU) and perceived ease of use (PEOU) influence technology acceptance and use. Its strength has been its simplicity which has led it to become one of the most used models in Information Systems research. This model has subsequently been extended as researchers have tried to adapt the model to various technologies and settings, for example, through accounting for external variables such as demographics along with other constructs such as subjective norms and institutional structures. This has led to a patchwork of disparate reformulations that have theoretically broadened the TAM conceptualization but have done little to fill in its gaps (Bagozzi, 2007).

Most of the research explaining e-commerce acceptance by consumers have used the TAM and this intersects with research on the adoption of Internet-based services in general. Ingham et al. (2015) summarizes these findings in a meta-review where the authors find that additional variables included to the TAM model to understand e-commerce acceptance include trust, perceived risk, enjoyment, and social influence.

A common criticism of TAMs is their lack of understanding of how individual beliefs

about a technology are constructed, instead, the models start with treating these beliefs as black boxes that simply exist untethered in space and time (Benbasat and Barki, 2007). Further, these models largely focus on individuals in organizational settings and as static quantitative models, fail to capture the qualitative, cultural and historical dimensions of technology adoption and use such as how it is shaped by social structures (Bagozzi, 2007) and informal learning (Straub, 2009). Further, there is an underlying technologically deterministic assumption of the user being a passive recipient who uses technology solely as its designers intended. This is in contrast to the social construction of technology literature which argues that new technologies and society — consisting of users and their social environment — are mutually constitutive. Importantly, TAM models assume voluntary adoption of technology by individuals (Lindner, 2013), but as we see in the case of many initiatives - the adoption of new technologies is often a top-down push mandated by those in power, for example, by organizations or the state.

2.3.3 Domestication Theory

Both the technology acceptance and diffusion models are technologically deterministic, privileging the technology over user agency and failing to account for wider social processes that shape the adoption, use, and evolution of technologies. Domestication theory largely focuses on how users integrate (or conversely fail to integrate) technologies with the everyday practices of daily life (Hynes and Richardson, 2009). The focus is still on the users - be it individuals or more broadly, the household. It, however, emphasizes that users have the capacity to create their own meaning about technologies along with adapting existing routines (or practices) to accommodate them. Silverstone et al. (1994) discusses how Information and Communication Technologies (ICTs) move from the public sphere to the private sphere, but only in accordance with the moral economy of the household. During the process, technologies are ‘tamed’, moving from what the designers inscribed (Akrich, 1992) to being adapted by users to integrate into the routines and values of everyday life.

In this thesis, I refine Silverstone's original theory to study the entry of technology services such as online shopping. The original framework was applied to technologies (such as televisions, telephones, etc.), which were physical artifacts in domestic settings. The theory has subsequently been extended to look at technologies generally, with a focus on how the technical and the social are co-produced (Sørensen, 2006) through users innovating and adapting technologies.

The process of domestication consists of multiple phases and captures how the relationships between users and technologies are constructed, while also emphasizing the emotional, social, and cultural significance. According to Silverstone et al. (1989), four important phases of domestication were appropriation, objectification, incorporation, and conversion. However, the process is non-linear, and the phases can occur in any order. In the appropriation phase, a user is introduced to a technology and has access to it. This can be preceded by technology firms making the user aware of the technology by bringing it to the market and advertising it. The objectification phase is about the symbolic meaning of an ICT artifact, which includes how it is discussed and located in the everyday routines of a household. The incorporation phase looks at how the ICT is actually used and integrates itself into local infrastructures and existing practices. In the conversion phase, the usage of technology and the meanings ascribed to it are brought back to the public space, where they become part of how a technology is looked at socially. This can also influence future iterations of the technology.

These phases are also not absolute and can change depending on the type of ICTs. This is especially true when we consider ICTs that are not physical artifacts. For example, Harwood (Harwood, 2011) argues that for non-material ICTs such as online services, the objectification phase needs to be replaced by a configuration phase. Online technologies can be regarded to be configurational technologies, constituting a specific configuration of hardware, software, and services, that are ascribed symbolic meaning based on their structure and functionality. With respect to e-commerce and online shopping, this thesis

refers to Silverstone and Haddon's (Silverstone and Haddon, 1996) conceptualization of the objectification phase wherein an ICT creates a space in a household - both within existing routines and values.

2.3.3.1 Use and non-use

Closely related to domestication theory is the notion of non-use. Most technology adoption and acceptance models privilege 'use' and treat 'non-use' of a technology as problematic. The technology diffusion model, for example, treats 'the laggards' as potential future users (Satchell and Dourish, 2009) who need to only be 'convinced' of the benefits of a new technology. This brings with it stereotypes about various groups such as treating low-income users and the elderly as inherently being risk-averse. For similar reasons, the technology acceptance model is not a suitable model to assess non-use as it assumes that all actors are already familiar with the technology and ignores the complex socio-technical practices that shape both use and non-use (Cushman and Klecun, 2006).

Wyatt (2003) examines four types of non-users: a) the resisters, who do not use a technology because they do not want to, b) the rejecters, who no longer use a technology, c) the excluded, who never get to try a technology because they lack access to it, and d) the expelled, who involuntarily stop using a technology because of institutional reasons. Wyatt et al. (2005) argue that the first two groups should not be dismissed as 'laggards' because they might indeed be exerting individual agency. This typology captures the spectrum of non-use, and challenges the simplistic notion of digital divide (Selwyn, 2006) through analyzing the specific circumstances that lead people to not use a certain technology. Domestication theory is one such framework that helps us consider non-use through understanding the institutional, infrastructural, and cultural barriers that prevent a technology from being integrated with everyday practices.

2.4 Technology Adoption, Communication Channels, and Sense-making

Through a practice lens, [Orlikowski \(2000\)](#) discusses how the use of technologies is shaped by the material properties of the technology, what the designers inscribe, and what users add through using a technology. Actors also draw from prior skills, knowledge and experiences - these could either be personal or learned from others through formal training or informal learning. This process of learning brings to fore questions about the role of communication in technology use. [Orlikowski and Gash \(1994\)](#) capture how the use of technology is inherently social through the notion of “technological frames” defined “as the core set of assumptions, expectations, and knowledge of technology collectively held by a group or community”.

Relevant to understanding how communication shapes technology adoption and use, organizational literature has outlined how communication is integral to how actors order the world around them, make meaning, and construct knowledge ([Fenton and Langley, 2011](#)). For example, when looked through a practices lens, organizational strategies are ‘doings’ and are performed through communication channels such as text and conversation ([Suddaby et al., 2013](#)). Communication is embedded in social processes rather than solely being a result of individual actors acting rationally ([Yates and Orlikowski, 1992](#)). A communications perspective to organizations emphasizes the ongoing and performative nature of communication in organizing and creating order ([Cooren et al., 2011](#)). Communication is thus integral to the process of sensemaking, which “involves the development of plausible images that rationalize what people are doing.” ([Weick et al., 2005](#)). In the face of possible disruptions such as the entry of a new technology, communication is central to how actors exchange representations of events and decide on a course of action.

From an actor’s perspective, adopting a new technological innovation is accompanied by uncertainty as actors weigh the anticipated benefits against the relative costs ([Jack et al.,](#)

2015). This process is prolonged and involves multiple steps, including an initial decision to take-up a technology followed by subsequent decisions where the technology is assessed. The relationship between technology adoption and sensemaking has also been explored in organizational literature, with Weick (1995) discussing how a technology can have multiple interpretations depending on the group of users and context of use. Seligman (2006) argues that the process of adoption can be thought of as a series of sensemaking cycles that help construct symbolic representations and interpretations of a technology, ultimately leading to its adoption or rejection. Here, sensemaking is a dynamic social process of extracting cues from events and through the process of interpreting them, constructing a shared understanding.

In most models of technology adoption, once a technology is adopted (or rejected), actors subsequently influence others (Straub, 2009). A sociological view of this process looks at the role of social relations in creating networks and communication channels that allow information about technological innovations to disseminate (Lievrouw, 2006). However most theories are silent on the specific mechanisms that shape this information spread. Rogers (2010)'s diffusion of innovations theory is one of the few theories that emphasizes the role of interpersonal communication in addition to mass media in the adoption or rejection of a technology. Roger attributes patterns of diffusion of technological innovations over time to "the role of information and uncertainty reduction in the diffusion of an innovation". In this theory, innovative individuals are assumed as risk-takers who can better cope with uncertainty and are thus early adopters. A key assumption is that innovativeness is positively related to interconnectedness in the social system, with earlier adopters having more access to interpersonal communication channels. However, even here, the role of communication channels has not been given their due importance, especially how the nature of communication channels shape the adoption and use of technologies rather than just transferring information. This has been critiqued by researchers - for example, Burrell (2011) in her analysis of Internet use in Ghana discusses how the retelling and circulation

of rumors shape the use of technologies such as the Internet. [Lin \(2003\)](#) outlines how how different communication channels shape technology adoption in different ways because of their varying capabilities and richness.

CHAPTER 3

Data and Methods

Government-enacted policy initiatives in the city of Bangalore in South India have focused on attracting Information Technology (IT) companies from around the world, helping create one of the largest technology clusters in Asia. Consequently, there are now thousands of software and hardware companies (Basant, 2008) clustered in and around the city, contributing significantly to the economy of the city and its transformation to India's "Silicon Valley". The intersection of this "informational model of development" (Castells, 2011) with local networks of economic and social practices has significantly reshaped urban spaces and consumption. On one hand, it has resulted in deep social and economic inequalities and spatial divides (Grondeau, 2007) in the city. On the other hand, economic actors in local markets have often been able to tap into the economic potential of this globalization to offer cheap technology goods and services that would otherwise be inaccessible to a percentage of the population. SP Road in Bangalore is one such market, which over the last few decades has transitioned itself to become the primary hub for electronic and ICT goods in the city. Stallmeyer (2010) in his analysis of Bangalore's informational urbanism argues that globalization is constantly being reinterpreted by local actors in urban marketplaces (such as SP Road) to create spaces where the spillovers of globalized informational development are continuously re-contoured to local conditions.

3.1 The SP Road Market Ecosystem

Sadar Patrappa (or SP) Road, a crowded 1 km stretch of road is the primary location for buying and repairing technology goods in Bangalore. It adjoins the Bangalore *Pettah*, the historical market areas in Bangalore, India ¹ and is at the periphery of the Central Business District (CBD), the primary hub of commercial activity in the city. However, unlike the CBD, which has seen substantial real estate development with new buildings transforming the landscape, the area around SP Road continue to exist in the same historical configurations as other local marketplaces in the vicinity. Here, tightly packed buildings run on either side of crowded narrow roads that intersect the busy main road, with a crowded network of alleys housing the smaller shops of the marketplace.



Figure 3.1: SP Road Buildings

At SP Road, more than 2000 vendors have kept up with changing technologies for more than four decades and offer a wide spectrum of technology goods that range from relatively low-tech technologies such as water pumps to high-tech technologies such as branded computers and laptops. The market is renowned for its ability to offer goods at competitive prices and provide technical services unparalleled in the city (and surrounding regions). The SP Road marketplace begins on the east side entrance, which has the mobile phone and computer shops along with the highest density of customers. As we move west into the marketplace, the nature of technologies sold changes, from high-tech ICT goods to

¹the entire area is known as ‘Market’ by locals, and is the older part of the city. It retains the feel of old Bangalore and is often contrasted to the Cantonment part of the city which was historically the area occupied by the British.

low-tech goods. At the same time, the crowd of buyers also thins down. On the west side, SP Road meets Avenue Road, another historical marketplace that sells goods and services related to education such as books and stationery items.

The roads at the SP Road market are too narrow for cars to park. Two-wheelers, such as scooter and motorbikes, are parked on the sides of the main road, and are an adequate proxy for how busy the marketplace is. Customers who do not find parking on the main Road, park on the adjoining roads (i.e. PR and PP lanes), and when this fills up, they find parking at locations further away and walk to SP Road. Traffic policemen make multiple rounds at the marketplace on a daily basis, towing vehicles that are parked in no-parking zones. The customer traffic depends on the time and day of the week - Saturdays evenings are the busiest time of the week with relatively fewer customers on weekday afternoons. The marketplace closes early on Sundays so the vendors can have some time off. A regular day for vendors at SP Road begins at 11 am in the morning and goes on till 8 pm in the night, with shops shuttering down a little after 9 pm. The weather significantly affects customer traffic - when it rains, there are fewer customers as the marketplace is harder to navigate, by both foot or vehicle, with rainwater flooding the inner roads.

The market ecosystem primarily consists of customer-facing vendors, wholesale distributors, and informal service centers for most technology goods. Most of the larger service center shops rent real estate in the inner roads or inside building complexes, while the footpaths on the main road have been encroached on by smaller, mobile phone repairers. There also exist service providers such as those who deliver tea and food to the shops on demand. Further, there are hawkers and street vendors who are not permanent fixtures at the marketplace and sell food, fruit juices, clothes (often fake-branded), and cheap Chinese-made plastic goods such as toys and other oddities. On occasion, mobile phone companies would set up temporary kiosks to get customers on-board. At times, individuals - usually young men - could be found on the main road selling a single branded electronic item for cheap - these were usually regarded to be stolen or 'found' goods, and customers bought



Figure 3.2: A busy SP Road

them at their own risk. The foot traffic at SP Road primarily consists of low and middle-income customers, along with vendors from outside SP Road who source their goods from here. There is continuous market activity at SP Road, even when customer traffic is low, as market actors move goods around and deal with deliveries to be made outside of SP Road. The recognition of this locality as an important destination for purchasing electronic goods has led to companies like Dell and HP opening their showrooms on this road – their shiny clean exteriors and sparse uncrowded interiors, however, are in sharp contrast to the other shops.

SP Road actors have been connected to transnational networks of trade since the beginning (around the late 70s) – with many of them still having strong connections to Chinese manufacturers and international importers. This has resulted in the marketplace stocking a wide spectrum of technology goods – the diversity of the marketplace far exceeding formal retail stores scattered around the city. Further, they stock products made by Indian manufacturers and unbranded goods (also colloquially called ‘compatible’). There is thus a wide spectrum of goods to choose from depending on the purchasing power and how tech-savvy

a customer is. The marketplace also has connections to the grey economy, with goods of dubious legal status finding their way to some of the shops. Raids are a regular occurrence at SP Road, though the frequency has reduced in recent times.



Figure 3.3: Old laptops stocked at an informal service center

There also exists an alternative second-hand economy in the market, with used electronic devices such as laptops and desktops from around the city finding their way here for recycling. By leveraging extended social networks around the city, the service centers have been able to purchase old hardware discarded by IT companies for cheap. The systems are then either refurbished and sold to low-income customers or disassembled so that the components can be reused in repairing other systems. This is a useful means of getting older components that are no longer sold in the formal economy. It also allows service centers to work with components that have been

phased out by the companies or those that are typically hard to purchase. The prices of these refurbished (or second-hand) Information and Communication Technology (ICT) devices are substantially lower than those of first-hand devices, and together with low-cost repairs, the service centers help sustain an alternative ICT economy that caters exclusively to price-discerning customers.

The majority of vendors and wholesale dealers at SP Road belong to the Marwari (pronounced /maarvaadi/) community, a historically successful trading and entrepreneurial community. They have a presence in the historical marketplaces adjoining SP Road too

and have been instrumental in converting SP Road from a historically residential area to a marketplace. The community is known to be closely-knit (Dhanania and Gopakumaran, 2005), and all the Marwari traders interviewed had come to SP Road to either work for close relatives or for someone from their village. This was a trend found not just among the Marwaris - at SP Road, most work could be found only through extended social networks. In recent times, the changing nature of technology goods has seen the entry of the local Muslim business community who primarily sell and repair mobile phones. The computer service centers were usually non-Marwaris and employed a relatively diverse workforce. The Marwaris, in contrast, largely focused on the business side of the marketplace.

This thesis largely focuses on the personal computer ecosystem at SP Road, consisting of the sale and repair of computers, game consoles, and related peripherals and accessories. However, many of the observations and findings are valid for other technology goods too.

3.1.1 The Personal Computer Ecosystem

The personal computer ecosystem at SP Road primarily consists of wholesale distributors, white-box assemblers², peripheral vendors, and service centers. The wholesale distributors sell components exclusively to vendors - both in and outside SP Road. Situated away from the main roads with extensive stocks, they are out of bounds to regular customers. Stores that exclusively sell peripherals are smaller and fewer in number, with the assemblers being the most prevalent shops lining the main road. While assemblers also sell components and peripherals, along with laptops, their primary business is selling custom-built personal computers to customers. They do not charge extra for the assembling, with the cost implicitly included in the components sold as part of the configuration. They hold minimal inventories of components but are able to offer a wide range of custom solutions

²A white box is a personal computer that does not bear the brand name of a major computer manufacturer or seller. These are built by individuals (known as assemblers) putting together a computer using components sourced from a variety of sources. These are usually cheaper than the branded computers, as the assemblers are able to get individual components on a discount.

and support to customers - these small inventories have traditionally allowed them to adapt quickly to new components that are introduced into the market. This flexibility in offering solutions that specifically cater to a customer's technical needs and financial constraints have made them an important destination for price-discerning customers. Away from the main road, there are other assemblers who exclusively deal with second-hand desktops and laptops which have been refurbished, catering primarily to low-income customers. In contrast, branded showrooms on SP Road are strictly formal enterprises where the relationship between the customer and the seller is driven by the legal infrastructure of warranties.



Figure 3.4: Repair at an informal service center

While some assemblers do minor technical repairs, the majority of them only handle the configuring of systems – i.e. helping the customers figure out what components they need – and selling customers the components, with the actual technical work of assembling outsourced to service centers. These service centers are tucked away in narrow alleys or nestled in the higher floors of the building complexes facing the main road. The location is less of a concern for the employees who work here as they “don’t do sales” and have little need to be visible. They receive a part of their work from the assemblers on the main road and

the rest from regular customers or through the touts who roam around the main roads guiding new customers to the service centers. They don’t sell goods but do technical tasks such as assembling and out-of-warranty repair work on desktops and laptops along with software installation for both customers and the assemblers. The service centers have the

	Phase 1	Phase 2	Phase 3
Vendors	4	14	
Service Center Workers	3	4	
Customers	3	15	73
Other Actors	3		3

Table 3.1: Semi-structured interviews

equipment and technical know-how to repair motherboards and perform other advanced technical tasks. When they are unable to fix a problem or lack an essential component, they leverage the community networks in the area to request other service centers for help – I often observed local experts with advanced knowledge being called by the service centers to help with advanced tasks such as testing chipsets. Based on the computer components at their disposal and severity of the problem, the service centers offer a spectrum of possible solutions to the hardware problems that customers can choose from depending on their budget and time constraints.

3.2 Data Collection

The data collection was conducted by means of semi-structured interviews and participant observation ([Atkinson et al., 1994](#)) at the SP Road, Bangalore over 3 phases:

1. Phase 1: June 2015 and July 2015
2. Phase 2: November 2016 to December 2016
3. Phase 3: May 2017 to December 2017

The three phases of work allowed me to document the evolution of marketplace and how it has reacted to and resisted the entry of online marketplaces. Withdrawing from the field and reentering to collect further sets of data gave my work a fresh focus, allowing me to gain new insights as well as keeping an intellectual distance from the field. In the 3

phases of work, I examined existing practices, and the extent to which informality shapes social and economic life in the marketplace. When I began the study, e-commerce was just beginning to make inroads into consumer life in India. In Phase 1, I captured a marketplace in flux as it reacted to the cut-throat prices of online marketplaces. During Phase 2 of the study, I observed the marketplace as it coped with the push of demonetization by the Government of India. By Phase 3, the markets were slowly reaching an equilibrium with respect to competition from online marketplaces as well as the effects of demonetization. Through the 3 phases, I kept detailed field notes that documented the daily interactions and conversations at the marketplace. Observations were conducted at various locations in SP Road including the stores and informal service centers. This was supplemented by an exploration of SP Road and a general 'hanging around' (Bowers, 1996) to get a higher level view of the activities within SP Road. In addition, numerous in-situ interviews were conducted to clarify understandings with minimum interruption to the ongoing flow of activity. These observations produced a rich picture of the marketplace, the day-to-day activities of actors, existing practices, and the institutions and infrastructure that support the functioning of the market. Most of the interviews at SP Road were in Hindi, which the vendors belonging to the Marwari community spoke proficiently, while interviews with non-Marwaris were primarily in English, and if a translator was available, in Kannada.

The data analysis was conducted concurrently with the data collection through an iterative and deductive coding process. During Phase 1, an initial inductive, grounded theory approach (Glaser and Strauss, 1967) was used to analyze the field notes and transcripts allowing the emergence of categories and themes from the data and the development of theory. The next round of coding was more deductive, where the coding was continuously reviewed and the categories refined. Field-notes could not be coded in the same way as interviews, I instead chose to selectively code passages of field observation.

3.2.1 Phase 1: Entry of Online Marketplaces

During phase 1, e-commerce had started to just make a major impact and I was able to capture a market in flux as it reacted to the cut-throat prices of online shopping. Many vendors at SP Road were contemplating their future - some even considering if they should start selling online. A few had visibly made the transition as I observed them packing electronic items in packaging for the online marketplace. The foot-traffic at SP Road had dropped substantially and there were vocal concerns at the marketplace about the predatory nature of online shopping.

I initially focused on the vendors who were white-box assemblers - vendors who were very unique to the SP Road marketplace. However, as I observed the vertical interdependence at the marketplace, I moved onto interviewing other market actors including service center workers. Observations at the marketplace were thus supplemented by 13 semi-structured interviews with various actors who were part of the market ecosystem and willing to talk to me. This included 4 vendors, 3 service center workers, 1 non-SP Road assembler who sourced his goods from SP Road, 1 non-SP Road vendor, and 3 customers. I also had conversations with officials at Bangalore's City Crime Branch (CCB)'s Forgery and Misappropriation (F & M) division that handles piracy related crimes in the city and had conducted raids at SP Road before. Interviewed actors were predominantly part of the computer vertical at SP Road. All the individuals interviewed were male – technology goods markets are predominantly male-dominated.

3.2.2 Phase 2: Demonetization and Entry of Digital Money

For Phase 2, I managed to get an insider contact who introduced me personally to multiple vendors. Connections to further respondents were snowballed through immersion in the field. Follow-up contact with vendors and questions were not informed by a-priori design, rather, they were instead informed by a deep reflective reading of existing field notes. I was able to station myself at 5 retail stores and 2 service centers, and observed market actors

more closely as they interacted with each other. When permitted by the vendors, I also engaged with customers, and inquired about their reasons for shopping at SP Road. During breaks in work, I made conversations with the vendors to understand their perspectives of working at SP Road.

It was around this time that the demonetization push by the Government of India occurred – where all banknotes of Rs. 500 and Rs. 1000 denomination were illegal tender and had to be surrendered to banks. This unanticipated exogenous shock, was a significant economic event and led to challenges to both the informal and formal sides of the marketplace. Demonetization became an important lens for analyzing informality, as its professed goal was to encourage (and at times coerce) actors to embrace the formal economy.

Most of my interviewees estimated that close to 80-90% of the business transactions at SP Road were by cash. Post-demonetization, the majority of this cash economy crashed; all the currency notes SP Road actors has was without value. Around this time, I observed that the foot traffic had significantly dropped. Without the cash economy, most business transactions were done using informal credit for weeks after, even as the use of electronic cards slowly increased at the marketplace. In this phase, I was able to observe how community bonds were leveraged to deal with this external shock. Those shops which already had card swipe machines obviously had an advantage over others - however, I observed that those with card swipe machines began swiping for others – even with vendors they were directly competing with.

Overall, I observed 5 shops and spoke to a total of 18 vendors. Besides this I had in-situ conversations with 15 customers while they transacted with the vendors.

3.2.3 Phase 3: Adapting to Online Marketplaces and Demonetization

By Phase 3, the marketplace was slowly reaching an equilibrium with respect to competition from online marketplaces as well as the effects of demonetization. In addition to participant observations at the marketplace, I conducted informal interviews with peo-

ple associated with online marketplaces. I had in-depth conversations with 2 employees from e-commerce companies along with the owner of an inventory management software company that helped vendors manage orders and inventory in online marketplaces. These interviews gave me their perspective of the trajectory of online shopping and how this was shaping e-commerce strategies.

To capture how the entry of online marketplaces was affecting shoppers, 73 semi-structured interviews were conducted across 3 marketplaces. Two local researchers were hired to help conduct the interviews - 1) a male researcher who could speak the local language so we could interview more low-income shoppers who visited SP Road marketplace and did not speak Hindi or English, and 2) a female researcher to help interview female shoppers who might otherwise be wary of talking.

These interviews were conducted in Kannada, Hindi, English, or a mix of these languages depending on the interviewees. These were intercept interviews, where shoppers were approached while they were navigating the marketplaces. This allowed the interviews to be quicker and not be disruptive to their shopping routines. However, finding customers willing to speak with the researchers was a significant challenge. We initially offered monetary compensation, but found that it did not increase the number of shoppers willing to speak with us.

Interviews were recorded with permission from the interviewees and transcribed upon return from the field site. When interviewees did not allow recording, the researchers took down interview notes in notebooks which were made into digital copies on return. The interviews assessed the mechanisms and institutions that shaped how consumers navigated marketplaces along with their perceptions of and experience with shopping online and offline. We specifically focused on shoppers who continued to shop at these offline marketplaces to understand why they persisted in shopping there. Purposive sampling was used, wherein we used our judgment to find customers to interview until the goal of theoretical saturation ([Guest et al., 2006](#)) was reached. Initially, we chose customers who were

	Location	SP Road		Commercial Street		Other		Total
	Age	M	F	M	F	M	F	
	<20				2			2
	20s	16	3	2	15	2	2	40
Age	30s	9	1		3			13
	40s	11	1		5			17
	50s	4						4
	60s	3						3
	Total	43	5	2	25	2	2	79

Table 3.2: Demographic Details of Interviewees (Phase 3)

regulars at the marketplace. We then transitioned to finding customers with specific characteristics - such as age, language, and gender - who were not represented in the initial data collection. While we did not explicitly ask customers their socio-economic background, we chose specific locations at the marketplaces that were more likely to be visited by low-income customers.

The primary interview site was SP Road, where 43 interviews were conducted. However, as is common in marketplaces selling technology goods, the majority of shoppers are male. We subsequently conducted 4 interviews at a local general goods marketplace near Konappana Agrahara in South Bangalore and another set of 26 interviews at Commercial Street in Central Bangalore. The latter is one of the oldest marketplaces in the city, selling clothing, shoes, and jewelry, and is predominantly visited by female shoppers.

Some of the interviewees were in groups, as is often the norm when shopping in such marketplaces. We consequently spoke to 79 interviewees with the length of the interviews varying, depending on how cooperative the interviewees were. The majority of interviewees were residents of Bangalore. 3.2 shows the demographic split of the interviewees.

3.3 Reflections on Data Collection

“(The Marwari businessmen) don’t trust us. Anyone outside, they don’t trust anyone. That is what I think. They don’t disclose their secrets to anyone outside – where they are buying and all those things. So, they don’t involve others into their business...”

– Non-SP Road assembler sourcing from SP Road

Having been born and brought up in Bangalore, India, I was aware of the local marketplace culture. I also spoke Hindi, a language that most Marwari vendors spoke fluently. However, as an outsider attempting to document activities that were exclusive to only those who were part of the informal market ecosystem, I was treated to high levels of suspicion. Finding people willing to be part of interviews and observations was a significant challenge. During the first phase of the research, most shops refused to speak with me, even during non-peak hours when they were relatively free, sometimes not allowing me to explain the research project. Multiple vendors took photographs of my university identification card, without committing to speak with me. Others would only give very short and perfunctory answers to my questions, refusing to engage with me. Financial incentives did not work with vendors often scoffing when I suggested it. This was true even with service centers, who were even more suspicious of me. Wholesale vendors flatly refused to speak with me, with some not giving me permission to even to enter their shops.

The first time a shop agreed to allow me to observe their daily activity, I was given a stool to sit outside the shop and only observe the transactions from a distance. However, upon helping the vendors translate for a customer who only spoke English, they invited me to sit inside the shop and opened up to me. Winning the trust of the market actors was important, and a lot of it happened through conversing about everyday life over copious amounts of tea. Often, the act of them offering tea to me was a sign that they were willing to speak with me. I was also asked a lot of questions about my life - where I was from (by

which they meant not where I was born but where my family was originally from), what I did, whether I was married, among other personal questions.

During Phase 2 of my research, I managed to get the contact of someone who knew vendors at the marketplace personally. With this contact vouching for my authenticity, my access at the marketplace increased substantially. Vendors were willing to speak with me and even personally referred me to other contacts at the marketplace. While vendors would still sometimes choose to talk in their native tongue (Marwari) and exclude me from their conversations, it was still a huge improvement in terms of access. However, I had to often give them assurances that I would not show any of them personally in a bad light. These contacts persisted in Phase 3, though by then many of the vendors seemed less interested, and in some cases even bored of my presence.

Even when participants were willing to talk, they often refused permission to be recorded or photographed. I was allowed to take photographs of the shops and marketplace, but not of the actual vendors or the customers. Therefore, data was primarily collected through field notes, which were written up daily on return from the marketplace. During Phase 1, when making observations at the marketplaces, many of the notes were taken in shorthand on a mobile phone – a ubiquitous device in these markets, unlike paper notebooks which were looked at with suspicion. During Phase 2 and Phase 3, with increased access and recognition, I was able to take notes in a book but audio recordings were still not allowed. The collected data was anonymized to ensure that no traces led back to any of the vendors – this was especially true for any semi-legal activity that I observed, for example, the installation of pirated software or selling without formal receipts. Interviewees often mentioned that the only reason they were talking to me was because someone else had vouched for me. This was observed during interviews with the customers too - they were far more willing to give interviews when the vendors introduced me to them.

CHAPTER 4

Underlying Infrastructures of a Traditional Marketplace

(Adapted from: Chandra, P (2017). *Informality and invisibility: Traditional technologies as tools for collaboration in an informal market*. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, pages 4765–4775. ACM.)

4.1 Introduction

This chapter explores the social and technical infrastructure that underlies the organization of local marketplaces in many parts of the Global South. In particular, it looks at the interplay between informal and formal business practices, and how local actors are able to leverage communication technologies such as telephone intercom systems to create efficient ways to collaborate and collectively manage these markets.

Local marketplaces are active sites of economic activity in urban landscapes around the world, catering to the specific needs of low and middle-income customers. The informality of these marketplaces has allowed them to be flexible and offer services that are unavailable in the formal economy but exist as an integral part of everyday life – such as the repair and maintenance of electronic goods. The politics of these marketplaces (Mathews et al., 2012) along with the informal entrepreneurial spirit (de Soto, 1989) that is found in these spaces have long been studied by researchers. However, what is interesting from a collaborative

systems perspective is the technical infrastructure that supports the social organization of these marketplaces.

The chapter consequently looks at a trend that is increasingly becoming common in information and communication technology and development (ICTD) and HCI for development (HCI4D) literature. Moving away from paternalistic top-down formal technology interventions for communities, instead looking at local community-driven informal deployment of technologies that are tailored to specific geographies and social conditions and needs (Dell and Kumar, 2016). Studying this bottom-up adoption of top-down technologies (Rangaswamy and Densmore, 2013) not only captures the innovativeness of informal marketplaces in adapting new and existing technologies but also the nature of socio-technical activity present in informal economic practices. In the process, it also expands collaborative work to the invisible urban spaces that dominate markets in the Global South.

Drawing on ethnographic observations and interviews at Sadar Patrappa (SP) Road, this chapter will outline how local actors have been able to use traditional communication technologies to successfully collaborate and maintain the market for over three decades. SP Road has, over this time, become the primary hub for purchasing and repairing electronic goods in Bangalore. The chapter will describe the market ecosystem and the spatial configurations that allow informal activities to remain invisible. It will subsequently analyze the underlying technical infrastructure and specifically look at how the affordances of the traditional landline telephone intercom system support the informal business practices here along with re-shaping space in the market.

4.2 Background

4.2.1 Space and Informality

Space – both physical and virtual – plays an important role in shaping and facilitating social interaction and coordination (Bardram and Bossen, 2005; Erickson, 1993; Fitzpatrick et al.,

1996; Tellioğlu and Wagner, 2001). Echoing Lefebvre (1991), Dourish (2006b) has argued that space is socially constituted rather than just being a three-dimensional geometric environment encasing social actions. Spatial configurations are thus intertwined with collective practices and, in recent times, increasingly with information and communication technologies (ICTs) while also continuously being molded by power relations, societal structures, and history. Crucially, physical spaces are made legible and even transformed as people collectively discover new ways of navigating them through their use of ICTs.

This chapter primarily focuses on how ICTs are collectively used by actors to reinterpret urban informal spaces and facilitate collaboration. Much of these physical spaces are hidden away from sight at urban marketplaces such as SP Road and in analyzing collaboration in this market, the chapter borrows from a corpus of work that focuses on how successful collaborative systems not only ground communication in formal structures but also embrace the informal side of users negotiating articulation (Robinson, 1991). Star and Strauss (1999) build upon the interplay between the formal and informal to provide a framework that analyzes work and details the different ways it is rendered ‘invisible’. This could be because workers (doing very visible work) become socially invisible or conversely while the workers could be visible, their work becomes embedded in the background. Often, informal work – such as repair and maintenance (Jackson et al., 2012) – that exist outside the formal economy are invisible because either formal indicators are incapable of capturing this work or choose not to value them.

This chapter focuses on an alternative but related scenario where informal work is actively hidden by actors from the various offices that the state manifests itself in - such as the regulator, the law, and the tax collector (Centeno and Portes, 2006). The informal and formal, however, coexist, and the informal, unbounded by regulations and bureaucratic hurdles, provides much-needed flexibility (Westerberg, 1999). The chapter will detail the business practices at SP Road, the interplay between the visible formal and the invisible informal, and the role that traditional communication technologies such as telephones play

in bridging the formal with the informal, allowing actors in the market to successfully collaborate and sustain the market.

4.2.2 Innovation, Informality, and ICTs in the Global South

HCI design research has, in recent times, started to recognize alternate spaces of innovation, especially in non-Western settings. For example, studies have highlighted local practices of disassembly, maintenance, repair and reuse in the Global South that significantly extend the lives of devices and technical infrastructures (Burrell, 2012; Jackson et al., 2012, 2014). These and other studies also show how innovation and technology use is situated within the broader socio-economic structures of everyday life, often intersecting with informal practices. For example, de Souza e Silva et al. (2011), in the context of Brazilian favelas, discuss how mobile phone appropriation is deeply intertwined with the gray economy that the residents are a part of – their social and economic conditions being mirrored in their mobile phone practices.

Similar studies detail the frugal innovation in low-resource environments (Rangaswamy and Densmore, 2013) along with the agency of communities in finding resourceful and adaptive means to make ICTs fit their everyday lives and practices (Rangaswamy and Smythe, 2012; Schiavo et al., 2013). Here, the practices of adoption, appropriation, and finally the reconfiguration of technologies reposition the users in the processes of innovation and diffusion. This, in effect, renegotiates the inherent power relationships between the providers of technology and the users (Bar et al., 2016).

Studies on local informal ICT marketplaces catering to low and middle-income consumers highlight the entrepreneurial and creative practices present in these urban spaces. For example, Ilahiane and Sherry (2008) describe the enterprise culture in an informal ICT market in Morocco that helps bridge local demand with global ICT markets. The importance of social networks in these marketplaces has also been well documented. Studies on informal mobile phone store ecology in India find that these networks help vendors circum-

vent environmental constraints (Rangaswamy and Nair, 2010) while also allowing them to be durable and flexible in their ability to adapt to environmental changes (Rangaswamy and Smythe, 2012).

Relevant to this chapter is also how self-organized ICT networks augment offline social and business networks. Electronic community networks maintained by local communities to support their information and communication needs have been around since the 1970s and widely studied in community informatics literature (Kubicek and Wagner, 2002). With respect to the Global South, such networks have been considered as a means to empower marginalized communities and bridge the digital divide (Rey-Moreno et al., 2014). However, these networks have primarily focused on extending low-cost or free internet access to citizens and have usually been initiated by external actors.

4.2.3 The Fixed Telephone and Collaboration

The emergence of communication technologies such as mobile phones has led researchers to look at how mobility and virtual spaces influence social interaction and collaboration. However, much of the work that studies communication practices has been in the Global North with work in the Global South usually limited to studying the appropriation and use of mobile devices/applications or social media use (Wyche et al., 2013). Mobile communication has indeed become a common phenomenon in most parts of the Global South, and HCI4D literature has identified ways in which local communities are adopting these technologies to meet their specific needs (Kumar and Parikh, 2013). For example, Donner (2006) finds that mobile phones significantly expand the business networks of micro-entrepreneurs in Kenya and are often used as personal devices.

However, beyond the electronically mediated interactions of mobile devices, there exist complex ecosystems of communication that often include more traditional technologies such as fixed telephones. For example, in an ethnographic study in Mexico, Wang and Brown (2011) find that the communication ecosystems in rural landscapes are tailored to

the specific geographies and that fixed telephones still play an important role in the communication practices of locals.

The simplicity and (former) ubiquity of fixed telephones have, in the past, led researchers to look at them as a potential platform for CSCW applications (Resnick, 1992). Studies have also suggested that the intermediate levels of media richness and social presence that is afforded by them, might make them better than face-to-face or computer-mediated interactions (Connell et al., 2003). As mobile telephony has become more ubiquitous with its numbers greatly exceeding fixed telephone lines, the continued use of the latter in the Global South points to an account of communities leveraging the affordances of technologies that they are familiar with to construct communication ecosystems that suit their unique social and economic needs.

In this chapter, I discuss the use of a landline telephone intercom system by local actors at SP Road, Bangalore to collectively organize and manage a technology goods market – facilitating both adversarial collaboration and vertical interdependence between actors. I subsequently analyze how the intercom system relates to the informality and physical space at SP Road along with discussing its role in either creating invisibility or making existing spaces and practices more legible.

4.3 The SP Road Market Ecosystem

Figure 1: The main road at SP Road

In most retail shops, unbranded or local electronic components – or ‘compatible’ components – are stacked alongside branded components. These are either imported from China or made by local Indian manufacturers and are preferred by price-discerning customers. However, while the range of goods that can be obtained at SP Road is unparalleled in the city, the retail stores on the main roads have conspicuously small inventories. When customers asked for a component that is not in stock, vendors were observed calling

wholesale distributors from a landline phone who would then send someone over with the required components. If the customer chose to purchase the component, the transaction was completed otherwise it was sent back to the distributor.

“They are all distributors. For every component, we have multiple distributors.

They all have different numbers. We have an intercom here for that.” –

Assembler 4

The crowded marketplaces of SP Road, where many small vendors jostle with each other on narrow vertical niches, while also keeping up with the rapid obsolescence that accompanies technology goods, lends itself well to the practice of acquiring components on demand. Small inventories are also important for vendors on the main roads because of the high rents of real estate with the consequence that these shops are often very small. This real-time system using the telephone intercom is thus a flexible workaround that allows vendors to combat uncertainties of customer demand while also dealing with limited physical space.

In contrast to the vendors who are visible on the main roads, the wholesale distributors are situated away from the main roads and completely off-limits to customers (often with handwritten signs stuck crudely on closed doors that say the same). Here they pay lesser rents, are relatively anonymous, and are able to keep extensive inventories while sourcing merchandise to vendors.

Away from the main roads, the informal service centers are tucked away well inside building complexes or inside the narrow alleyways that branch out from SP Road. While they do cater to regular customers who find their way to them, they get a large amount of their work from the vendors who send electronic devices to them for configuring or repair, or through touts who roam around the main roads guiding potential new customers to them. For vendors who sell custom-built electronics such as white-box desktop computers, the service centers are where the assembling is done.

Communication between the service centers, wholesale distributors, and vendors is done exclusively through landline telephones which are part of an intercom service that connects all the shops at SP Road, in effect bridging the various actors spatially distributed around the market.

4.3.1 State Actors and SP Road

Besides the economic actors at the market, state actors – such as law enforcement agencies and sales tax officials – also exert significant influence on the SP Road ecosystem. Police raids shape the availability of illegal or gray market goods sold at the market, while many of the business practices are in response to actors finding ways to maximize profits while also satisfying sales tax officials. For example, anti-piracy raids have led to shops no longer selling disks of pirated software; instead pirated software is now only installed by service centers using installations saved on portable hard disks – an activity that can be hidden away quickly.

”(Does police ever trouble you in your work?)

We’re too small for anyone to care. We mind our own business and do our work.” – Service Center 2

Conversations with officials at Forgery & Misappropriation (F & M) division at the City Crime Branch (CCB) – an agency handling intellectual property-related crimes in Bangalore – gave credence to the notion that the state actors do not wish to waste time and resources going after shops that are “just trying to make a living”. In the case of CCB, it is primarily motivated by their desire to spend their resources and time catching the larger players in the piracy supply chains – such as those who supply and distribute pirated goods, rather than focusing on shops that only sell them.

There is thus a tense equilibrium at these marketplaces – while the threat of raids hangs in the air, formal actors often choose to turn a blind eye and are thus complicit in ensuring

the invisibility of informal economic practices, but this is heavily contingent on actors being discreet about their activities and the profits remaining small.

4.3.2 Piracy and SP Road

“When the laptop itself costs 20k, how could someone afford the software for 15k” – in-situ interview

Software piracy is one of the informal services that helps SP Road vendors and service centers provide customers with low-cost, albeit illegal, solutions to their software needs. As seen in the above quote, piracy here was directly related to the high price of essential software such as the Windows OS and office applications. For software that had been made cheap and affordable - for example, antivirus software by Kaspersky and Quickheal, there was little evidence of piracy. Service center workers were observed telling customers that, while they will do the installation for them, they should purchase the original software from the shops given how cheap it is.

Software piracy is not a major source of income for SP Road vendors – for both the assemblers and service centers. For assemblers, getting the software loaded is part of the service that they provide to customers with many of them willing to get it done for free if the customer is a regular or is buying an expensively assembled system from them. While service centers do it for a nominal fee, they make it clear that it is only a minor source of income for them and don't waste a lot of time haggling over it, with some showing irritation if the customer was wasting their time with too many questions.

4.4 Space and SP Road

Physical space, in the context of SP Road, is as much a product of historical factors as it is of economic and social factors, with the outline of the traditional market (Pettah), established in the 16th century, persisting at the peripheries. Thus, while the goods sold

have changed, the marketplaces continue in the same spatial configurations as they have for centuries. Further, former residential areas have, over time, been converted to market spaces. Tightly packed buildings crowd either side of a deep network of roads with narrow roads intersecting the busy main road at regular intervals along with a constellation of alleys that house the smaller shops. As one moves further from the main roads, there is a transition from the formal to the informal, as informal activities are hidden away from the regulatory gaze of law enforcement agencies and sales tax officials.

Not all shops can be seen from the main roads, and the signs put out by these shops to indicate their location create a crowded disorganized mosaic. Actors that chose to be invisible to customers, such as some of the distributors and service centers, don't bother with signage. The labyrinth of buildings, alleys, and roads do get overwhelming for new customers, who the researcher often observed struggling to retrace their steps.

As previously mentioned, real estate rents are a function of how visible a store is to foot-traffic. Shops on the main road are able to maintain small floor areas by outsourcing technical servicing to the service centers and inventories to the wholesale suppliers. The minimal inventories in shops also hide a significant amount of trade that is instead conducted through the intercom in real time with no paper traces left behind, thus allowing them to partially evade audits by sales tax officials.



Figure 4.1: Narrow alleys branching from SP Road



Figure 4.2: Crowded building complexes

The intercom service plays an important role in the business practices in linking the informal activities hidden away from sight with the more formal retailing activities that are actively advertised to the customers. In the next section, the chapter will describe this landline telephone intercom in more depth and discuss how this underlying technical infrastructure allows

economic actors at SP Road to communicate and collaborate effectively. Subsequently, it will explicate on how the intercom service relates to informality.

4.5 The Intercom System at SP Road

The telephone intercom system at SP Road is an EPABX (electronic private automatic branch exchanges) service that is franchised from Bharat Sanchar Nigam Limited, the government-run telecommunications service. It allows commercial establishments to run their own in-house telephony switching systems (referred to as an intercom system) and is independently run by a vendor under the auspices of the Bangalore Electronic Dealers Association, an organization that SP Road merchants have set up to ensure the smooth running of the market.

“Everything is a two-wire system, whether you are working with electricals or working with phones. So, it is easy to use. I figured out once I joined the job”

– Intercom Worker

As evidenced by the above quote, the technical simplicity of the telephone intercom service allows for its easy maintenance and use. At the time of this study, the intercom was being maintained by two electricians who had only recently started working at SP Road but

had figured how to maintain the system on their own within a few weeks. They also viewed the researcher with great suspicion, taking a photograph of his identification cards using their mobile phone camera and refusing to give permission to take photos of the equipment in the room.



Figure 4.3: The landline telephone intercom system

The intercom office that they worked in was on the top floor of the first major building as one enters SP Road with no external signs indicating its presence. It was thus conveniently located with respect to vendors finding them, but still invisible to customers – there was little chance of anyone accidentally stumbling upon them. The office itself was sparse – a small room with the EPAPBX system and an inverter in the scenario that there were power cuts, along with a table with a desktop computer, another table with multiple landline phones, 2 chairs, and a creaking ceiling fan.

The intercom has around 500 active connections at a time but can support a maximum of 1500 connections. It covers almost all shops on the 1 kilometer stretch of SP Road except for the smaller stalls. Getting a line to the intercom service and a four-digit phone number is a prerequisite for anyone who wants to start a major shop at SP Road. He is initially charged a starting advance that is proportional to the size of his shop, ranging from Rs. 2000 (30 USD) to Rs. 3000 (45 USD). He is subsequently charged a monthly rent of Rs. 200 (3 USD).

“No directory or records. We just remember who to call. That we know the

numbers of who we need” - Assembler 2

None of the vendors were observed using any directories that listed the intercom phone numbers of the various shops. Once a shop gets a connection, the 4-digit intercom number has to be subsequently conveyed to all other relevant stores by word-of-mouth along with services that are being offered. This is an important “interaction ritual” (Goffman, 1967) that allows new actors to join existing social and business networks. Given the range of technology goods available at the market, this ritual limits the exchange of numbers with only those who matter to a specific technology good (for example, personal computers). It also means that as the market evolves as new technologies and actors replace older ones, the onus is on those who arrive at the market to socially integrate themselves with the existing market.

It is crucial to note here that mobile phones are extremely common at SP Road. Almost all the actors observed by the researcher spent their free time entertaining themselves on their mobile phones – either playing games, watching movies, or listening to music. However, despite the ubiquity of the mobile phone, the intercom continues to remain the primary means of business communication within the market. Mobile phones, on the other hand, were primarily used to communicate with outsiders – either customers or non-SP Road vendors and distributors.

The merchants take great pride in the intercom system and extol its utility and ease where all their important business contacts within the market are just 4-digits away. The intercom has also facilitated the creation of a layer of service providers that cater to all merchants – these include tea-sellers, tiffin shops that provide lunch, and handymen such as electricians.

The intercom system is thus an integral part of the SP Road business community. All major actors, irrespective of their location, are by default connected to the intercom network. Through personally introducing themselves, sharing the intercom number, and detailing the products and services they offer they become part of the business network that

corresponds to their specific technology good. The technical infrastructure subsequently sustains vertical interdependencies in the market and ensures that it runs smoothly.

4.6 The Intercom, Informality, and Community

Informality helps refigure our perceptions of economic activity in the Global South. However, by “fail[ing] to adhere to the established institutional rules” (Feige, 1990), they are often perceived to be illicit by the state. Sociologists Cross and Peña (2006) argue for a differentiation between informal and criminal based on the relationships between regulatory mechanisms and the economic activities. Thus, informal markets are regulated by informal or social-institutional means and can, on many occasions, appeal to the state or criminal organizations for assistance, while criminal economies are completely regulated by criminal organizations. They conclude that an informal economy is different from a criminal one not by the nature of activity but rather if they can “negotiate a level of coexistence between legal (state) and extralegal forms of regulation”.

At SP Road, the majority of goods sold are legal; while the researcher was on multiple occasions offered a ‘cheap’ iPhone, these instances were rare and this was corroborated during in-situ interviews with customers. However, some of the services offered, such as jailbreaking imported game consoles or installing pirated software, are not always on the right side of the law. Further, many of the informal business practices at SP Road attempt to evade formal regulations such as sales tax, with one vendor telling the researcher that they feared sales tax officials more than the police.

“As long as we give a bill, everything is legal.” – Assembler 4

The practice of giving formal receipts (or bills) draws the line between the formal and informal – and also legal and illegal – in most markets across the Global South. Discrepancies between expected receipts and actual receipts have long been measures of shadow

economies (Fleming et al., 2000), and sales tax officials spend considerable efforts in clamping down unreported sales and skimming of receipts.

Purchases of electronic goods are deemed legitimate and under warranty by manufacturers only if the customer can show a receipt as proof of purchase. Vendors at SP Road subsequently provide receipts only when the goods have company warranties or if the customer explicitly demands them. Goods are usually offered at a lower price in the absence of a receipt. The service centers offer no receipts because most of their services offered are informal and on goods that are usually outside of company warranty.

Crucially, transactions between the vendors and wholesale distributors also happen without any formal contracts. Here, it is important to understand the strong community networks within the market - the majority of vendors belong to the Marwari community, a successful trading and entrepreneurial community (Lamb, 1955) with strong community bonds that dominate trade in this part of the city (among other parts of India). The strong social bonds allow economic relationships to function solely on the basis of trust rather than formal contracts. Thus, a vendor can make a real-time request for a component from a distributor via the intercom phone, and complete the purchase with the customer without having to formally purchase it from the distributor – with the books balanced informally at a later time.

These social bonds are also visible in vendors outsourcing technical work to service centers based primarily on personal connections and who they can trust. During interviews, all vendors refused to disclose the service centers that they outsource their technical work. The service centers are where all informal technical work is done, some of it illegal, for example, the installation of pirated software. In interviews and customer interactions, the vendors stressed that while they could get pirated software installed, it is not them but someone else who would do it. Subsequently, the service centers – who were a phone call away on the intercom, but hidden to outsiders – were reached out to install the pirated software.

As previously mentioned, there are sometimes attempts at disrupting illegal activities through official raids – either by sales tax officials or law enforcement agencies. The larger shops on the main road are of course more susceptible to these raids due to their visibility. To deal with the raids, these shops often bribe local area policemen and leverage insider contacts who can warn them in advance, information that is subsequently conveyed to other shops also via the intercom system.

4.6.1 Intra-community bonds and the Intercom

“The new people who come here, how do they start (a shop)? They have money with them. They hire people who already know this place, SP Road, and business.” – Service Center 1

Besides providing a relatively secure communication line that is completely controlled by the market association and is geographically constrained within SP Road, the intercom also has a deep symbolic value. By default, an actor at SP Road is invisible to the rest. The ritual of getting an intercom line and conveying the number to others in the market is an integral part of getting to know SP Road, the community, and their informal business practices. As seen in the above quote, businessmen who are new to SP Road hire those who have an intimate knowledge of the social networks and practices at SP Road. Leveraging intra-community bonds are crucial in this market and the telephone intercom system is ultimately a technical manifestation of these bonds.

Businesses at SP Road follow an apprenticeship model of training, where new workers – many of them fresh migrants from the village – learn on the job as they work with older, more experienced workers from their own community (and of often from the same village). Some of the more experienced actors have been working at SP Road for many decades, while most of the younger males who the researcher interviewed had never used a computer before starting work at the market. The traditional landline telephone is subsequently a

communication tool that all actors at the market can use with equal ease irrespective of age or technical aptitude.

“We’re all interdependent on each other here. (Pointing to chai-walla (or tea-seller)). Even the chai-walla is dependent on us. If customer comes (to us), he gets business, otherwise nothing. This one has 2 to 3 employees who work for him. So this interdependence means that if one person suffers, everyone suffers down the chain.” – Service Center 1

The roles of economic actors are clearly defined at SP Road – with wholesale dealers, the vendors, and the service centers occupying different spaces in both the physical market and the business ecosystem. Further, each technology good – for example. mobile phones, personal computers, or electrical appliances among others – has its own independent ecosystem that, for the most part, does not intersect with other ecosystems. The intercom service is however used by all actors irrespective of what goods or services they sell - the only criteria being that they are physically located at the SP Road market.

While there is vertical interdependence in the market, there is also intense horizontal competition at SP Road that plays an important role in driving prices down. However, despite the competition, vendors were observed helping each other out on numerous occasions – from helping balance account books to getting information about new products. This was true even in the service centers where they exchanged technical information and equipment freely with each other. Social relationships are important at SP Road and it allows for adversarial collaboration where the market is informally regulated by the intra-community bonds.

These intra-community bonds are an important reason why the intercom system has been maintained by the market without any external assistance. As mentioned, social regulation is the primary means of regulating the informal side of the market – consequently, local disputes are handled by the community and the association (Bangalore Electronic Dealers Association) they have formed rather than law enforcement agencies.

The intercom service directly relates to informality by being both the underlying technical infrastructure that facilitates and a result of the informal institutions that help regulate and shape business activities at SP Road. It helps in connecting the formal side of SP Road (ex. shops on the main road that appear legitimate under the regulatory gaze of the State) to the informal side (ex. informal contracts of goods and services that exist without paper trails). In the process, it anonymously connects the entire community and helps in partitioning it through the sharing of intercom numbers.

4.7 Discussion

The agglomeration of vendors, wholesale distributors, and service centers dealing with a variety of technology goods create a rich and complex market ecosystem at SP Road. Here, the vertical interdependencies are a result of the division of labor that manifests itself spatially and is concurrently distributed between the formal and informal. The social and technical infrastructure at the market plays an important role in allowing this interplay between the formal and informal to exist. However, it is the informal business practices, sometimes bordering on the illegal, that have allowed SP Road to remain competitive against formal markets in the city while also revolutionizing access of low and middle-income populations to the flows of economic and technological modernity. Through providing goods at costs lower than anywhere else in the city along with creating an alternative economy of refurbished, out-of-warranty, and ‘compatible’ technologies they substantially expand the reach of the technology goods market.

Much of the markets in the global South are invisible as local actors find ways to avoid the panoptic gaze of a Weberian state that seeks to regulate and order. That these invisible spaces might be overlooked sites of local innovation has been studied in recent times by CSCW and HCI researchers ([Jackson et al., 2012](#)). The chapter extends this to also look at the underlying technical infrastructure that facilitates this invisibility while also selectively

making it legible to those within the informal business networks.

4.7.1 Invisibility and Technical Infrastructure

Researchers have argued about the role that communication systems can play in disembedding invisible work and hidden actors (Star and Strauss, 1999). Here, the chapter stresses that it is not always beneficial for invisible work to be made visible or explicit. This idea is certainly not new to collaborative work – previous research (Bishop, 1999) has pointed out the tensions that accompany the disruption of informal and invisible communication. Centeno and Portes (2006) discuss how the most effective tool of informal entrepreneurs is not to take on the state but instead withdraw information from it. In the case of local markets in the Global South that thrive on their ability to avoid and find informal workarounds around formal institutions, making themselves invisible from the regulatory gaze allows them to exist and function unmonitored (and untaxed) in the interstices of the formal economy. These workarounds, often bordering on the illegal, encode rich local knowledge about the market and its economic, social, and cultural practices. As mentioned before, in the absence of formal regulations such as the law, their practices are instead regulated by informal regulations that are a result of economic actors being embedded in stable closely-knit networks of communities.

At SP Road, the technical infrastructure constituting the landline telephone intercom – a simple easy-to-maintain low-cost secured communication system – underlies the formation, growth, and continuation of these informal business networks along with facilitating informal business activities. Unlike mobile phones – which have replaced landlines as the primary mode of communication – the intercom system is geographically constrained, and solely built and maintained to support business transactions in the market. Importantly, it flattens out physical space, in effect, transforming the complex labyrinth of roads, alleys, and building complexes into 4-digit telephone numbers. With no telephone directories, informal actors can choose who they wish to be visible to through personally introducing

themselves while the default condition is being invisible. This is an important function of the intercom system as the act of becoming visible allows an actor the opportunity to officially introduce themselves and the services they offer to the specific technology goods vertical within the business community. While this introduction could be done through mobile phone numbers too, the intercom system provides an extra layer of privacy by making the phones invisible to the outside world - only those who physically have a shop at SP Road can call the number. There are also no physical traces such as call logs or records. Lastly, the short phone numbers allow them to easily remembered.

4.7.2 Local Technology Use, Informality, and Cooperation

The successful use of the telephone intercom as the default primary communication system at SP Road for more than 3 decades show how communities localize technology and create robust systems that facilitate collaboration in local markets. Further, the continued use of the traditional landline telephone over the more ubiquitous and high-tech mobile phone indicates that there are affordances offered by this technology that could inform the design of cooperative systems.

A key affordance is the relative simplicity of a landline intercom system – both the landline instrument and the technical backend. The landline instrument is limited in functionality and this helps formalize its role as solely a business tool. While actors used mobile phones for other purposes such as playing games, watching movies, listening to music or making conversation, the landline phone was limited to only business communication. In a community that is wary of outsiders, the intercom system is a community-driven indigenous communication system that leverages existing public telecommunication infrastructure to create a private channel that facilitates adversarial collaboration – its simplicity allowing its continual maintenance solely through the efforts of the community.

There is much to learn from informal organizational structures that exist in the Global South, especially how local merchants create order and collaborate without having to re-

sort into formal institutions. Actors at SP Road join the communication network solely due to their need to be part of the community. From a collaborative systems context, this study shows how communities adapt technologies in ways that informally facilitate co-operation. Specifically, it opens the possibilities of understanding if the affordances that low-tech technologies offer can be leveraged to create communication systems that help local communities collaborate and self-organize around their everyday practices.

This is especially important if we shift our gaze to informal communities that span the Global South who are not only resource-constrained but also functioning in unique political, social and physical environments. In such contexts, studying the complex ecosystem of existing communication devices and specifically studying how local communities are using them can inform the design of collaborative systems that can better support existing social and economic practices.

4.7.3 Technology Appropriation and Control

Globalization has led to the diffusion of ICTs around the world. Local actors have not just adopted these technologies, but also appropriated and reconfigured them – transitioning from simply embedding them in existing social and economic practices to personalizing these technologies and creating new practices around them. These processes of appropriation have also been accompanied by efforts by users aimed at gaining greater control of the technologies – shifting the locus of control from those who provide to those who use. In the case of SP Road, the intercom system, while leased from the state, has been re-purposed as a business tool that the community controls, is proud of, and is used to keep their economic activities discreet.

Tensions between the formal and informal often manifest themselves as negotiations and contestations of power. Many of the business practices at SP Road are thus shaped around efforts at self-provision - the community finding ways to remain competitive against formal retail markets through leveraging social capital effectively. The creation and sub-

sequent maintenance of the intercom system are the results of such a collective social goal where local actors self-organize and exert control over the market infrastructure.

4.7.4 Implications

The future of HCI and ICTD research in the Global South is contingent on our ability to understand local needs and ways of technology appropriation. However, there is a definite lack of systematic historical data about the informal spaces that dot the social and economic landscape of the Global South. Invisible from formal indicators by their very nature, studying them would require qualitative research that can shine a light on the “thick descriptions” of everyday practices.

The current study shows evidence of a single local reconfiguration of an ICT system to meet the unique requirements of this specific business community at SP Road, Bangalore. These will differ in other informal markets with their own unique sets of environmental constraints, cultures, and everyday practices. However, the case presented in this chapter does highlight how the success of informal economic practices is dependent on the ability of actors to control their visibility – both from the state and other actors.

The design of technical systems often overlooks the necessity of obfuscation in everyday practices. [Suchman \(2016\)](#) argues that there are trade-offs in making work visible – for example, while visibility can increase accountability and legitimize work, it can also create new opportunities for surveillance and control. Further, for work that is otherwise contained in naturally-occurring everyday practices – historical, and contextual – the act of making them more explicit can increase transaction costs. For example, the just-in-time nature of supplier-retailer relationships at SP Road depends on local reputation and built up social capital that formal contracts cannot replicate with equal efficiency.

Thus, when studying ecosystems, researchers need to be aware of the constellation of visible and invisible practices – many intertwined with each other. This chapter emphasizes [Star and Strauss \(1999\)](#)’s observation that if systems do not take into consideration the

relationships between visible and invisible work, the already marginalized are the ones who inevitably suffer. While efficiency and accountability are important criteria in assessing if certain practices should be made visible (or conversely made invisible), it is important to consider questions of equity and power relationships. For example, would giving an actor greater control over their visibility help empower them or would it reinforce practices that are socially undesirable. This is particularly important when working with informal spaces, where the lines between the legal and illegal often blur. Designed systems need to be particularly careful that they do not restrict the innovation that flows in these spaces through disrupting existing practices by either attempting to make work more visible/invisible or withdrawing the agency of actors to switch their visibility.

In line with [Dourish \(2006a\)](#), I also want to reinforce the notion of local actors and communities as designers, no longer looking at them as passive users of existing technologies but instead as design actors that are able to reconfigure old and new technologies to meet their unique needs. Informal public spaces have always been contentious – often looked upon as threats to existing order, and as complex sites of negotiation and conflict where the informal finds ways to resist the formal. From an HCI perspective, these sites and their ability to create their own informal design solutions allow us to question the role and place of ‘the designer’ and the inherent tensions that might accompany any design interventions that seeks to introduce formalized systems to these self-regulated informal spaces.

4.8 Conclusion

Over the last few decades, local informal networks of economic and social practices across the Global South are increasingly intersecting processes of globalization to create new markets that play an important role in broadening access to goods of technological (and often cultural) modernity. The strength of the informal has always been its ability to navigate local social, economic and physical spaces. Identifying, analyzing and supporting collab-

oration in informal settings thus provide us with a practical understanding of how local actors negotiate these informal spaces together as a community. Further, studying how these communities are leveraging new and existing technologies to self-organize and collaborate - while at the same time being invisible to actively avoid formal regulations, shows how the design of collaborative systems can organically unfold in these informal spaces. It also offers important lessons on the ability of actors, driven by local needs and community structures, to reconfigure technologies and create locally appropriate self-governing collaborative platforms.

CHAPTER 5

Market Practices and Consumption

(Adapted from: Chandra, P., Ahmed, S. I., and Pal, J. (2017). Market practices and the bazaar: Technology consumption in ICT markets in the global south. *In Proceedings of the 2017 CHI conference on Human Factors in Computing Systems*, pages 4741–4752. ACM.)

This chapter is an edited version of the above paper. The original paper used the method of controlled comparison to compare 2 ethnographic site - SP Road in Bangalore, India and Gulistan Underground Market in Dhaka, Bangladesh. For the thesis, I have retained observations and findings that relate to only SP Road.

5.1 Introduction

This chapter examines the ways in which technology consumption in informal ICT marketplaces is a consequence of interweaving socio-technical systems, and how the stability of certain practices helps sustain these marketplaces in the face of rising challenges from the corporatized sales ecosystem. To do so it uses practice theory, a strand of cultural theory that offers a conceptual framework that re-positions notions of the individual and social. This chapter looks at practices as the primary unit of analysis, with individuals and technologies acting as carriers of the practice - subsequently it extends socio-technical research to analyze how the consumption of technology unfolds within existing practices in these informal marketplaces.

I will outline the practices that help leverage social links and materiality to create a market environment in which consumers and producers get around local problems such as information noise through negotiations constructed upon situated knowledge. Subsequently, I argue that the social and economic practices that evolve in these marketplaces are an integral part of the cultural life of communities, and foster relatively stable predispositions that also dictate the consumption of new technology goods and services.

5.2 Background

As previously outlined, the consumption of goods necessarily happens within practices (Warde, 2005), with the multiplicity of (often intersecting) practices accounting for the diversity in consumption behaviors. Changes in consumption behavior correspond to the development of new practices. However, new practices are created only through new components diffusing into existing ‘homegrown’ practices or through reconfigurations of existing components from exogenous shocks. Extending this to technology consumption - the contemplation, adoption, and use of technology products and services are guided by existing everyday practices. The inertia of these practices (i.e. their propensity to resist change) and their ability to evolve dictate the consumption behavior of individuals over time as well as within different socio-technical contexts.

5.2.1 Practice Theory and HCI

Focusing on shared everyday practices allow us to assess technology artifacts in relation to the sites of their performance and use (Suchman et al., 1999), thus moving us away from rational models of homo economicus. The lens of practice theory shifts the focus from the individual to the regular recurring and adaptive routines that they are engaged in, thus allowing us to assess how everyday actions shape social and economic life. It has found acceptance in organizational studies as a means to examine how organizational strategies

(Jarzabkowski, 2005) and knowledge (Orlikowski, 2002) are dynamically (re)constituted through locally situated practices.

Practice-oriented approaches in HCI shift the focus beyond the individual to the co-evolving relationships between human and non-human actors. HCI researchers have subsequently started to look at practice theory as a means of moving away from the ‘interaction’ paradigm focused on the individual and ahistorical HCI situations (Kuutti and Bannon, 2014). Practice theory has particularly been useful in the analysis of everyday practices such as domestic consumption (Gram-Hanssen, 2010; Spaargaren, 2000) and designing for sustainable HCI (Pierce et al., 2011). Designers have subsequently highlighted its effectiveness in the design of tools that attempt to influence consumption behaviors embedded in multiple practices and local contexts, such as energy conservation (Strengers, 2011) and food waste (Ganglbauer et al., 2013). Practice theory has also offered a valuable lens to look at materiality and its intersections with existing social and cultural practices, i.e. how material objects and space shape everyday life (Giaccardi and Karana, 2015). The inherent difficulty in identifying practices has led to the creation of frameworks that enable designers to identify and map practices in everyday life and subsequently design interventions built around these routines (Entwistle et al., 2015; Pink et al., 2013).

5.2.2 Consumption and marketplaces

The acts of contemplating, purchasing, and maintaining a technology good play an important part in the consumption of a product. This chapter thus focuses on informal ICT marketplaces that cater to low- and middle-income consumers in South Asia. These marketplaces are what can be termed “consumption junctions” (Cowan, 1987), i.e. where consumers are introduced to technologies, interact with them, and make purchase decisions. Further, they are the primary sites where these technology goods are maintained and repaired. This chapter analyzes existing market practices at SP Road with the understanding that consumption behaviors are embedded in these practices.

Looking beyond economic transactions, the materiality and sociality of marketplaces around the world have been studied extensively by cultural anthropologists (Cook, 2008). These studies – ethnographic and interpretive in nature – paint a rich picture of the everyday practices at public sites of consumption such as sidewalk sales (Duneier and Carter, 1999), flea-markets (Sherry Jr, 1990), and garage sales (Herrmann, 2003). These studies show how marketplaces are socially embedded along with highlighting the experiential and extra-economic dimensions of shopping and consumption.

The nature of market practices found in these marketplaces are a direct consequence of the local contexts in which goods and services are sold. Economic anthropologists have argued that public marketplaces are often close approximations to perfect competition, with atomistic vendors selling homogeneous goods and competing on price, relatively unhindered by state regulations. However, Plattner (Plattner, 1982), in his analysis of a produce marketplace, shows that decisions at a marketplace are shaped as much by role of custom and habit as market information. Further, vendors do not seek to maximize profits, instead choosing to carve and maintain their economic and social position in the marketplace. Further, sociologists have argued that price setting in marketplaces can be looked at as an ongoing and social activity (Prus, 1985), rather than simply being the economic consequence of supply and demand. Other research has shown that when working limited resources, vendors build personal relationships to help deal with future uncertainties and sustain their business. For example, in my research as well as other works Pal et al. (2018), in the face of economic shocks such as the demonetization initiative, vendors across India leveraged their informal networks to cushion the impact of this economic shock.

In marketplaces around the world, both vendors and buyers eschew short-term utility gains for longevity and social benefits. The difference between personalized long-run reciprocal relationships and impersonal short-term deals in marketplaces has been attributed to the quality of available information. Geertz (1978) in his ethnographic work of the bazaars in Sefrou, Morocco, stressed that a key characteristic that differentiates public marketplaces

from formal alternatives was that information at the marketplaces was uncertain and scarce. Market practices consequently revolved around dealing with information problems. This is true even when the goods sold are non-standardized (Fanselow, 1990), as is often the case in many marketplaces. In this scenario, price mechanisms can no longer be used to gauge the quality of products, and market practices are a direct result of actors getting around this uncertainty in quality.

In information-poor socio-economic environments, often a result of inadequate information infrastructures, there is greater risk and uncertainty in any exchange, and consequently there is a greater need to ‘experience’ the goods and build relationships (Plattner, 1982). Even when relationships are not being built, social behavior is used to gather greater information. Such an approach to studying marketplaces moves away from exoticizing market behaviors but instead finds their roots in specific environmental constraints. Deka (2017) studying technology goods marketplaces in New Delhi, India argues that the economic activities are entangled in routinized everyday practices that are structured to meet the immediate needs of actors, with the social component being an integral part.

The subsequent emergence of market practices and relationships is centered on the search for information, with institutional structures in public marketplaces either facilitating or hindering them. For example, two search practices that Geertz (1978) identifies are clientelization and bargaining – both creating communication channels that allow actors to reduce uncertainty in their transactions. Clientelization refers to the continued adversarial yet reciprocal and symmetrical relationships between consumers and sellers that are a result of repeated interactions and accumulated social capital, while bargaining allows an in-depth exploration of a transaction by both actors. Other studies of bargaining in marketplaces discuss how it leads to the creation of lasting relationships in marketplaces (Khuri, 1968). These shared practices reduce the load of decision-making for buyers and steer consumption by playing a crucial role in *how* consumers across the Global South interact with goods and services.

5.3 Market Practices and Technology Consumption

The social and economic life at these marketplaces manifests as a fabric of entangled practices, making the task of parsing individual practices a significant challenge. In this thesis I identified practices through focusing on three components (see Shove and Pantzar (Shove and Pantzar, 2005): 1) images, which are the meanings that sellers and vendors ascribe to the various activities at the marketplaces; 2) stuff, which represents the goods and services sold at this market; and 3) skills, which are both the know-how required to transact at the marketplaces as well as observed activities. Through analyzing the dynamic performative linkages among these components, I identify some of the practices that are integral to these marketplaces. Consumption, which unfolds within these practices, is a direct outcome of the interaction between these components.

5.3.1 Practices of Searching

SP Road is a crowded labyrinth of roads with a clear visible transition from formal to informal as one goes further from the main road with respect to goods and services. For example, deeper inside the shops no longer carry signs of branded logos, there are more service centers and shops sell second-hand electronic goods. The customers that the researcher accompanied often struggled to retrace their steps to find previously visited service centers that were away from the main road. Touts could be seen patrolling the mouth of the main road, attempting to guide new customers to the shops that were away from the main road. The touts were usually junior workers at the service center, apprentices still under training tasked with getting traffic into the shops. At peak times, usually in the later afternoons evenings, around 10 - 15 such touts could be observed patrolling the main road. For example, if the tout noticed someone with a laptop bag, he would follow the (potential) customer and ask, “*Bhaiya* (Brother), laptop repair?”. These overtures would often be ignored by experienced customers who repeatedly reassured the touts that “they knew where they were

going.” If the customer did take the tout up on the offer, he would then be walked to the service center by the tout and introduced to the repairers there. However, new customers look for repair were also observed refusing these offers to avoid looking like they were new at the marketplace: “If they know you’re new here, they might ask you for more money - sometimes even cheat you” Instead, they walked around, gauging shops through several heuristics - number of customers at a shop, the location of the shops, general demeanor of the repairers, and prices.

Both vendors and experienced customers reiterated that new customers need to be careful at the market, especially when dealing with shops away from the main road, to ensure that they don’t get fleeced — either through overcharging or switching/stealing components from their electronic devices. New customers finding their way around the market often choose shops through recommendations from their extended social networks or through extensive price-shopping, where they explore multiple shops trying to find the best deal. Search costs directly correlate to walking distance and play an important role, with the consequence that the shops on the main road tend to get the majority of the business.

Interviewer(I): *Why are the service centers usually so inside?*

Service Center 3(S3): *The rent is much lesser here. We don’t do sales, so we have no need to be outside. The ones who know us come off here.*

I: *But do enough people know of your shop?*

S3: *We have some regular customers, for others they know they come inside and look.*

I: *But why do they come all the way inside?*

S3: *Because we charge much lesser, and we do good work. (Customer to his left nods in agreement). No one on the main road will do advanced repairing, only handle simple ones. We do the difficult work.*

The inner roads are where most of the advanced technical work also happens, for example, the repair of motherboards. Further, they provided other services that were outside the gamut of formal service centers such as the installation of pirated software and jail-breaking of mobile phones. Finding a good deal or service involves trade-offs with respect to both search costs and risks - the relative anonymity of these shops meant that there was no recourse if something went wrong. The more complex the task, the higher the search costs and the potential risks. Finding a lower price also often directly corresponded to a more risky transactions. There was no optimal deal and depending on the nature of purchase, customers were observed spending considerable time - often many hours - trying to reduce purchase uncertainty in terms of price and service. Prior research has shown that consumers are often more sensitive to price aspects to costs than to temporal aspects, and observations at SP Road confirmed this for the customer who did choose to

However, the willingness to search was more than just about finding the best deal. While the practice of searching transformed the marketplaces into a busy hive of activity as customers compared deals, it also provided a rough proxy to sellers about specific characteristics of a customer, for example, how likely was a customer willing to accept a given offer or how knowledgeable a customer was about the value of a good or service. It subsequently shaped interactions at the marketplace. On some occasions, I observed customers pretending that another shop had lower prices without actually engaging with them. Vendors, in response, often called out what they thought was a bluff: "Then go buy there - why are you coming to me?" or engaged in subsequent acts of negotiations or bargaining.

In contrast to new customers, experienced customers have no difficulty in finding their way around this urban market. Through leveraging their prior experiences in the market and their existing connections, they are able to find good services at reasonable prices without facing any substantial risks. As we see in the next subsection, these search practices are intrinsically linked with clientelization practices because customers can use existing social capital to better navigate the marketplaces. These observations demonstrate how search is

practiced through local knowledge, personal experience, and social networks.

5.3.2 Practices of Clientelization

Repeated interactions between sellers and consumers, also known as clientelization, significantly reduce search costs for regular customers. The categorization of “regular customer” or “old customer” plays an important role in the market and differentiates those who have accumulated social capital from new customers. These customers are an important source of income for the sellers and were observed to receive extra discounts and more personalized service. Reputation at SP Road is primarily built through word-of-mouth and customer service, with none of the sellers publicly advertising. The limit of their advertising is a board outside the shop with their name, contact details and services offered.

Interviewer: Given that you are so away from the main road, how do you get enough customers?

Service Center 2: I sometimes have someone who looks out for people outside and gets them here, but those who know me come to me directly. Customer relationship is important. If they trust me and I do good work, they will come back.

With customer relationships highly valued at SP Road, sellers were observed going out of their way to make a customer feel comfortable — especially if the customer was someone they believed would be a long-term customer. The sellers usually knew multiple languages — switching seamlessly between Marwari, Hindi, English, and Kannada depending on the ethnicity of the customer. Lengthy transactions were accompanied by the seller offering the customer a beverage such as tea, which was delivered by a tea-seller on call.

Clientelization plays an important role in building familiarity between consumer and seller, and the buying and repair of ICT goods are deeply embedded in this social prac-

tice. For low- and middle-income customers who are making a major investment in an ICT good, this practice allows them to buy from a seller they trust and get better prices and more personalized customer service with respect to future maintenance and repair. Thus, for regulars at SP Road, the urban chaos that overwhelms new customers is transformed to a much more navigable social space partitioned between the reputable trustworthy sellers and the others. For sellers, it offers the promise of future business from the regular customers as well as new customers to whom they are recommended. With many of the sellers offering informal services that sometimes veer into illegal spaces (such as installing pirated software), it also allows for a more efficient vetting of customers. This is crucial because they have to be wary of police raids and sting operations.

The importance of clientelization to sellers is apparent in the efforts they make to maintain relationships with customers:

“We have a saying - customers are like god (points to a sign in his shop). So every time we get a customer, it’s our duty to treat them with respect. Only then will they trust us and come back. (But what if they’re just a one-time customer?) Then, they might tell others about us. But even if they don’t, we have to do our work well. That’s all we need to feel content.” - Vendor

Clientelization at the SP Road marketplace is thus a reciprocal (and often symmetrical) relationship that helps both customers and sellers reduce information noise in the marketplaces: the sellers get repeat customers while the customers get trustworthy service. The practice helps create a more socially navigable space that is a direct result of local reputation and trust gained through repeated interactions and extended social networks.

5.3.3 Practices of Bargaining

Bargaining or haggling over price is a familiar sight in bazaars across South Asia. Unlike formal retail stores, such as branded computer showrooms, where the prices of ICT goods

are publicly advertised and fixed, extended haggling between customers and sellers is the norm at SP Road. There, the practice of bargaining transforms information-seeking about price and quality into a social activity that embodies materiality, technical complexity, and existing social relationships between the negotiators.

The materiality of the ICT goods and services is integral to the practice of bargaining. This is especially true for services such as repairs, where the visible material complexity and the engagement of the seller play an important role in a consumer's valuations. Sellers spend considerable time explaining the amount of technical work that goes into a certain task and its complexity to convince the customer that the price is fair. Seller valuation was also a function of whether they perceive a customer to be a potential regular or someone who would return.

Invoking principles of fairness is common at the market. Sellers were often observed attempting to convince customers that their profit margins were low and that the price they were offering for an ICT good was fair, if not the cheapest. This was especially true for branded ICT goods that could be bought online for much cheaper prices. Customers, on the other hand, spend considerable time questioning the complexity of a service task based on their observations. The intense price competition between sellers and the ability to haggle prices in effect empowers customers, if only momentarily. Bargaining is an integral part of shopping at SP Road and it allows for customers to weed the trustworthy sellers from the untrustworthy ones. Sellers are able to use it to distinguish the customers with whom they can practice clientelization. For example, customers purchasing assembled desktop computers were observed going from shop to shop, inquiring the prices and having extended conversations with sellers, who filled out quotation sheets with the different components and their costs. Advice was dispensed by the vendors, and every component was debated, with discounts given at every step. Here the process of bargaining over price became a cooperative activity as sellers worked with the consumers to give them a desktop configuration that was most relevant to them with respect to their needs and budget.

The following observation from SP Road shows one of the many ways customers and vendors collaboratively decide on the price of a service.

Customer asks if he will do it in front of him – repairer nods yes. Repairer (R): “Total will be 1300.” Customer (C): “How much discount on this?” R: “Best price. Only because you are old customer. C: ”The fan, how much approximately” R: ”About 950. We’ll put a new one” C: - ”No. No. I’m ok with old. I don’t want new, put old.” R: “Second will be something like 200 less.” C: “Only 200 less. That’s too little. Check it again. Give a better price...”

This conversation continued for about 10 minutes, where the customer went through every individual component and service to establish that he was getting the best price. At one stage, they argued about whether running a cleaning brush over the motherboard was worth Rs. 200 or not. Both buyer and seller were eventually satisfied by the exchange.

The researcher observed haggling sessions that went on for more than 30 minutes, as every detail was assessed and discounts argued over. However, not all prices are regulated through bargaining; often the lack of elasticity to changes in supply and demand lead to fixed prices, and the vendors are clear and upfront about this. This was most apparent in goods that are sold at discounted prices by electronic retail stores such as computer peripherals, and vendors at the market lacked the profit margins to bargain over them.

The practice of bargaining is thus a cooperative adversarial activity which gives the buyers a semblance of control while also building long-term relationships if the transaction went through.

5.3.4 Practices of Testing

A middle-aged South-Indian customer, speaking in Kannada, asks for a 17” monitor. M2 points at an HP monitor. The customer wants him to open the box so he can check it. While

taking it out of the box, M2 guarantees the customers that in his 10 years of experience, he has never seen any problems with a monitor. The customer doesn't respond to M2 and patiently waits as M2 takes the monitor completely out of the box, removes the thermocol packaging and shows it. The customer holds the monitor and turns it around, examining every side of it. While he doesn't test it out, he appears to be satisfied by what he sees. He buys it for around (Rs.) 6000, in cash. Leaves with a receipt. – Researcher's notes (Bangalore)

As with bargaining practices, the material nature of the good plays an important role in the valuation of a good or service. The researchers observed customers examining electronic goods with a need to see them up close and in some instances physically touch them to gauge their quality. Tech-savvy customers would go further and test the components that they were buying or make the seller test it in front of them. The sellers don't discourage these informal practices of testing and it differentiates them from the branded retail stores, where demo pieces for ICT goods can be tried but the final piece is bought sealed, untouched and untested by the customer.

“I don't like buying it online. There is no guarantee there. I know these people, they're straight with me. I can get my work done without any issue here. Online, I don't trust really. Also, here I can sit and watch as they repair my system in front of me. I like that.” - Customer 2

Customer 2 had given his laptop for repair early in the day and was sitting on a stool in front of the service center for most of the day — it was a weekday and he had taken leave from work just so he could get the laptop repaired. He intended to sit there till the laptop got repaired and was willing to sit there until the evening when he would have to go pick his children up from school. This was a common sight at SP Road — people sitting on stools at the edge of the service center or standing by counters and watching as their electronic goods were repaired. The service centers even encouraged it, partly because it meant that they weren't responsible for the theft or any accusations of damage from the

customers. This is in contrast to formal service centers, where the servicing happens behind closed doors with little transparency. As mentioned previously, watching the repair plays an important role in the valuation of the services and helps establish a common “regime of value” (Appadurai, 2012) where negotiations are based on common observations.

The observations also fed into bargaining and clientelization. Although the negotiation of price would usually be done before the repairer started fixing the phone, often the customer would argue during and after the repair work.

5.4 Discussion

Informal ICT marketplaces have survived and in many cases out-competed formal retail stores for decades. Even with the influx of electronic retail stores in South Asia, these bazaars remain the primary destination for most urban low- and middle-income customers. These marketplaces, as important consumption junctions that introduce customers to new and existing technologies while also actively shaping their preferences, are integral to the process of technology consumption. Parsing and analyzing existing market practices allows us to assess their role in the production and reproduction of social and economic life at these marketplaces. A practice-theoretic approach to understanding ICT bazaars highlights the importance of engaging with everyday market activities to better understand market outcomes such as consumption. This holistic understanding of how and why people consume in certain ways has important consequences with respect to HCI design and postcolonial computing.

The four practices that this chapter outlines — searching, clientelization, bargaining, and testing — are arguably as relevant to digital economies as to physical bazaars, and these practices highlight the mutually constitutive relationships between everyday market activities and market outcomes. These practices are continuously reproduced at these bazaars, the constitutive elements dynamically interacting with one another, creating “cir-

cuits of practice” (Magaudda, 2011) within which the consumption of technology goods unfolds.

These practices are locally situated performances — very contextual, historical, and culture-specific — and are a direct consequence of everyday market activities, which often relate to finding ways around market problems (such as information noise). The stability of these practices is a result of their constituent components integrating themselves in similar configurations during performances. It is also during performances that practices can partially reconfigure, leading to changes over time. Practices are also created when new elements integrate themselves into existing configurations of practice. The path dependence of practices provides important implications for HCI research.

5.4.1 Traditional marketplaces and HCI

While this chapter focus on informal ICT marketplaces in South Asia, the insights can also help in analyzing other sites of public consumption (including those existing in the Global North). New design and technology interventions need to performatively integrate themselves with existing practices to be successful. Consequently, identifying existing practices is important to the process of design. Marketplaces — as a collective socio-economic entity that brings customers, sellers, and goods together into a single physical space — are thus rich sites for the study of consumption. Through holistically analyzing such physical spaces, we can identify existing practices that shape consumption. These can subsequently inform the design and management of new market environments that build upon traditional shopping experiences.

The high-profile entry of online marketplaces looking to disrupt traditional marketplaces across the Global South brings to the fore questions on how these new marketplaces will accommodate customers who are already ingrained in traditional practices. In my study, I often found customers who did not trust online marketplaces for a variety of reasons, ranging from not knowing who they were buying from to their need to physically

examine a good prior to purchase. Thus, clients' comfort with or preferences for certain forms of searching, price arbitration, and product sampling, and their investment into purchase networks are each important elements of participation in online marketplaces as well. This is explored further in Chapter 6. From an instrumental perspective, these are helpful for a more granular understanding of how practices can reconfigure themselves in ways that may enable technology adoption around digital marketplaces. These preferences also highlight facets that clarify how interfaces can be designed so they diffuse into existing practices of users.

5.4.2 Market Practices and Design

The four practices identified in this chapter have intersections with existing HCI research and provide useful insights that can inform design interventions. The practice of searching has been extensively studied in HCI literature, with studies focusing on the broad spectrum of online information-seeking behavior. Relevant to our findings is the idea of social searching (Evans and Chi, 2008; Morris, 2013; Twidale et al., 1997). This can be either explicit, where individuals interact with others at various stages of the search process, or implicit, where recommendations are generated by algorithms that use socially generated datasets. Observations of searching practices at marketplaces such as SP Road highlight the importance of local knowledge and how it is built through repeated interactions with the environment. A crucial component of design for communities would be to leverage local knowledge and relevant social networks to create more contextual search tools.

Further, understanding the role that social capital plays in building local reputation and trust – and subsequently reducing information noise – has important implications for design. The practice of clientelization leverages social capital to facilitate better and more intimate business relationships that are beneficial for all parties involved. While online reputation systems do attempt to create reliable trust systems that reduce seller uncertainty, they often lack the longevity that personal relationships present in informal marketplaces

that are stable and deeply intertwined with other market practices of consumers.

These findings have relevance beyond just marketplaces. For example, the purchase of assistive technologies by people with visual impairments is driven by historical practices where the markets consists of devices aggregated and sold through disability agencies or personal contacts despite the availability of online marketplaces (Pal and Lakshmanan, 2015). These informal markets enable the practice of 1) testing the quality of functions on a device with assistive software, 2) using social networks as a failsafe in case devices have problems, and 3) arbitrating prices.

At SP Road, sellers and customers alike were involved in the practice of clientelization (along with other practices), and consequently, the customer was no longer central to consumption. This is in contrast to user-centered design and other interaction paradigms that build systems around users. In line with practice-theoretic approaches in HCI, I propose a broader approach to design that involves all actors and objects that constitute practices.

Last, I look at materiality, which plays an important role in the practices of bargaining and testing, and helps establish common ground with respect to the valuation of goods and services. Research has shown the role product uncertainty plays in the purchasing decisions of individuals (Dimoka et al., 2012), especially with respect to tangible goods and services, and our study highlights the importance of physical experiences during an exchange on terms familiar to both parties in a transaction. The dominant digital paradigm of removing uncertainty has focused on reviews of goods and sellers through multi-tiered online ratings. However, very little work has focused on what makes individuals comfortable with digital means of verifying product and seller reputation. This chapter highlights marketplaces for material products in what is arguably a transitional exchange ecosystem as digital marketplaces gain share in India; however, there is a range of goods and services where verifying the goods and those involved in the transactions relies on both traditional practices and forms of material reassurance. The findings in this chapter suggest that designers should reconsider what goods and services are experiential and how this classification depends on

the socio-economic characteristics of consumers.

CHAPTER 6

The Domestication of Online Marketplaces

(Adapted from: Chandra, P. and Chen, J. (2019). Taming the Amazon: The Domestication of Online Shopping in Bangalore, India. In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development*, page 9. ACM.)

6.1 Introduction

On May 18, 2018, Walmart announced they were acquiring a 77% controlling stake in Flipkart, one of India's largest e-commerce companies with "an intention to tap into one of the most attractive retail market in the world" with respect to both market size and potential growth rate. Amazon, who had launched their Indian marketplace in 2013, responded by increasing their own capital investment as they prepared to compete with Walmart. While e-commerce in India currently accounts for less than 3% of total retail sales in the country¹, its current trajectory of growth (estimated at 1200% from 2016 to 2026) has led to advertising and marketing campaigns by e-commerce companies aimed at convincing offline shoppers to embrace online marketplaces.

The growth of e-commerce in India, like other digital services, has been attributed to increased smart-phone adoption and internet usage. Recently, e-commerce has also become

¹<https://www.statista.com/topics/2454/e-commerce-in-india/>

associated with a nation-wide push towards a digital economy and, in the process, becoming intertwined with narratives of ICTD and technology-driven modernity (Pal et al., 2018). For example, the 2016 move by the Indian government to demonetize existing currencies and encourage the adoption of digital money was actively supported by all e-commerce companies. Despite the move negatively impacting them in the short-run, most companies were optimistic about the long-run transition of consumers from cash-based payments to prepaid electronic payments.

The predominantly cash-based non-digital economy in India has been one of the many challenges that e-commerce companies have struggled with in their efforts to gain market share. Besides the infrastructural and logistic challenges of operating in a country as vast and diverse as India, entrenched everyday practices constrain the adoption and use of digital technologies and online services as they exist today. Today, the retail scene is at an interesting juncture. Traditional semi-formal marketplaces still form the bulk of retail sales in the country, but while they have thus far been able to hold their own against branded retail stores, the entry of online marketplaces has cut substantially into their profitability. With significant funding from venture capitalists and the benefits associated with economies of scale, e-commerce companies are highly competitive. Furthermore, larger companies are capable of sustaining short-term losses and deferring profitability to strategically convert shoppers permanently to online shopping practices.

Research on technology adoption tends to focus on innovations and success stories - in contrast, narratives of how technologies are resisted tend to be neglected. Studying the adoption of e-commerce during the transitory phase where users are still attempting to make sense of it allows us to look at the infrastructural, institutional, cultural, and socio-technical obstacles that shape technology use and non-use. Further, in a political environment where the digital has often been equated with development and progress, studying this resistance also contributes to existing discourses on ICTD and the digital economy.

This chapter uses the lens of domestication theory to study why and how online shop-

ping is being incorporated into daily lives. To focus our attention on resistance to online shopping, we explicitly consider the spectrum of non-users who continue to shop in traditional marketplaces. Through interviews with shoppers in traditional marketplaces, we seek to understand why non-users persist in their practices and parse the dynamics of how (and when) online shopping successfully integrates - or fails to integrate - with existing shopping practices. We thus look beyond access to technologies and digital literacy, and instead study the institutional, infrastructural, and cultural factors that shape use and non-use of digital technologies.

I use the following refinement of domestication theory to specifically apply the theory to e-commerce:

1. Appropriation: how are users introduced to and use online shopping?
2. Objectification: how does online shopping place itself in a domestic setting and what does it mean to shop online?
3. Incorporation: how does online shopping integrate itself into existing infrastructures and shopping practices?
4. Conversion: how do users talk about online shopping, and how are user perceptions feeding back into the design process?

6.2 Domestication of Online Shopping

6.2.1 Appropriation

In the appropriation phase of domestication, we look at *how* users are introduced to online shopping and *why* they decide to use it.

“(So how did he go about purchasing it?) He just saw ads on Amazon. It is being sold at a lower price. Even in Google, everywhere you see ads. Good

promotion. Amazon was selling it at the least price. He saw and that's why he purchased." - RA3, female

The above quote shows the role of advertisements in influencing the purchasing decisions of customers online. The entry of e-commerce in India has been accompanied by large-scale advertising and marketing campaigns - both offline and online. Firms have invested heavily in print, television, and radio as well as out-of-home (OOH) advertising (Madison, 2018), while also being the highest spending sector with respect to digital advertising expenses (IAMA and IMRB, 2017). An important strategy utilized by firms to increase their sales volumes has been offering deep discounts to customers. Largely funded by venture capitalists and private equity investors, it has allowed online marketplaces to price their goods without concerns about profitability which, in turn, has led to vendors from traditional marketplaces struggling to compete. Marketplaces such as SP Road have faced the brunt of this, with foot traffic dropping and many vendors having to close their shops, converting from retail to wholesale, or deciding to move their sales online. In response to these discounts, Government of India's commerce ministry passed a regulation in 2016 that restricted online marketplaces from directly funding discounts.² This has however been circumvented with e-commerce firms instead subsidizing online sellers. We thus find e-commerce firms heavily competing to offer the lowest prices in an attempt to transition price-conscious customers from offline to online. Further, credit card and digital wallet companies have tied up with e-commerce companies and provide further discounts in an attempt to boost digital transactions. As we can see in the following quote, these discounts play an important role in driving the decision to shop online:

"(Do you buy items online?) Yes, I do. (Like what?) Mostly branded things. Any electronics which is branded and standard, I buy it online - especially if there's a lot of discounts. Right now, there are a lot of discounts coming out."

²<https://rbidocs.rbi.org.in/rdocs/notification/PDFs/NFEMA387FF7CAF22BF1141438FF69A28CEC94FB9.PDF>

- RP1, male

Interviewees mentioned that they were introduced to online shopping through either the recommendation of friends and family or through advertisements - from billboards around the city to full-page spreads in newspapers. These advertisements bridged the offline world with these new online spaces, helping make them as ubiquitous and familiar as the traditional marketplaces that they were advertised beside. All interviewees were thus aware of the existence of online marketplaces irrespective of whether they used them or not. The discounts offered were appreciated by customers and it played an important role in getting them to even consider shopping online. Relevant to shoppers moving online, e-commerce firms have also been offering online-only deals on goods such as mobile phones which are otherwise unavailable in offline marketplaces. Some of these deals involved tie-ups with technology companies - such as Amazon.in being the sole vendor selling certain new models of mobile phones, and this has also convinced many first-time users to purchase electronics online.

Here we see that the strategies of e-commerce companies primarily revolve around the construct of a 'price-sensitive' consumer looking to purchase new models of ICT devices. While this might indeed be true for a certain section of population, it is simplistic, unidimensional, and does not take into account other socio-cultural factors or alternate consumer typologies.

6.2.2 Objectification

In the objectification phase of domestication, we look at how online shopping situates itself in a domestic setting and what it means to shop online. The interviews found that online shopping was not equally used by the people within a household - the dynamics of shopping were instead determined by multiple factors, including ownership of digital devices, use of electronic money, and household relationships.

“(Have you tried online?) I tell him - if he’s shopping, he buys. (Do you usually use the Internet?) Yes. Yes. I watch youtube and all on it. Facebooking. But shopping online, he has the cards, so he buys. (But you don’t always need cards to shop, right? What about cash on delivery?) What? (It’s possible to pay by cash when you buy online) Yes. I know. That also he does.” - RP22, female

“(Do you compare prices on different sites?) Yes, we do that. My husband does that. (So in case Flipkart is selling the same item at a cheaper price, would you buy it from there?) My husband decides all this. If he thinks it would be good at Flipkart, he might order.” - RA20, female

As evidenced in the above quotes, in some cases, women deferred to their husbands (and in one interview, an elder brother) when shopping online because the men were perceived to be the primary decision-makers when it came to technology-related decisions. This was visible even when the women owned and used ICTs such as mobile phones and were familiar with the use of digital services. A similar pattern was observed with respect to the older population interviewed, with many stating that they deferred to their offspring in either making decisions with respect to online shopping or executing the final shopping transactions. This was further influenced by who controlled the electronic cards in the household, with credit cards often solely owned and used by husbands or sons.

“I buy from markets. Online, not that much. Online, he handles, markets I handle myself. (Any reason why?) I like going out. All day you’re in the house - going to markets is nice. Today also we went shopping (where?) to Gandhi Bazaar. (what did you buy?) household stuff. Going to markets - it feels good. So many shops and people. You can eat also. Online, a little boring when you compare.” - RP22, female

Besides the gender dynamics at play with respect to online shopping, we also see how shopping experiences were perceived differently depending on whether they were online or offline. Online shopping was termed by some as lacking excitement or ‘boring’ because it lacked social interaction and was seemingly less entertaining. This further supports the notion of shopping being more than just buying goods from sellers, but instead a social and cultural phenomenon (Falk and Campbell, 1997). The act of leaving home to go shopping at a marketplace — a public space — was deemed important, as this was an excuse for participants to get out of the house and socialize with friends, shopkeepers, and family. This was felt even more acutely by interviewees who were housewives or the retired elderly. In contrast, online shopping was largely associated with the purchase of discounted low cost branded goods, the potential convenience of buying products from home, and receiving them at your doorstep without having to leave the house.

“(Any reason you prefer to buy either online or here?) Well I mostly just buy online these days. More convenient. Here I am today because I had the time. Otherwise where do we get the time to come here and buy?” - RO6, male

Offline and online shopping was often contrasted in terms of convenience and getting around time-constraints. Interviewees, who visited the marketplace infrequently, mentioned that “if (they) had time, (they) would choose offline” but that crowded traffic conditions and busy work schedules were often a major hindrance to shopping in physical marketplaces as they were at a distance from home. Besides being just saving time, this behavior corresponds to the accessibility dimensions of convenience (Farquhar and Rowley, 2009). This echoes prior research that shows how the primary drivers for users shopping online are the spatial and temporal flexibilities with respect to accessing these marketplaces (Jiang et al., 2013). The choice of a marketplace — online or offline — was thus shaped by the values of the consumers with respect to their convenience profiles, i.e., what they considered as ‘convenience’. For example, some interviewees who preferred offline

marketplaces found the hassle of having someone at home to receive deliveries as an inconvenience.

6.2.3 Incorporation

In the incorporation phase of domestication, we look at how online shopping integrates itself (or fails to integrate itself) with local infrastructures and existing shopping practices.

6.2.3.1 Local infrastructures

Since the 90s, policy initiatives in Bangalore focused on attracting IT companies from around the world have helped create one of the largest ICT clusters in Asia. This has been accompanied by the influx of technology workers into the city, doubling the city's population in less than 20 years. The city now has a middle-class whose changing consumption have become the visual urban embodiment of globalization (Fernandes, 2000). Technology literate with disposable income, the middle-class are an important target audience for companies providing technology-related services such as e-commerce. On the other hand, this growth has strained the city's limited infrastructure and presents an important challenge for locals looking to navigate city life.

“Also, Bangalore has really changed - the traffic situation is so bad that we are forced to stay in one area. Before we could easily travel here quickly and pick something up. Now I think twice because it takes time to come.” - RP11, male

The increase in vehicular traffic and the inability of road infrastructure to cope has led to significant traffic congestion, and shopping online has emerged as a way for people to purchase goods without having to deal with the hassle of navigating this heavy traffic. The convenience offered by online shopping thus appears even more attractive when juxtaposed against inadequate local infrastructure and crowded public spaces. For many users who could buy the same goods online, physical marketplaces were visited only if they were

nearby or “on the way” to other places. The physical city infrastructure is thus one of the contextual variables that shape technology adoption and use.

6.2.3.2 The unbranded economy and repair culture

However, despite the inconvenience, many buyers do travel to physical marketplaces because they offer products and services that are unavailable online. This study suggests that online marketplaces are primarily used to only buy branded goods - unbranded goods are bought (and repaired) exclusively from traditional marketplaces.

“(So what do you usually buy online?) Well, only branded I will buy online. Like expensive branded, because then it doesn’t matter where I buy it from.” - RP8, male

“Yeah. Yeah. Markets like (SP Road), we shop because it’s cheaper for some things. Online, we use for regular branded things. So depends on what we want to buy.” - RP22M, male

The purchase of unbranded or ‘local’ goods is pervasive across the Global South and is largely driven by the high price differentials between branded and unbranded goods. Unbranded goods, sometimes veering into the ‘grey’ economy, are a staple of the informal economy and constitute a significant proportion of low-cost purchases for low and middle-income consumers. However, online marketplaces have not been conducive to the sale of unbranded goods partly due to issues related to copyright, patent, and trademark infringements. Thus, customers purchasing from the unbranded economy have little need to adopt and use online shopping. On the other hand, the standardized nature of most ‘regular’ branded goods commodifies them so that it matters less where they are purchased, thus allowing online marketplaces to compete for these specific goods.

“It’s Indian way, no? Why waste when we can reuse. We use old clothes as mops at home. We repair things instead of use and throw. It’s why we have

so many repair shops here - look around, everywhere people repairing - their phones, their laptops. No one wants to just throw.” - RP11

The practice of purchasing unbranded goods in India is supported by an active culture of repair and maintenance. This repair culture also significantly extends the lives of branded goods by offering cheap out-of-warranty services. The integral role of repair in the purchase and consumption of goods in the Global South has been well-documented in ICTD literature (Ahmed et al., 2015). Repairing extends the process of consumption of goods to not just the assessment and purchase of goods but also their maintenance. Repair services, especially of unbranded goods, are also not offered by online marketplaces, and partially contributes to the persistence of local traditional marketplaces.

6.2.3.3 Assessing Quality

“(What don’t you trust about online?) What they say - the ratings and reviews are just not enough for me. I need to see it myself and get opinions of others. (But aren’t the reviews opinions of others?) But other customers, no? What do they know? (What other opinions do you want?) Of shopkeepers here. They know about what is selling and what is not. That helps us make a decision” - RP12, male

Another important reason for unbranded goods (and often branded goods) not being bought online (for example on online auction sites such as eBay.in) relates to how the quality of goods is assessed. Prior to purchasing a good, buyers go through an extended process of assessing if it is worth buying which includes getting information from their immediate social network or searching online. However, when information about a product is scarce (for example, when it is not a familiar brand), quality is gleaned through assurances provided by sellers. In traditional marketplaces, these assurances are important and a result of historical relationships that have helped build trust in sellers and their expertise.

“(What about reviews and ratings from other customers?) Reviews are from other customers, no? - customer is trying just one piece, na - here they sell multiple pieces so they know more about how many have problems, how many did not. Also I think they share suppliers and know what everyone else is selling, so if something is getting returned, everyone in the market will know.”

- RP8, male

Sellers, as trusted middle-men, play an important role in aggregating information about goods and conveying it back to potential buyers. There is also an element of curation, with sellers playing an important role in deciding what should be stocked and sold based on personal knowledge and observed customer demand. Online marketplaces, in contrast, have a very different set of institutional mechanisms for helping buyers assess goods, chiefly ratings and reviews from other customers. However, for many customers, the lack of these social relationships online was a major hindrance in assessing the quality of information with respect to purchasing decisions.

“(So if the prices online got lower, would you continue shopping here?) For touch and feel, I will come here. Like right now, I’m here to see how the phone is - so I would like to hold it.” - RP24, male

Prior research has also identified the role of material tangibility in helping buyers value goods and services in marketplaces around the world, especially in the Global South (Chandra et al., 2017). Besides social interactions with sellers, customers also have a need to physically touch and examine goods, a feature that virtual spaces do not afford. Most interviewees had made the decision to visit the physical marketplace primarily to experience the goods they wished to purchase. This is part of a deep-rooted culture of ‘testing’ goods first-hand and leveraging social relationships that help buyers navigate purchases in situations where existing information infrastructures are inadequate, either because of socio-economic conditions or the nature of goods (like unbranded or highly experiential

goods). Once a good was assessed, some completed the purchase of goods from the physical marketplace, while others — and this was necessarily with respect to branded goods — leveraged offered discounts and purchased the goods for cheap later from online marketplaces.

Shopping and consumption, as activities, consist of multiple intersecting practices - from the practices that allow buyers to assess the quality of goods to purchasing and maintaining them in the long-run. Here, we see that, only the practices that constitute the actual purchase of a good have incorporated online marketplaces. For those who had transitioned online, it was primarily for branded goods with the decision shaped by steep discounts and traffic conditions.

6.2.4 Conversion

In the conversion phase of domestication, we look at how users and non-users talk about online shopping, and further, how this fits back into the design process.

6.2.4.1 Familiarity and Electronic Payments

“(So which do you prefer - CoD or card?) It depends - if it’s a small amount, I prefer CoD. Big amount I might do it through card. (And why is that?) I don’t like using my card online - I’m not comfortable doing so. Why use it for small amounts?” - RP5, male

While online marketplaces have been undercutting the profits of traditional marketplaces through aggressive pricing, they have faced significant barriers in bringing customers on board who are either digitally illiterate or not bought into using electronic payments. Their strategies reflect this: for example, to combat the lack of comfort and familiarity with electronic payments, most e-commerce companies introduced CoD (cash on delivery)

which, in 2015, represented close to 85% of online purchases in India³. Among the factors contributing to the success of CoD are the low number of credit card users in the country along with the consumer's general lack of trust in digital payments. While the CoD has been inconvenient for sellers due to restricted cash flows, through providing buyers with a more familiar payment alternative, online marketplaces have been able to integrate themselves with the purchasing practices of some buyers.

6.2.4.2 Trusting online marketplaces

In traditional marketplaces, historical social structures allow actors to deal with imperfect information (Stiglitz, 2000) with local contexts shaping solutions to information problems. A major challenge for e-commerce firms is re-establishing these institutions online and at scale, and reducing perceived uncertainty and risk through building trust with the buyers. In the absence of trust, rumors about the perils of online shopping are common as we see in the below quote:

“Well there are phone apps. But there are so many rumours also. That you pay and buy something and nothing will come, or some other item will come, or a brick will come. Recently there was this thing no - someone bought a mobile online and they sent a brass statue of something instead, which costs 100 rupees. So that's why I haven't. I haven't tried online at all. I don't even have an inclination to. Or knowledge to. Or the money to. If I was educated and had pocket full of money, then I can buy online. Branded companies if we go online, no problem. But for some brand if we go online... We won't even know what we will get.” - RO28, male

In response to buyer mistrust, e-commerce companies have attempted to create stable institutions and establish accepted standards of practice. In doing so, they have had to con-

³<http://www.businessinsider.com/cash-on-delivery-remains-the-preferred-method-of-payment-in-india-2016-6>

front existing practices, socio-cultural variables, information scarcity, and infrastructural constraints, along with managing relationships at multiple levels: buyer-seller, competition between sellers, and relationships between market actors and regulatory agencies/the state. They have also spent considerable resources in building their brand, all of which have paid dividends to some extent. As seen in the below quote, most interviewees had little clue who the actual sellers at the online marketplaces were and goods were bought solely with the understanding that the e-commerce companies were the ones guaranteeing their transactions. Thus, we see relationships building between buyers and the online marketplaces and not with individual sellers as is common in traditional marketplaces.

“(do you look at ratings of sellers?) No. I have never done that. (So you don’t really care about the sellers?) Not really. Flipkart is guaranteeing, right? That’s all that matters.” - RP5, male

In addition, e-commerce companies have attempted to reduce the risk and uncertainty involved in transacting online. This has led to policies where sellers carry most of the burden of risk, such as liberal return policies in the event buyers are unsatisfied with their purchases along with relatively responsive customer service. This was backed up in interviews with e-commerce company employees who stressed that the current objective was to make online shopping attractive to buyers through reducing perceived risk and sellers will have to accept this reality if they wish to sell in an online marketplace. This is in sharp contrast to traditional marketplaces, where information asymmetry often gives sellers an advantage over buyers that is only offset by a potential price competition between rival sellers.

6.2.4.3 Experience zones and material tangibility

The journey of moving shopping from offline to online has come a full circle with many online marketplaces now contemplating opening physical stores or “offline experience zones”

so people can experience the goods they wish to buy in-person. The importance of material tangibility in shopping has been the key criticism of online shopping. For example, [Underhill \(2009\)](#) identifies three key things that online shopping does not provide: “touch, trial or any other sensory stimuli”, “immediate gratification”, and “social interaction”. While the need for tangibility can indeed be moderated through branding ([González-Benito et al., 2015](#)), it remains an important factor in shaping the shopping practices for a significant section of population. The decision of e-commerce companies to set up offline locations to experience goods is evidence of how the process of domestication and non-use feeds back into the decisions of e-commerce companies.

“Also, this is a market with a lot of people, it can handle so many people. These experience zones might not be able to. So far touch and feel, this market is the best. Now for things that don’t require me to touch and feel it, and if online shops gave it at the lowest price possible, then I would obviously buy it there.”

- RP24, male

However, when interviewees were asked about ‘experience zones’, many seemed confused by its necessity and discussed how traditional marketplaces already offered this physical tangibility while also being a public space that large amounts of people could visit. Services offered by the ‘experience zones’ were also already present in branded retail stores across the city for many decades. The traditional marketplace was preferred because of the diversity of goods that could be experienced, which included unbranded alternatives. Further, there were vendors who the interviewees preferred to have face-to-face conversations with while trying out new goods. Here, we see how practices intersect each other — for example, how the need for physical tangibility intersects with unbranded purchases and social interactions. A challenge for new technology deployments is finding ways to incorporate itself into not just a single practice but a nexus of multiple practices.

6.3 Discussion

In recent times, international development agencies such as UNCTAD (UNCTAD, 2015) have outlined how electronic commerce can be harnessed by policy-makers to support economic growth and sustainable development with respect to developing countries. For example, a 2017 WTO report (OECD and Organization, 2017) argued that e-commerce could potentially help support “job creation, entrepreneurship, creativity and innovation”, along with benefiting both consumers and MSMEs. The claim that e-commerce would benefit entrepreneurship was also stated⁴ by the Indian Prime Minister during the launch of the *Digital India* campaign, a state-driven program aimed at digitally empowering Indian citizens. E-commerce as a means of development and prosperity is one of many trajectories of globalized capitalism, referred to Gillian Hart (Hart, 2001) as ‘development with a small-d’. However, it has unfolded in conjunction with traditional development initiatives (‘or Development with a big-D’) where nation-states in the Global South are encouraged to remove regulatory barriers and build infrastructures that facilitate commerce across borders. In this narrative, the traditional “digital divide” is positioned as a “market access divide” (OECD and Organization, 2017) and digital initiatives such as the *Digital India* program are, in effect, helping both domestic and global corporations tap into new consumer markets (Gurumurthy et al., 2016).

This chapter positions the entry of online shopping in India against the backdrop of techno-utopian optimism where digital literacy and use of digital services (such as e-commerce) are equated with empowerment, development and modernity (Pal et al., 2018). Instead of non-use being considered as a proxy for social exclusion, we argue that ICTD research needs to look at the complex ecosystem of everyday practices that shape the use/non-use of technology. Recent technology and development literature have begun looking beyond just the technical and economic (Kitner et al., 2011), and instead considering the role of social and cultural forces in mediating the adoption and use of technologies (Burrell,

⁴<https://www.narendramodi.in/shri-narendra-modi-shares-his-vision-for-digital-india-5944>

2012; Rangaswamy and Nair, 2010; Jack et al., 2017). Kuriyan et al. (Kuriyan et al., 2012) describe how design and deployment in ICTD contexts have historically assumed a poor-as-consumer model, where products and services are ‘sold’ to populations as potential solutions to satisfy their needs and socio-economic aspirations. Kuriyan et al. critique this market strategy, instead arguing for a broader approach that integrates cultural contexts and political needs. Other research highlight the ingenuity of users and communities actively shaping technologies to meet their unique needs (Rangaswamy and Densmore, 2013; Chandra, 2017). Research on repair and maintenance further emphasize how decisions of adoption are not one-off moments in the life of a technology artifact (Houston et al., 2016).

This analysis of the domestication of online marketplaces adds to existing literature on technology adoption and use in the Global South by studying the dynamics of adoption in the face of entrenched practices and infrastructural and institutional forces. Marketplaces are integral to the everyday lives of individuals across the Global South and e-commerce companies are attempting to create alternate imaginations of the marketplace, a process that Silverstone and Haddon (Silverstone and Haddon, 1996) refer to as ‘commodification’. Consumers subsequently attempt to make sense of online marketplaces including assessing their potential and limitations. Similar imaginations have been documented in ICTD research especially in studying technology adoption by the non-techno-elite (Oreglia and Ling, 2018).

The use or non-use of a technology is invariably about whether it can successfully integrate itself to existing practices. As consumers attempt to integrate technology services into their everyday lives, they make decisions on what capacity they will use them. We stress that studying non-use is of particular significance as it allows us to understand the myriad of conditions that impede the use of a technology and to look beyond the dichotomies defined around users, access, and usability. Studying marketplaces specifically - both online and offline - can also be useful for ICTD research because they are rich sites for studying encounters between a broad spectrum of users and a wide variety of technology products.

This chapter thus contributes generally to the ways we can assess the successes and troubleshoot the failures of ICTD deployments.

6.3.1 Non-use and rethinking the Digital Divide

Sociological literature has, in recent times, problematized the notion of the “digital divide”, arguing that we need to shift away from looking at who has access to a technology to instead studying the specific reasons for not using the technology. The spread of ICTs has precipitated this - with ownership of mobile phones increasing rapidly, actual access to digital services is not as much an issue as whether they are being used in everyday life and to what extent. This also moves away from a dichotomy of “have” and “have not” to instead looking at a spectrum of use and non-use scenarios which often correspond to specific socio-economic conditions and institutional contexts (Selwyn, 2006). Understanding use and non-use invariably mean studying how a technology fits into everyday life, rather than an analysis of an idealized notion of “the use” (Wyatt et al., 2005).

On these lines, the acceptance and adoption of digital services such as online shopping should not be looked at as a binary choice for individual users. Instead, as we have shown here, acceptance and adoption are shaped by a multitude of infrastructural, institutional, and cultural factors. While this does not discount the role of individual agency, it does stress the need to look at the broader social, cultural, and economic forces. Much of technology and development research has focused on the success and failure of interventions and deployments without considering that not adopting a technology could also be regarded as an optimal decision (Tully, 2015). This echoes the criticism leveled at positivist models of technology adoption. There are, however, inherent difficulties in understanding the causes of non-use (Driesbach et al., 2009), partly because of the diversity of non-use cases (Fernández-Ardèvol, 2016). As this chapter shows, the lens of domestication can be a useful way to understand the non-use of digital technologies. Rather than an act of deprivation, domestication instead focuses on the inability of a technology to be incorporated into

existing everyday routines or practices.

Considering varying degrees of non-use allow us to go beyond just questions of access and digital literacy. For example, this chapter shows how the institutions within a household and the dynamics with respect to gender and age shape the actual use of online shopping even when the interviewees were active users of digital devices. Studying technology adoption and use must be cognizant of such local tensions that are the result of the complex web of relationships that an individual is entangled in.

6.3.2 Design, Domestication, and Marketplaces

Unlike other technology adoption models, the phases of domestication are not linear and the process is not a closed one, i.e. it does not end with a technology simply being adopted. Silverstone and Haddon ([Silverstone and Haddon, 1996](#)) discuss how design and domestication are both integral to the process of innovation — it is a constant process of adjustment and negotiation between designers (in this case, e-commerce companies) and users (both buyers and sellers), while at the same time influenced by other entities such as competing marketplaces and policy-makers.

Technologies are designed with how an idealized user would domesticate it in mind. Kittner, Kuriyan, and Mainwaring ([Kitner et al., 2011](#)) in the context of design for the Global South discuss how preconceived notions about the middle class - chiefly, price sensitivity and need for ease of use - have shaped business decisions and the design of technologies. The authors argue that such strategies ignore the powerful social forces that shape technology adoption. As mentioned previously, similar stereotypes have also been attributed to low-income consumers who are further perceived to also have low digital literacy skills. The process of domestication reveals how the idealized user is considerably different from eventual users by highlighting the frictions that impede the domestication of a technology.

These users are also not passive consumers, but instead reinterpret technologies and

continuously attempt to adapt them to meet their unique needs and circumstances. Similar imaginations have been documented in ICTD research especially in studying technology adoption by the non-techno-elite (Oreglia and Ling, 2018). The phase of conversion, where users/non-users communicate their technology preferences with the outside world, provides feedback to help designers iterate on their products. We can readily observe this with e-commerce companies aiming to set up experience stores that allow for material tangibility during the shopping process, and with the option of cash-on-delivery to address the inability of electronic payments to be incorporated into a cash-based economy.

How a technology (or technology service) situates itself in a domestic setting also brings into play the symbolic aspects of technologies. For example, we see how the institutions within a household and the dynamics with respect to gender and electronic money shape the actual use of online shopping even when the interviewees were active users of digital devices. Studying technology use/non-use must be cognizant of the tensions that are not located at the site of technology adoption, but are instead products of the individual's broader web of relationships.

Recently, HCI4D research has begun studying practices and assessing the persistence of these routinized recurring behaviors. In an analysis of marketplaces in India and Bangladesh, Chandra et al. (2017), argue that the inertia of historical practices helps explain the persistence of traditional marketplaces. The success of any new technology or design intervention is contingent on its ability to integrate itself into existing practices. From an ICTD perspective, focusing on practices, rather than the users, can help not only identify non-use, but also the symbolic components of technology adoption. This chapter builds on existing work by outlining the specific processes by which the adoption and use of a technology are shaped by existing practices, and in turn, how it incorporates itself into practices.

6.3.3 Marketplaces and ICTD

This study offers a historical snapshot of the introduction of online shopping in urban India. We build upon existing literature that looks at shopping as more than just simple economic transactions, but instead as a cultural and social phenomenon that structures the everyday lives of citizens and shapes the consumption of goods. Marketplaces, as spaces that facilitate shopping, thus play an important role in everyday life and are rich sites for studying consumption. The transition from offline to online provides a useful case study for ICTD research looking to understand how the entry of new technologies impacts a diverse spectrum of socio-economic groups.

Backed by funding from investors around the world, e-commerce companies are actively attempting to reshape consumer's preferences. However, in contrast to traditional marketplaces, which are bottom-up grassroots level responses to consumer demand, online marketplaces are top-down corporate-driven initiatives piggybacking on government infrastructure projects (such as *Digital India*). Studying the degrees of success (or failure) of online marketplaces along with analyzing who benefits and who does not, provides useful insights on the ability of powerful actors to either disrupt or transform ingrained social and historical practices through deploying new digital technologies.

Despite the influx of capital and resources, online shopping is still a small percentage of total business-to-consumer retail sales in the country, with most of its growth in larger urban centers. Marketplaces, varied in their scale and diversity, provide a unique space for ICTD researchers to not just understand existing consumption patterns and the underlying factors, but also shape its future trajectory. This thesis does not speculate on the future of retail sales in India, but if online shopping is here to stay and flourish, it is important to find ways to make the transition more equitable. Without romanticizing traditional marketplaces, the current transition to digital provides an opportunity to create bottom-up approaches towards the distribution of goods and services in the Global South that do not lead to increased marginalization or exclusion.

6.4 Conclusion

This chapter explored how online shopping embeds itself into routine, everyday life as well as the reasons why individuals choose to shop online. Through interviews with buyers who are still shopping at traditional markets and have not completely transitioned to online marketplaces, we studied the dynamics of the domestication process where the new “wild” digital technologies surrounding online shopping are tamed and made part of everyday life. Our study reveals how existing practices, institutions and infrastructures shape ‘use’ and ‘non-use’. In doing so, we critique an essentialist view that problematizes the ‘non-user’ as not being innovative or tech-savvy enough, and instead surfaced the reciprocal process through which both technologies and use/non-use are transformed by each other.

The various phases of domestication were analyzed. Appropriation involved the role of advertising and deep discounts by e-commerce companies to influence buyers to move online. Objectification outlines the perceptions of online and offline shopping along with how control over ICTs and electronic money is gendered. Incorporation highlights the role of local infrastructures, the unbranded economy and repair culture, materiality and sociality in the use or non-use of online shopping. Finally, conversion looks at how e-commerce companies are adapting their services to build greater trust and familiarity.

CHAPTER 7

Making Sense of Digital Technologies

(Adapted from: Chandra, P and Pal, J. (2017). *Rumors and Collective Sensemaking: Managing Ambiguity in an Informal Marketplace. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems. ACM*)

7.1 Introduction

Recently, there has been an increased awareness of rumors and their ability to influence public opinion. With social media sites and applications playing a key role in the circulation of unverified information, the proliferation of rumors appears to have drastically increased. However, rumors (and narratives of their consequences) are not new phenomena (Kapferer, 1992) - they are among the oldest known forms of informal communication and their economic, social, and political effects have been extensively documented. Rumors are treated with suspicion, in part due to the assumed dubious intent of the rumor originator, but also on grounds of function, since they lack a stamp of approval from formal channels of information dissemination. However, there is a significant body of sociological work that sees rumors in much more nuanced terms (Shibutani, 1966; Coast and Fox, 2015; Fine, 2007; Fine and Turner, 2001) treating it as a direct consequence of communities navigating risk and uncertainty in new situations.

When we consider rumors in the context of informal economies that make up a large part of the social and economic activity in the Global South, we encounter unequal and

sometimes antagonistic relations between local communities and formal institutions such as the state. When trust in formal institutions is inadequate, communities often depend on social relationships in regulating their everyday lives (Granovetter, 1985). Here, informal communication, such as rumors, circulating through interpersonal relationships often play a far more important role than information verified by formal sources.

This chapter focuses on the presence of rumors at SP Road when faced with the entry of new technology services. Such marketplaces remain the primary destination for consumers - especially low and middle income - across the Global South (Cook, 2008). Despite the informal side being at odds with formal authorities (such as tax officials and law enforcement agencies), they have been able to survive, thrive, and successfully cater to consumers for many decades. However, in recent times, government policies and the entry of new technologies such as online shopping and digital wallets have significantly disrupted these marketplaces.

As the business community in the marketplace has attempted to make sense and come to terms with these new developments, it has been accompanied by the circulation of unverified information - often in the form of rumors. This chapter looks at these rumors as a means of understanding how communities perceive new and existing situations. Specifically, how do market actors use rumors to make sense of the ambiguity that accompanies the entry of new technologies and new government policies, both looking to disrupt existing market practices? This is in addition to actors navigating the historical tensions between the formal and informal - as the two oppose and at other times complement each other at the marketplace. In doing so, the chapter builds on work in organizational literature that looks at the role of informal communication in collective sensemaking and processes of decision making.

Sensemaking relates to how individuals make sense of social environments and structure the unknown, the unfamiliar, and ambiguous events (Weick, 1995). Extending this to communities, collective sensemaking refers to a shared understanding of such events aris-

ing from interactions within a social ecosystem. This can be either top-down, in which case the sensemaking is guided by formal institutions and rules of information veracity. Alternatively, it can be a bottom-up approach that is more spontaneous and channeled through loose norms that leverage social relationships and ad hoc linkages. In the latter, channels of informal communication play an important role in facilitating interactions.

From the perspective of HCI/CSCW research, this chapter adds to existing socio-technical literature on technology adoption (Griffith, 1999; Orlikowski and Gash, 1994; Pal et al., 2018). Our research examines how business communities in a small local technology goods marketplace react to the entry of new technologies such as online shopping and digital payments. We propose that the trajectory of adoption and use of these new technologies is inseparable from the way communities subjectively interpret and discuss it. Rumors, as a form of information exchange, are an important part of this process of sensemaking.

Studying these rumors help us understand the role of informality in collective decision-making. Organizational and collaborative systems research has previously studied how informal communication is vital to collaboration, providing much-needed flexibility that helps systems deal with spontaneous needs and novel unplanned situations (Whittaker et al., 1994). Further, these studies have highlighted the ability of informal communication to provide alternative perspectives and interpretations of formal events (Boden et al., 2014).

By outlining a community's reaction to government policies, our work also highlights the ways in which rumors relate to institutional trust. Collective sensemaking in this case either supports formal narratives or subverts it, with the latter helping us identify the concerns of a community, especially in the face of differential power relations. This has important implications for research in other parts of the Global South, especially where communities do not have cooperative relationships with formal institutions.

7.2 Related Literature

7.2.1 Rumors, Ambiguity, and Collective Sensemaking

Informal communication such as gossip, urban legends, and rumors have been extensively studied, with researchers highlighting both their positive and negative functions. While some studies have argued for their social function in maintaining social norms and contributing to social order (Gluckman, 1963), others highlight individual self-interest that uses misinformation to advance a cause (Paine, 1967).

Early psychology research looked at the transmission (or retelling) of rumors as a way of people explaining uncertainty and ambiguity in everyday life along with simplifying complex events (Allport and Postman, 1947; Rosnow and Fine, 1976). Sociologists such as Shibutani (1966) extended this to conceptualize rumors as a social act, shifting the focus away from solely individual motives. As recurring communication, rumors help people collectively solve problems through constructing a representation of an uncertain situation, especially when the demand for information is unsatisfied by formal sources. Rumors are thus a direct consequence of information scarcity (Kapferer, 1992). For example, organizational researchers have looked at rumors as a means of understanding how employees deal with anxiety when faced with organizational change (Bordia et al., 2006). Stressing on the communal aspect of rumors, this chapter thus looks at them as a form of bottom-up collective information seeking (Turner, 1994) that contrasts with more top-down controlled approaches to information management.

Studies have outlined the conditions that lead to a rumor spreading: 1) it must be relevant, 2) it must influence anxiety, and 3) while credible, must have a generalized uncertainty about it (Rosnow, 1991). DiFonzo and Bordia (2007) give an operational definition of rumors as “unverified and instrumentally relevant information statements in circulation that arise in contexts of ambiguity, danger or potential threat, and that function to help people make sense and manage risk”. As situated acts of collective sensemaking, rumors neces-

sarily diffuse through already existing informal social relationships (Miller, 1992) and are primarily defined by their ability to evade formal institutional restraint. Thus, the veracity of a rumor is not important and neither is whether it is positive or negative - rather, a rumor is defined by the uncertainty in both its source and its content.

From an institutional perspective, rumors are characterized by their relationship to the social institutions that help them spread. They are thus indicative of the trust existing in these social institutions, while at the same time revealing a lack of trust in formal institutions and the quality of information that they provide (Fine, 2007). Further, rumors play a key role in shaping trust - for example, researchers have argued that the depletion of organizational trust is a possible consequence of the spread of rumors (DiFonzo et al., 1994). Others have argued (Miller, 1992) that by creating informal networks of communication, they help in building social institutions and sustaining communal solidarity, especially in communities not served by formal institutional communication networks.

7.2.1.1 HCI, Rumors, and Collective Sensemaking

HCI/CSCW research has also studied rumors as a process of collective sensemaking during periods of uncertainty and stress, such as crisis events (Starbird et al., 2016; Krafft et al., 2017). Focusing largely on online rumors, specifically on social media channels such as Twitter, these studies analyze the spread of rumors and how different groups react to them (Liao and Shi, 2013). Further, these studies have analyzed the role of formal communication channels in shaping the propagation of rumors. For example, Andrews et al. (2016) look at how official sources of information can play a crucial role in dampening rumors or correcting misinformation. On a similar note, Starbird et al. (2018) outline how journalists are more likely to deny negative rumors. In all these studies, rumors have been framed largely as misinformation that needs to be clamped down on.

On the other hand, HCI/CSCW research has generally been more positive about the importance of informal communication. Studies have discussed its importance in collab-

orative work, especially in workplaces and organizations (Chen et al., 2013; Yuan et al., 2013). With respect to communities, researchers have outlined how the design of platforms that support community decision-making have to take into account informal conversations (or 'everyday talk') (Johnson et al., 2017). Much of this research has been in the Global North with very little focused on informality in the Global South, which often has a far more contentious relationship with formal institutions.

7.2.2 Marketplaces, Rumors, and Communication Channels

As public and highly networked spaces, local marketplaces facilitate the “interactions of flows of people, goods, and information” (Janssens and Sezer, 2013), and are central to everyday economic and social life. Often integral to the creation of intermediary channels of communication, they have exerted significant social, economic, and in some instances, political influence across the Global South (Mowlana, 1979).

A marketplace is accomplished - both economically and socially - primarily through communicative actions. These informal channels of communication play an integral part in decisions, helping actors at semi-formal marketplaces around the Global South get around issues of information scarcity and noise. Such marketplaces are characterized by their need (and ability) to circumvent formal institutions (Chandra, 2017), and instead leverage social relationships to reduce risk and uncertainty in economic transactions. Informal communication such as rumors and word of mouth not only evade formal control but also help bolster existing social relationships. The role of rumors in facilitating decision-making is also visible in more regulated marketplaces. For example, in financial marketplaces - where exclusive (and new) information is particularly valued, rumors remain an important means by which traders make everyday decisions (Kimmel, 2004). Here, profit-making is often contingent on actors being one step ahead of formal channels of verified news, with rumors providing such an alternative stream of information.

From a sociological lens, rumors in marketplaces also play a deeply symbolic role,

helping actors make sense of their place in the local economy (and society, more generally). [Marfaing and Thiel \(2014\)](#) discuss how rumors among Senegalese and Ghanaian traders are coping mechanisms that help them deal with economic difficulties faced with the entry of Chinese entrepreneurial migrants. [Harney \(2006\)](#) in his analysis of migrant communities in Italy argues that rumors help connect the racialized identities and uncertainties of migrant life with existing narratives of informal economic practices among the wider population. Rumors and other forms of informal communication, in-effect, help relate the individual to the community they are part of - in doing they also shape the moral economy. They thus both reflect and shape informal practices, acting as an interpretive frame that guides market actors in modeling their economic and social behavior in the face of change and uncertainty.

7.2.3 Community, Communication, and Rumors

As public spaces, marketplaces like SP Road have historically been important sites of social interaction ([Gumpert and Drucker, 1992](#)). Besides extended conversations between vendors and customers, the researcher observed vendors interacting with each other as well as visiting distributors throughout the day. With significant vertical interdependence between marketplace actors, many of these interactions were related to business, such as paying off dues, striking deals, and sharing information related to products. On occasion, vendors would ask others for help - for example, on how to use new technology such as a card-reader. This was interspersed with more informal conversations between groups of vendors especially during off-peak hours; conversations would often be over cups of tea that a local tea-seller would either bring during certain times of the day or on demand. Even when vendors were direct rivals, i.e., sold similar goods, they were observed socializing with each other. Much of this was a result of strong communal ties. Vendors who had been plying their trade at SP Road for many years had become part of a close-knit community. Further, Marwari vendors not only belonged to the same community but were,

in many cases, from the same village or part of extended families.

Almost all the younger and middle-aged vendors at SP Road had mobile phones that they used when they were not with customers. The device was primarily used for playing music, watching videos, and messaging on WhatsApp. Further, it was used to communicate with customers and distributors who were not at SP Road, though this was limited to the main vendor who owned the shop rather than those working under him. During informal conversations with others, vendors were observed showing/sharing media content along with messages or social media forwards that they had received. Here, mobile devices played a key role in introducing information from outside the marketplace into daily face-to-face conversations between vendors.

The conversations themselves were wide and varied, ranging from family issues to the current political climate. These conversations played an important role in the information-sharing practices of the community and shaped the propagation of information in the marketplace. The researcher documented only those conversations where he had been given explicit permission to do so. The researcher further discussed any overheard rumors with the vendors; many of the quotes presented in this chapter are from these interviews.

Following [DiFonzo and Bordia \(2007\)](#), information statements were coded as ‘rumors’ if they were repeatedly shared (or transmitted), treated as credible and useful, and their contents were, to the knowledge of the researcher, unverified. Whenever any ‘rumors’ were encountered, he followed up with the speaker in unstructured interviews aimed at gaining greater insight. Finally, selective coding was applied to both interview transcripts and field notes to categorize the rumors based on context and content. Qualitative coding of this data revealed three broad categories of observed rumors:

1. Unverified information that helped market actors assess the risks of new technology, such as online shopping platforms
2. Unverified information that helped actors deal with uncertainties surrounding new government policies such as demonetization and decisions such as pushing digital

money services

3. Unverified information that helped in the organization of informal business practices and was aimed at keeping informal activities hidden from the regulatory gaze of the state

7.3 Rumors, Market Actors, and New Technologies

Online marketplaces funded by international investors are significantly reshaping urban retail in India. However, current FDI (Foreign Direct Investment) laws in India restrict entities with foreign investment from operating inventory-based models of e-commerce, which has meant that online marketplaces can only act as facilitators between sellers and buyers. They have subsequently attempted to out-compete traditional marketplaces by luring buyers online through cutthroat, often predatory, prices (Chandra and Chen, 2019). In this section, we look at how rumors helped vendors assess the risks of selling on online marketplaces.

Vendors at SP Road with significant inventories have contemplated transitioning online, with many of them testing the waters over the last few years. However, online retail was unfamiliar and consequently perceived to be risky and fraught with dangers. Conversations between vendors about online shopping often consisted of them discussing the logistics of selling online and if the transition was worth it. Prevalent rumors were an important part of these conversations, and they conveyed the potential dangers of selling online. In the following conversation excerpt between the researcher and a vendor who sold audio equipment, he explains the problems faced:

”Customers also do hera-pheri (deceit). They’ll buy something, then put something else in the boxes and try returning to claim refund. And we have no choice - we have to refund. It’s our loss. (I: Does this happen a lot?) A lot of times. (I: When was the last time this happened?). Not recently. (I: Did it happen

to you?) No no, but it has happened to others (here in the marketplace) - one customer put old electronics in the box and tried giving it back - people here (at the marketplace) complain about it. These companies are making it easier for people to do hera-pheri (deceit)”

Variants of the above rumor, wherein customers replace a brand new item with an older item and attempt to return it, were repeated in multiple conversations among the vendors. However, these incidents were unverifiable and the researcher couldn't find anyone in the marketplace who had personally experienced this. Indeed, the respondents themselves were aware of the unverifiability even as they shared it, as would emerge in conversations with the researcher. These rumors were nonetheless reiterated in conversations as a means for vendors to justify their decision to continue selling offline. As seen in the above rumor, it was done through highlighting the dishonesty of 'anonymous' online customers looking to game the marketplace and the lack of formal/informal mechanisms that could help prevent it.

This rumor was related to how risk was distributed in online transactions and how this differed from traditional marketplaces. In traditional marketplaces, vendors have relatively low risk with customers bearing the bulk of uncertainty. Further, repeated interactions (or clientelization) is an important practice that helps build familiarity and trust between buyers and sellers (Chandra et al., 2017; Geertz, 1978). At SP Road, it allows vendors to have a stream of customers who, based on history (and levels of trustworthiness), they could personally trust and subsequently offer further services such as credit, warranties, and product returns. Online marketplaces, in contrast, do not provide avenues for long-term customer relationships. They operate by putting the product and the platform at the center of the transaction, rather than the interaction between the vendor and the buyer. The focus on customer satisfaction and generous return policies has led to a shift in power from the vendors to the customers. This asymmetry in power manifests itself in rumors of customers abusing power as we see in the below quote by a vendor. The vendor sold audio

accessories at SP Road for the last 20 years and had not attempted to sell online.

”People will make fake complaint about product - tell it is fake or that it came broken, and company will seal accounts. It happens a lot - no safety for us. (I: Why do they do that?) why they seal? Because customers lie about us. (I: what do you do when they seal) what can you do? You come back to selling here. (I: Have you faced such customer complaints?) No no. I don’t sell online. I like selling here, no jhanjhat (complications). (I: Are there others in the markets who have faced this?) Yes yes. (When probed for more details, he veered away from the identity of people who have faced this but talking about how you can’t trust online shopping).”

Variants of such rumors were common in the marketplace and were invariably repeated by vendors who had chosen to not sell online. Similar rumors included stories about customers making fake complaints that led to vendor accounts being suspended or banned. All these rumors were framed in terms of morality and responsibility - vendors held the e-commerce companies responsible for making it easy for the customer to misuse the generous return policies.

These rumors were driven by a lack of trust in online marketplaces, especially with respect to them looking out for the best interests of sellers. This was not surprising given how they had disrupted traditional marketplaces and were looking to dominate the retail market. Further, while advertising/marketing campaigns have attempted to draw in buyers through extolling the benefits of online shopping, there have been less convincing mechanisms to woo traditional vendors online with the consequence that many at SP Road remained unsure if it was worthwhile to sell online. In the absence of formal communication looking to mitigate seller anxieties, informal communication such as these rumors played an important role in communicating the flip side - i.e. potential risks to the sellers. These rumors consequently constitute a community-level response to perceived deficiencies in the new

online marketplaces. Besides allowing them to collectively make sense of the new online marketplace environment, it was also an avenue for them to vent their fears.

7.4 Rumors, Government Policies, and Institutional Trust

In November 2016, the Indian government demonetized Rs.500 and Rs.1000 banknotes with the stated intent of combating the illicit shadow economy and remove unaccounted cash from the economy. A later professed goal was to push India into becoming a cashless digital economy and to bring more transactions under taxation, which was enthusiastically supported by e-commerce companies. Marketplaces such as SP Road were severely affected by the demonetization with customer traffic falling significantly in the following months. Old cash notes had to be either deposited or exchanged and there were restrictions on the cash withdrawals per week, both causing inconveniences to vendors who predominantly worked with cash payments. As the amount of liquid money in the local economy decreased, many vendors were forced to adopt card swipe machines and/or digital money wallets such as PayTM. Rumors here helped actors deal with uncertainties surrounding demonetization and the entry of digital money services.

The response of vendors to the aftermath of the demonetization shock showed strong community bonds. When vendors were unable to procure their own machines/digital wallets or did not have the technical knowledge to operate it, others stepped in and shared theirs. Vendors with more resources were observed handling the exchanging of the notes at the banks as leaving the shop to stand in long queues of lines was not feasible for all. Through all this, the rumors prevalent in the marketplace about demonetization showed an uncertain trust in the state's initiative and the entry of digital wallets. It did not help that the move was shrouded in secrecy and at, times, its implementation seemed chaotic and unplanned (Pal et al., 2018). The community, confronted by the uncertainty that followed this exogenous shock, responded through leveraging their social relationships and as in-

formation diffused through them, it constructed collective narratives that helped them both make sense and respond to it.

The below extract is from a conversation between a vendor and a long-term customer at a computer accessories store when discussing demonetization, a few weeks after it had been implemented:

“Vendor (V): But what’s the point - fake notes are already out.

Customer (C): Fake notes. Where?

V: Yes. They caught someone in Calcutta smuggling fake notes. That was the 2000 rupee note. Here (at the marketplace) also, someone tried to pass off a fake 500 rupee note.

C: So quickly?

V: They want to make fake notes, they’ll make fake notes. What’s going to stop them?

(C asks to see what the new 500 rupee note looks like)”

The above rumor reflected an imaginary of a state that was struggling to truly contain illegal activity such as counterfeiting. The circulation of these rumors was used to create and reinforce the narrative of demonetization being a failed move and that the state was ineffectual in controlling the ‘illegal’. Demonetization, since the beginning, had been framed as a means to tackle the “shadow economy”, and in doing so, had implicitly clubbed the illicit economy with the (relatively morally ambiguous) informal economy. Informality shapes most practices at traditional marketplaces around India, helping market actors circumvent environmental constraints, and demonetization had disrupted many of these practices. For example, vendors steeped in practices that revolved around the materiality of cash found the transition to new technology services such as digital wallets forced and, in some cases, difficult. Subsequently, such rumors could also be seen as political statements critiquing government policy and the forced adoption of digital wallets.

There was unverified information extolling the government too - for example, an experienced SP Road vendor who actively supported the demonetization move shared information with the researcher about the presence of a chip with a nano-GPS tracker in the new (to be released) currency notes that could track its location and subsequently help cut down on money laundering. Showing the effectiveness and technological prowess of the Indian government, this rumor once again has its origins on social media and was so pervasive that the Reserve Bank of India (RBI), India's central banking institution, had to release a public media statement denying it. During the time after this statement was released, the researcher observed the rumor discussed by the vendors as they attempted to reach a collective consensus on its veracity. The consensus among other vendors was that it was probably false. The statement by the RBI played an important role in this and shows how official sources of information can allow actors to verify information contained in a rumor.

However, not all formal communication decreased uncertainty. The demonetization move was accompanied by extensive government-backed campaigns about transitioning from cash to digital payments coupled with advertising by digital wallet companies. Linking demonetization with the adoption of digital wallets bred mistrust about the true intentions of the government and did little to reduce uncertainty about the benefits of the policy. It brought in further ambiguity about the benefits of adopting unfamiliar technologies. This led to the circulation of rumors that suggested that the only ones benefiting from this move were digital wallet companies and government officials bought by these companies. The following forward from WhatsApp was read verbatim to a customer in the presence of the researcher:

“think that a 100 rupee note is circulated 1,00,000 times. It will have the same value. Nobody will get any commission. But if it is circulated through cashless way, each transaction fetches 2.5% commission; that means 1,00,000 times 2.5% = 2500%, i.e. Rs. 2,50,000 (Rs. Two lakhs fifty thousand rupees) to service providers like Paytm or Jio Money etc., just for this one hundred

rupees. So, it's a perpetual golden egg laying goose gifted to the gang. That's why this is the Mother of All Scams."

While the message misrepresented the fact that financial transactions cost 2.5% only when money was moved from a digital wallet to a bank account, it communicated fears that digital wallet companies were the ones benefiting from the move to a cashless economy. The numbers quoted in this rumor became part of multiple conversations. However, such rumors did not originate at the marketplace - most of them including the one about fake notes had spread to market actors via WhatsApp messages from networks outside the marketplace.

Over the last few years, WhatsApp has become integral to the communication practices in the marketplace, with all interviewees stating that they used it in some form, either for personal communication or for business transactions. Here, we see messages from WhatsApp networks spreading to conversations among market actors. This rumoring is what [Shibutani \(1966\)](#) describes as “extemporaneous rumoring”, which is a result of people facing higher than usual ambiguity due to an unexpected event or crisis. When dealing with the breakdown of their regular everyday practices, people are often receptive to sources of information beyond their immediate social networks - for example, conversations with strangers, social media messages, or as we see here, WhatsApp forwards. These circulating rumors played an important role: they allowed the community to construct a collective reality of the event while also finding a way to voice their displeasure against what they perceived were unfair policies. As an outlet to voice their discontent and thus reduce anxieties, we once again see the cathartic properties of rumors.

7.5 Rumors and Information Boundaries

In this section, we look at how rumors help organize informal business practices and play a role in keeping informal activities hidden from the regulatory gaze of the state. The

informal economy exists at the interstices of the formal economy, with its boundaries ever-shifting as it seeks to sometimes evade, and other times interact with the formal economy (Sassen, 1993). These boundaries contour the flow of information and the modes of communication used, often leading to the territorialization of information. Such boundaries of information preserves (Fine, 2007) have previously been studied with respect to marginalized communities. For example, Fine and Turner (2001) argue that communities in the United States have their own non-overlapping pools of knowledge, with informal communication among African-American communities a direct result of the historical mistrust against formal institutions dominated by white society. Informal communication, such as rumors have consequently served as a means of warning the communities to the dangers that lurk (Gheyntanhi et al., 2007) and shaped practices, while also allowing the communities to collectively bond and make sense of their own place in society (Miller, 1992).

Vendors at semi-formal marketplaces such as SP Road have been able to compete with - and sometimes even out-compete - their formal equivalent (such as branded stores in formal marketplaces) largely through informal 'workarounds'. These workarounds, historical in nature, leverage strong community networks to find efficient ways to navigate local environmental constraints. The ability of vendors to remain competitive is contingent on their ability to resist formal restrictions and keep informal practices relatively invisible from regulatory agencies and corporations. This could be with respect to offering products and services that might border on the illegal or not declaring their profits/assets to tax officials. The boundaries between the formal and informal manifest themselves in the marketplaces as localized pools of knowledge.

Actors at SP Road use existing infrastructure - social and technical - to create information boundaries between the formal and informal. We thus have a closely-knit community that looks out for each other, especially against formal authorities if needed, for example, using the grapevine to warn others about potential police raids. Here, informal communication channels act as alternative knowledge streams that circumvent formal communication

channels and shape everyday practices. In the below quote, we see a rumor about how law enforcement agencies entrap those installing illegal software:

I: What about (pirated) software installation? We actually don't do it a lot. Because they catch us, they will charge 5 to 10 lakhs. (I: If you are caught?) Yeah. Here, so many people this has happened. There was a Marwari guy here. They caught him and charged him. (I: So they came here and raided the shop?) No. They sent someone pretending to be like he is an old man, who knew nothing about computers - so they'll catch like that."

This rumor was pervasive in the marketplace and repeated by multiple vendors with minor variations - the common theme being that law enforcement often sends undercover cops to catch vendors red-handed while committing illegal acts such as installing pirated software. However, this rumor once again was not verifiable by the researcher. Its lack of veracity was also questioned by officials from law enforcement agencies who stated that this had never happened and that, generally, they had no interest in going after these vendors who made very little money from pirated media. Rather they expended their resources to apprehend major players - for example, people writing and selling pirated optical disks in bulk. With formal authorities aware of the nature of informal practices prevalent in the marketplace, the ability of the marketplace to function was dependent on them being discreet and limited with respect to conducting any illegal activities.

Such rumors make risks more tangible and visible, and in the process play an important role in structuring existing practices. For example, at SP Road, software installations were done only for 'regular' customers or those who a vendor "was sure of". Here, the accuracy or veracity of the rumor was irrelevant in its true purpose and no one in the marketplace particularly cared to question it, rather it played a symbolic role as a mechanism for social control and shaped how the informal side of the market dealt with the formal regulatory agencies.

7.6 Discussion

In recent times, research has begun to consider the underlying infrastructures in the Global South, and how this understanding can inform the design and implementation of new technological systems. Defining the Global South has often been problematic - while geography or the level of economic development is often used as a reasonable differentiator from the Global North, I argue that institutions and informality offer important points of distinction. These in turn are central to understanding how communities make sense of their environment.

The strength of the informal has been its ability to help actors find ways to navigate local environmental constraints by leveraging community bonds and collective knowledge. Rumors are a form of collective knowledge built by actors exchanging information and interpretations. They help a community make sense of unfamiliar and ambiguous situations. Thus, instead of focusing solely on controlling, correcting, clamping down or discrediting rumors, can researchers learn from rumors to instead uncover the concerns of communities? Can rumors also help us analyze how the contours of uneven power geometry manifest themselves in everyday life? In our case, the rumors are situated within the context of existential anxiety for vendors on SP Road, who while still successful in maintaining their businesses, were deeply aware of the threat of online commerce and digitization. This is arguably not unlike the anxieties of a range of stakeholders who see their traditional modes of exchange and livelihood challenged by change.

The rumors outlined in this chapter largely correspond to 1) instances where existing institutionalized channels of communication were either inadequate or deemed untrustworthy, and 2) where informal communication channels were used to help keep the informal side discreet from regulatory agencies that could disrupt their business practices. With respect to the former, during the introduction of online marketplaces or digital wallets, formal channels were inadequate in assuaging the anxieties and concerns of potential adopters, especially for those who were ingrained in traditional ways of selling. Similarly, there was

insufficient information about demonetization from both the government and the formal media sources.

As previously discussed, there has been a concern around the origins and spread of rumors in HCI/CSCW literature. But a focus on this, both in online and offline settings, deters a determined analysis of their cause and effect. The recent public discourse on “fake news” has furthered drawn researchers’ attention to the mechanics of spread, alongside pre-defined assumptions of the political motivations of such activity (largely, negative). While these are undoubtedly important questions, there is little outside a small circle of research in sociology on the social motivators for acceptance and propagation of unverified/verifiable information. This chapter instead examines peoples’ internalization of rumors to reinforce that they are directly related to the lack or mistrust of institutionalized communication channels, coupled with high levels of trust in local social relations.

It is helpful to think of rumors as a direct consequence of the dynamics of trust pertaining to a community and the degree of formalization, which are both local and historical. For marginalized communities, formal institutional sources are likely to provide information that often does not resonate, particularly during moments of anxiety, as we see in the case of demonetization. Importantly, such information does not need to be in opposition to what one may ‘want to hear at times; rather, the incompleteness of information can itself be a major driver of rumor.

For example, in our study, the rumors about customers gaming online purchases can be attributed to both the resonance of the narrative that online shopping works against small sellers and the lack of trusted information on the ways small vendors may participate in the digital economy. More broadly, rumors provide counters to dominant public narratives and are coping mechanisms, especially in situations of limited agency. Prior research on communities at risk, for example, immigrant communities, shows that they opt for various kinds of unverifiable information to avoid being in a constant state of anxiety (Romero and Mercado, 2017).

7.6.1 Technology Adoption, Collective Sensemaking, and Rumors

Technology adoption literature has looked at the success or failure of top-down implementation of new technologies. We find here that in critical moments, such as the aftermath of demonetization or the sudden expansion of online market adoption, the ambiguity of likely outcomes bring rumors to the fore as the community collectively constructs interpretations of the technology. Focusing on these rumors allows an understanding of the tensions that accompany technology adoption, while also emphasizing the importance of communication practices in supporting the convergence of interpretations. This is especially true when new technologies are pushed by external actors, such as government initiatives or corporations looking to disrupt traditional practices.

At its heart, sensemaking relates to how individuals and communities make sense of new situations, especially when they are novel, or their meaning is ambiguous. The social nature of sensemaking means that it is mediated by social interactions, and thus the role of communication becomes key. The introduction of new technologies naturally results in sensemaking because their inherent complexities lend themselves to multiple interpretations (Griffith, 1999). The process thus involves developing “assumptions, expectations and knowledge” (Orlikowski and Gash, 1994) about the technology, and subsequently shapes how actors respond to it. As an iterative process involving varying interpretations of different aspects of the technical artifact, the interplay of communication practices ultimately leads to a shared understanding (Stigliani and Ravasi, 2012).

As we see in this chapter, communities respond to the uncertainty of technologies by collectively constructing and circulating rumors as tales that warn potential adopters of risks (and sometimes benefits). The role of rumors in making sense of new technologies - reassuring to an extent, it complicates the model of technology diffusion. An assumption inherent in technology diffusion models is that a new 'better' technology will be adopted simply because it is superior to older ones. This results in a linear model which begins with a potential adopter introduced to a technology and ends with either an adoption or a

rejection. However, from a social sensemaking perspective, technology adoption is a dynamic process in which people are continuously seeking to make sense of the gap between expectations and actual experiences. Further, it highlights the importance of informal communication in the process. Sensemaking is more concerned with plausibility rather than accuracy and is about “accounts that are socially acceptable and credible” (Weick, 1995). Circulating rumors, as “improvised news” that are collectively constructed by a community (Shibutani, 1966), are integral to this process.

7.6.2 Informality, Institutions, and Rumors

Informality in the context of organizations and much of the Global North is starkly different than in local communities in the Global South. Altrock (2012) differentiates the two kinds of informality as ‘complementary’ and ‘supplementary’. In complementary informality, informality is with respect to the informal exchange of information with the legitimacy of institutions not questioned. In supplementary informality, informal institutions substitute for formal institutions because the latter are either too weak or because of low institutional trust. At semi-formal marketplaces, while we see both forms of informality, the presence of supplementary informality wherein local actors actively mistrust formal institutions makes communication starkly different than when studying organizations in the Global North.

Researchers looking to understand or leverage informal communication channels will need to differentiate between the two kinds of informality to understand power and trust relations. In conditions of supplementary informality, rumors play an important role in shaping trust in a society and are often vital in helping social, economic, and political systems strike a balance between the formal and informal. For example, Fine (2007) discusses how a moderate level of rumors helps facilitate a vibrant public sphere. He argues that the absence of rumors indicates a society where the public no longer seeks to contest formal institutions, while a society rife with rumors shows the breakdown of trust in formal institutions.

Identity construction accompanies any process of sensemaking - how events are interpreted and made sense of is influenced by individual and group identity (Bird, 2007), while also having a bearing on them. As a form of collective sensemaking, rumors play an important role in shaping identity; for example, Coast and Fox (2015) argue that rumors can “help uncover collective beliefs and shared identities” and help in bringing communities together. This is often against external threats, such as perceived outsiders, the state, or the entry of new technologies. A rumor is justified by its origins in a community, but more importantly, the community is reinforced by its shared purchase of a rumor.

While rumors can help bind communities, the potential divisiveness that might exacerbate existing tensions is what leads formal authorities to clamp down on them. However, when we look at rumors through the lens of power relations in the Global South, the antagonistic relationship that they suggest between local communities and powerful entities (such as the state and corporations) can also be seen as a form of resistance. Informal spaces in the Global South have long survived through resisting the formal, and in the context of informality, rumors are yet another way for the unequal power relationships to be both actively and, more importantly, tacitly discussed and opposed. This is not to deny that rumors cannot be used to spread misinformation or be propaganda. Instead, rumors and their negotiation in the process of sensemaking is central to understanding their functioning broadly. Our challenge as scholars of the sociotechnical is how to be nuanced about understanding and contextualizing rumors.

Future research and design in the Global South is contingent on our ability to understand how institutional structures shape technology adoption and use. Here, we argue that identifying and analyzing the role of informal communication in the negotiation of technologies by local communities offers important lessons on how institutional trust and mistrust shape technology appropriation.

Finally, the focus of this chapter is on rumors in an offline setting; it is important to differentiate these from online rumors. While offline rumors do intersect with the online world

of social media forwards, most of the circulation of rumors here is through face-to-face conversations. This brings with it a unique set of localized trust relations and social institutions. For example, actors are able to assess the credibility of those telling the rumors more accurately. A historical unease with formal institutions and deep-rooted community bonds in the marketplace also mean that rumoring here has different temporal characteristics than online rumoring - rumors move relatively slowly but are also given more credibility when relevant.

7.7 Conclusion

Having outlined some of the rumors encountered in a semi-formal marketplace, our work argues that studying rumors can be a useful means of gauging the pulse of a community. Exogenous events such as technology pushes often exacerbate the difficulties of operating in environments in which there is limited access to institutional information and/or recourse. Unverifiable information here indeed becomes the norm, rather than the exception. As social media such as WhatsApp become integral to how information is shared in communities, it is worth taking a step back to study the offline spread of unverified information. Our work in this chapter, while primarily instructive on the strategies of information sharing and its relation to institutional trust in a marketplace setting, is also useful in framing the motivations and strategies of unverifiable information flows in any community. This chapter also highlights ways in which sensemaking is fundamentally collective. Individuals' decisions to trust, consume, or propagate information are driven not by formal institutions, but the embedded relationships with other actors in their networks. Our work further underlines the role of communication channels - informal and formal - in analyzing the adoption of a new technology or community response to a new policy.

CHAPTER 8

Conclusion: Informality and Traditional Marketplaces

Traditional marketplaces, with their unclear legal boundaries, are contested spaces that organically evolve as they cater to consumer demand and changing consumption needs. This thesis is primarily about their persistence, their role in shaping the consumption of technologies, and how actors here respond to the entry of digital services and retail alternatives.

Self-organized, and mostly regulated by informal rules, these spaces have historically been the central hubs of goods and information (Casson and Lee, 2011) attracting sellers and buyers from around the region. The central ‘market’ area in Bangalore has been an important trade node and is part of old Bangalore established in the 16th century. Much of the spatial characteristics of old city still persist and the area now consists of adjoining marketplaces each specializing in the sale of a certain set of goods and services. The market area has evolved; local business communities have diversified the goods sold while expanding the market spatially through converting old residential houses into commercial establishments. The SP Road marketplace is one such recent extension established in the late 1960s.

These historical marketplaces are intrinsically tied with notions of community - for example, each business community specializes in the trade of a specific good(s) or service(s). The marketplaces have played an important and central role in both the development of the city and the everyday lives of locals who source their goods from here. The Marwari

community, that has dominated trade and commerce in Bangalore, has played an important role in the emergence and growth of SP Road. SP Road has evolved organically (and spontaneously) and a result of local business communities keeping up with changing consumer demands, while also being structured by intra-community bonds. SP Road, thus while relatively newer, is still embedded in the same historical social relationships that shape market exchanges in nearby, relatively older, marketplaces.

However, unlike in cities like Bangalore, traditional marketplaces have become less common in much of the Global North, driven by changing urban infrastructures, consumer preferences, and supply-chain logistics. While there has been a blip of resurgence in recent times, these have largely been top-down initiatives by local governments, with the organization of the marketplace often supervised by urban planners and bureaucrats. In response, urban studies scholars have discussed how planners can support self-governance at marketplaces and in the process empower local communities along with fostering a sense of community and increased public responsibility (Morales, 2010).

In contrast, traditional marketplaces in the Global South continue to actively resist attempts to drive them out of business. Marketplaces such as SP Road remain important public spaces of non-corporatized consumption, far removed from the sanitized quasi-public environments of branded showrooms and online marketplaces. Through facilitating face-to-face interactions and increasing access to goods and services, they play an important economic and social role in the everyday lives of low-income shoppers, many who depend on social relationships and materiality to be confident in their purchases. Such marketplaces complicate the notion of the rational atomistic market actors; instead market actors are embedded in deep and historical social practices, with informality being integral to the functioning of the marketplaces.

Largely self-organized by local business communities, the state regulates the SP Road marketplace from a high-level, with daily activities governed by local informal institutions such as intra-community bonds. This is partly to do with how informality pervades all strata

of social and economic life across the Global South. As Roy (2009) argues in the context of India, the state is often an active participant in sustaining and extending informality. Marketplaces such as SP Road exist in a unique institutional space wherein the state is relatively ambiguous about its position with respect to these marketplaces. On one hand, local authorities, such as law enforcement agencies, allow the marketplace to operate relatively autonomously, interfering only on rare occasions. On the other hand, government initiatives have actively attempted to disrupt existing market practices with the professed goal of decreasing the informal economy - for example, through introducing and evangelizing the use of digital services that seek to formalize economic transactions.

This thesis captures the tensions between the formal and informal that underlie everyday life at such marketplaces, and how they relate to the new government policies and the entry of new digital technologies. The latter directly relates to the study of technology adoption in the context of HCI / ICTD research looking to design technologies for different socio-economic contexts. While informal spaces are often socially and economically disadvantaged, they are also active sites of everyday resistance (Kudva, 2009) - here, market actors deal with adversities through finding local ways around the formal structures that impede. However, even though the informal economy makes up most of the economic activities in the Global South, informality remains a relatively under-explored area in HCI/ICTD research. This thesis describes how informality sustains the marketplace. Informality at the marketplace can be seen as a social phenomenon that emerges from, while also structuring, existing practices. It subsequently plays an important role in shaping the consumption of technology goods.

Further, the use of practice theory in this thesis provides two important perspectives for HCI and ICTD researchers. First, the stability of these practices opens new avenues for the design of products and services, especially how we can leverage existing practices to design technologies that empower communities. Second, it allows a critical analysis of existing situated practices through an intersectional lens, for example, helping us identify

who is benefiting and who is being marginalized.

8.1 Practices, Stability, and Marketplaces

Online marketplaces have still been unable to completely dislodge traditional marketplaces. In this thesis, I argue that the inertia of existing market practices, or their propensity to resist change, play an important role in sustaining marketplaces such as SP Road. This inertia can be explained through the social, cultural, and physical characteristics of everyday market life at SP Road.

For many customers who still shopped at SP Road, the act of ‘shopping’ still constituted going to a public space and interacting with vendors face-to-face. Further, visiting a marketplace was often for more than just shopping. This “general understanding” (Schatzki, 2002) of shopping and ‘public’ marketplaces significantly influence the intersecting practices that are performed at SP Road. The market practices previously discussed - clientelization, searching, testing, and bargaining - consist of dynamic linkages between shared meanings, material objects, and skills. The skills that constitute these practices consist of the know-how that market actors have internalized over time. For example, most experienced market actors - vendors and customers - have the oral literacies needed to bargain in face-to-face situations. Such embodied skills are suited to market exchanges in traditional marketplaces and are not easily transferable to other spaces. As we see in the practice of searching, the skills that allow actors to reduce price uncertainty are uniquely suited to disordered spaces such as SP Road, and do not translate to virtual spaces.

Market actors are also aware of what these practices mean to others in the marketplace. These shared meanings allow actors to anticipate responses to their own actions, helping create familiar environments that encourage habitual behavior. The unchanging spatial configuration of SP Road further allows actors to be familiar with the physical space that they navigate. Familiarity thus plays an important role in stabilizing existing practices, and

contributing to practices resisting change.

Existing market infrastructures play an important role in shaping the evolution of practices. For example, the unbranded ecosystem of technology goods and services is found only at marketplaces such as SP Road. Similarly, With respect to the maintenance of older technology artefacts, only SP Road has highly skilled actors and the related socio-technical systems to make repair and maintenance highly convenient. Such infrastructures, by providing an easy means for existing practices (related to repair and unbranded goods) to be continuously reproduced without change, help sustain their inertia.

Finally, I stress the role of informal communities in the stabilization of practices. [Barnes \(2005\)](#) argues that social practices can be seen as a form of ‘collective action’, and that shared practices lead to social order. SP Road marketplace ecosystem consists of extended social networks, and shared practices both support social relations and shape how power is distributed at the marketplace, especially with respect to outsiders and formal authorities. In the section “Informality and Resilience”, I further argue how informality plays an important role in stability of existing practices, especially in the face of exogenous shocks.

8.2 Informality and Access

This thesis shows how, for many consumers, the consumption of technology goods and services is still shaped by traditional marketplaces. SP Road has been an important regional node in both local and global supply-chain networks of technology goods. This has resulted in a broad spectrum of goods finding their way to the marketplace - from second-hand computer hardware obtained from local companies to the latest technology goods from Shenzhen, China. Neither branded showrooms nor online marketplaces have been able to compete in terms of the diversity of goods found at SP Road. The supply-chain networks that enable this have been built upon historical relationships that are a direct extension

of the informal networks that exist within the marketplace, and show the ability of local informal economies to form linkages with global economic structures.

Casson and Lee (2011) detail how, historically, the rigidity of formal markets did not allow them to adapt to changing market conditions, which subsequently led to the rise of informal, relatively unregulated markets. As we see at SP Road, informal networks of social relations are able to support complex social and economic exchanges that formal institutions are often incapable of replicating. Many of the economic interactions, such as the exchange of goods without formal contracts, have no equivalent representations in the formal economy. These informal institutions, rooted in geographical locality and constellations of kinship-based networks, customer relations, and personal ties, regulate the markets and allow business practices to be flexible.

At SP Road, global technology trends have been localized by self-motivated economic actors to provide relatively low-cost goods and services that cater to the demands of the price-conscious customers. The intersection of ICT goods and related services with the sociality of traditional markets has also created a communal and entrepreneurial space that further offers non-standardized labor-intensive services such as customized and assembled computers. This is in contrast to the formal retail stores run by global technology corporations which are relatively impersonal and inflexible in their offerings.

Importantly, given the rapid obsolescence that accompanies technology goods and services, the SP Road marketplace shows a capacity to adapt to both changing consumer demand and the entry of new technologies. Relatively unencumbered by formal regulations and through leveraging informality, SP Road has been the central site for buying technology goods and services for decades. From ham-radio enthusiasts buying radio components in the 1970s to engineering college students buying ICs in the 2010s, the marketplace has kept up with global trends. As a regular customer at SP Road reiterated to me during an interview: “Jo bhi chahiye, yahaan mile jayega (Whatever you want, you can find here)”. Informality, plays an important role in broadening access to technology goods and services.

For a low-income customer looking to buy a ‘sasta’ (cheap) Chinese-make or a second hand mobile phone, SP Road remains the primary site for purchase in the region, if not the only site. While sold hardware might not have company warranties, the extensive informal repair services offered by the marketplace allow these goods to be maintained and recycled.

The repair work at SP Road further emphasizes situated and embodied knowledge in contrast to the abstract conceptual knowledge that is found in formal company service centers. Knowledge is freely shared at the marketplace, and the marketplace is able to keep up with changing technology trends through informal learning. The marketplace is a space for innovation with repairers finding creative ways to do low-cost repairs such as substituting components from used hardware. These informal service centers at SP Road have consequently been respected and trusted as sites of technical expertise, and often contrasted to formal service centers who were relatively limited in their offerings.

As HCI and ICTD research seek to engage with technology-driven initiatives in resource-constrained communities, the success of these initiatives will hinge upon our ability to understand what users need and how are they consuming technology goods and services. Traditional marketplaces of technology goods remain rich sites for studying existing consumption patterns of customers who have still not bought into corporatized marketplaces – for example, those who are relatively less digitally literate or economically marginalized. These sites also allow us to interrogate the nature of the relationship that under-served communities served by traditional marketplaces have with the global information economy, and subsequently help inform more bottom-up approaches towards the distribution of technology goods and services in the Global South that are embedded in local contexts.

8.3 Informality and Collaboration

In this thesis, I highlight how communities appropriate technologies to sustain informality at the marketplace, for example, how the intercom system underlies informal business activities and plays a role in helping the marketplace self-organize and self-govern.

A key feature that characterizes traditional marketplaces, and is clearly visible at SP road, is competing vendors collaborating to create the institutional mechanisms that organize and sustain the marketplace. This kind of collaboration has resulted in the establishment of a merchant association which is organized and run by vendors from the marketplace. Research on how communities govern themselves without the need for external laws or regulations has precedence in legal and economic studies (Ellickson, 1994; Clay, 1997). Studies have shown how merchant communities around the world leverage intra-community bonds and use informal reputation mechanisms to drive cooperation and enforce collective punishments, ensuring that order is maintained (Greif et al., 1994).

With information and communication technologies (ICTs) becoming an integral part of the everyday lives, it is not surprising that they have also slowly been integrated into market practices. Around the world, market actors are appropriating ICTs and subsequently reshaping the nature of trade and commerce. Technology and development literature had particularly been optimistic about the means by which new ICTs such as mobile phones are increasing the capability and productivity of micro and small business owners (Mbogo, 2010; Abraham, 2006; Donner, 2006; Donner and Escobari, 2010). Studies looking at market transactions have further argued that that new ICTs reduce information symmetries in a market and subsequently lower transaction costs (Jensen, 2007).

However, as Oreglia and Srinivasan (2018) argue, these narratives do not account for the role of power and politics in shaping technology adoption and use, including why market actors might choose to not switch to a new digital technology. For example, at SP Road we see how the intercom system continues to remain the preferred tool for business over the mobile phone. While the intercom system does have an instrumental use in reducing coor-

dination costs at the marketplace, its use is also intertwined with local power relationships. This community-driven technical infrastructure supports the informal business practices at the marketplace, helping it self-organize and in the process, sustains informality.

Previous research on the role of technological systems supporting informality have largely been in the context of organizations, and study how systems support informal flows of communication to help in collaborative work settings (Schmidt and Rodden, 1996; Somerville and Monk, 1994; Ackerman and McDonald, 2000). Similar studies have highlighted how we need to be cognizant that older systems of documentation, for example, non-digital records are better suited to support the informal aspects of collaborative work (Hardstone et al., 2004). However, there has been limited research on how communities use technologies to support informality in the context of the Global South. As argued in Chapter 7, informality in the Global South manifests itself differently than in organizational contexts of the Global North, especially with respect to how actors navigate the tensions between the formal and informal. The ‘informal’ in organizational contexts refer primarily to facets of work, information, and coordination that are hard to systematize. While the political nature of informal work has definitely been studied in HCI/CSCW in the context of invisibility and accountability (Star and Strauss, 1999; Suchman, 2016), it often does not look at how the dynamics of trust manifest themselves in informal spaces in the Global South. This is especially important when we study informal urban ecosystems where community bonds and mistrust of outsiders actively shape the nature of practices and local collaboration.

At SP Road, collaboration is the result of strong intra-community bonds and heavy vertical interdependence between actors (along with other non-economic motivations such as pride in the marketplace). Here, competing vendors have collaborated for decades to ensure the smooth running of the marketplace. While still heavily competing on price, the underlying infrastructure of the marketplace is maintained and shared by all market actors. Market actors can choose to use the technical infrastructure, and in the process, integrate

themselves with existing informal market practices. The intercom system also shows the role of technical infrastructures in helping communities successfully self-organize and self-govern by structuring the environment and reducing coordination costs between market actors. Through allowing existing informal actors to control their visibility and introducing greater ‘flexibility’ in the marketplace, it also sustains informality.

The use of the intercom system also reinforces the link between informality and innovation, showing the ability of informal actors to find creative workarounds around rigid institutional structures. The integration of the intercom system with SP Road’s business practices can be looked at as a process of bottom-up socio-technical innovation. From a practice theoretic view, innovation here is a collective act as the community integrates a technological system into their market practices that are themselves continuously reproduced through everyday performances (Shove, 2007).

8.4 Informality and Trust

As we see in the previous section, intra-community bonds and extended social networks play an important role in shaping informality and market practices at SP Road. Interpersonal trust - both thin and thick - are thus the primary mechanisms through which market actors navigate uncertainty risk and uncertainty at the marketplace.

Thick interpersonal trust (or strong ties) at the marketplace is largely tied to ethnicity and kinship patterns. Thus vendors and wholesale dealers at SP Road who deal with each other often belonged to the same ethnic community and were familiar to each other. Even when vendors were heavily competing with each other, these strong ties lead them to help each other out during times of need. Informal contracts in this context are easily enforceable as trust acts as a substitute for formal regulations.

The dynamics of thick interpersonal trust at the marketplace also partition the seller community at SP Road between different technology goods verticals - for example, I ob-

served limited interactions between sellers who dealt with computer-related goods and sellers who dealt with mobile phone-related goods. Often this partition was also on the lines of ethnic communities, for example, Marwari vendors were not observed interacting with vendors from the Muslim community.

Even when they were not from the same community, there was generally a thin interpersonal trust between most sellers at SP Road. Most sellers knew others through extended social networks, and these weak ties manifested themselves in the establishment of a local dealers association that looks out for the interests of the entire SP Road marketplace.

Customers, generally as members of out-groups, belonged to extended social networks (unless they were vendors from outside SP Road belonging to the same community as SP Road sellers). There was thus thin interpersonal trust (or weak ties) between customers and sellers. This trust was built through the practice of clientelization or through others acting as intermediaries and vouching for the market actors. However, for customers who did not have any previous relationships - direct or extended - at the marketplace, navigating the marketplace was associated with much higher risks. As previously mentioned, institutional trust is low at SP Road with sellers often having a tense relationship with formal institutions. Informality at SP Road is thus related to how interpersonal trust - thick and thin - flows at the marketplace and its interaction with the more impersonal institutional trust.

8.5 Informality and Resilience

When looked at from a practice perspective, marketplaces are more than just dyads of sellers and buyers at a specific location - instead they are constellations of practices: multiple intersecting configurations of activities, people, material artefacts, and symbolic meanings. These configurations, while enduring, also evolve over time as the constituent components change. Previously, I have outlined some of the practices observed at SP Road and how the stability of these practices explains why some customers still visit the marketplace and

allow the marketplace to persist. These practices at the marketplace are both shaped by informality while at the same time allowing informality to emerge in everyday life. Here, informality broadly refers to a form of organizing logic (AlSayyad, 2004) that shapes actions and meaning. Informality is thus intrinsically intertwined with the persistence of traditional marketplaces such as SP Road.

The entry of online marketplaces has indeed led to a drop in customers at SP Road with some shops even changing owners during my time in the field. Many interviewed vendors were pessimistic about competing against the heavy discounts offered by the online marketplaces. However, this was not a problem unique to SP Road, with brick-and-mortar shops around Bangalore also facing heavy losses, forcing them to either close down or shrink their operations. However, crucially, it is the formal side of SP Road that has faced the brunt of online marketplace, for example, the sales of branded electronic goods. Throughout my study, customers were still observed coming to SP Road, especially if they wanted unbranded goods or informal services - for example, out-of-warranty repair, unbranded goods, white-box assembled computers, and services still not available online.

“Systems will crash, things will spoil. They require servicing. That they can’t do online. They will need service centers.” – Service Center 1

Service centers were thus not pessimistic about their future. All interviewed service center workers said that they were getting enough work and did not expect a substantial drop in the number of customers.¹ Both the unbranded economy and the informal service economy at SP Road are performed by existing market practices, some of which have been outlined previously. As previously argued, the persistence of marketplaces such as SP Road is a result of these market practices having inertia. Informality plays an important role in the longevity of marketplace by organizing these practices.

¹Many non-SP Road vendors interviewed also spoke about how they were following the model of SP Road vendors and attempting to moving away from sales, instead providing other informal services as a means to stay in business.

Informality has been historically associated with resilience; its inherent flexibility allowing a greater tolerance to risk and uncertainty. Here, I define resilience as a measure of how persistent a socio-technical system is and its ability to absorb changes. In systems literature, the characteristics of resilience of a system include flexibility, self-organization, and capacity to learn and adapt (Butsch et al., 2009).

For example, we see how SP Road vendors dealt with the government's demonetization initiative, where social relations and intra-community bonds allowed the community to soften the impacts of this economic shock:

A vendor comes to the shop with a stack of 500 rupees notes. He hands them to R who counts them using a counting machine, and then puts them in his drawer, where he already has a lot of 500 and 1000 rupee notes. When asked about it:

“We help each other. They give me their old notes. Next week, I will get everything deposited for everyone. (But why you?) Because we know each other well, there is trust. They have smaller shops, they don't have time to leave them and go to a bank. I can do it far more easily.”

In the face of uncertainty and risk, the vendors at SP Road fell back upon informal relationships to both make sense of the external shock and find informal workarounds to deal with it. The SP Road marketplace emerged out of demonetization relatively unscathed - market actors bided their time, leaned onto each other, and by the time I returned for Phase 3, the marketplace had mostly returned to its pre-demonetization state.

The persistence of traditional marketplaces can be seen as a consequence of the resilience inherent in informality. Social practices at the marketplace are stable and resistant to change in the face of external economic and technological shocks partly due to informal structures absorbing these shocks.

I want to stress that resilience is not intrinsically positive - it also has the potential to

riefly existing inequalities and power structures, creating barriers for more inclusive marketplaces. For example at SP Road, it is harder to navigate the marketplace if you are an outsider with no social connections and without the resources to build social capital. This resilience, as I will argue in the next section, is also one of the reasons an intervention or a new technology might find it difficult to be integrated in existing practices.

8.6 Informality and Technology Adoption

In the context of this thesis, I primarily focus on the adoption of Information and Communication Technologies (ICTs) such as online marketplaces. I study the adoption of online marketplaces from two varying perspectives that are a direct consequence of how they have been pushed asymmetrically to buyers and sellers. While e-commerce companies have been trying to make online marketplaces attractive to buyers through discounts and liberal return policies, there are very few incentives for sellers to move online. Sellers instead perceive the entry of online marketplaces as an exogenous shock which threatens their existing business and brings with it considerable levels of uncertainty and risk. In Chapter 6, I apply the domestication framework to study how buyers are attempting to “tame” online shopping into domestic settings. In contrast, in Chapter 7, I study how sellers at SP Road are collectively making sense of the high levels of ambiguity accompanying the entry of online marketplaces.

This thesis thus studies the dynamics of technology adoption in the face of existing practices and institutional forces. Both the entry of digital technologies at SP Road and the domestication of online marketplaces in domestic settings show that technology adoption is not a linear and closed process. Instead it is a dynamic process where users - individually and collectively - continuously try to make sense of a new technology.

Further, besides local conditions shaping the evolution of a technology, we see in the domestication framework how there is also a constant process of negotiation between users

and designers. Users, on their part, are not passive consumers; rather, the adoption and use of a technology involve interpretations and adaptations, as users attempt to incorporate it into their existing routines and local conditions. The non-use of a technology is often not an indicator of the lack of tech-savviness or digital literacy, rather it is the inability of a technology to be incorporated into everyday life. This could be for a variety of reasons, including whether a technology is incompatible with existing well-entrenched structures.

When a new technology is pushed to a community, a practice-theoretic approach looks beyond just the individual rational decisions to the “contextual, social, and historical factors” (Rivera and Cox, 2014) that not only shape its use, but also resist and challenge it (Halkier et al., 2011). In doing so, we are able to capture the diversity of technology use, as a result of the “ongoing and situated interactions” (Orlikowski, 2000) that users have with them. As these interactions recur, they also capture how technology use can eventually become routinized over time. We can see this in the use of the intercom system, which is now taken for granted at the marketplace, having integrated itself into the everyday business practices by market actors.

This approach brings to fore the institutions and structures that shape technology use and how this, in turn, reinforces them. We thus see how informality shapes the integration of technologies into everyday life and routines at multiple levels. At a household level, we have personal relationships that shape access and control over technologies and related entities. At the level of the marketplace, informal networks shapes access to technology goods and services. Finally, the collective nature of practices emphasizes how integral social interactions are to technology adoption and use (Christensen and Røpke, 2010). Lastly, we see how informal communication within a social network plays an important role in how communities collectively make sense of new complex technologies. Through an iterative process that involves adjusting assumptions and expectations based on experiences and informal learning from the social network, actors come to a shared understanding of a technology.

		Rules	
		Low	High
Networks	Low	Nascent Marketplaces	Online Marketplaces
	High	Traditional Marketplaces	Hybrid Marketplaces

Table 8.1: Organization of marketplaces

8.7 Designing New Marketplaces

Marketplaces such as SP Road have kept up with changing technologies and consumer demands for more than 4 decades. Even with the entry of online marketplaces, they continue to find ways to adapt - eschewing selling goods with low profitability to a more service-based approach that leverages informality. I conclude this thesis by providing implications that can inform the organization of new marketplaces.

Generalizing a marketplace is difficult, as its organization varies depending on multiple factors including the nature and size of the marketplace, type of goods and services offered, and the characteristics of sellers/buyers. However, irrespective of the marketplace, the larger goal is reducing risk and uncertainty for both buyers and sellers. Marketplaces, in general, reduce risk and uncertainty through two forms of organization (Kashkool, 2010):

1. the creation of social networks that perform a diverse set of roles that range from building reputation to creating knowledge; and
2. the creation of rules, which are formal regulations that allow for sanctions and incentives

The above table also indicates the multidimensional nature of trust. What kind of trust shapes transactions at a marketplace and reduces uncertainty - is it institution-based trust or is it interpersonal trust, where market actors personally trust each other? Further, trust

in a market can involve both horizontal relationships between market actors and vertical relationships between market actors and intermediaries (such as e-commerce companies).

Both rules and network-based governance have their respective strengths and weaknesses. However, network-based governance is harder to design because it involves creating community structures that a market can embed itself in. Through most of history, such marketplaces have evolved organically, driven by historical community bonds and consumer demands. These marketplaces, once established, contribute in further community-building (Morales, 2011) through providing a geographical space where relationships can be built through personal interactions. These interpersonal interactions has been captured in the notion of “social capital”, as features of social organization that can help communities organize and act collectively (Putnam, 1993). A similar concept with respect to human interactions or ‘encounters’ is ‘relational goods’ that are co-produced by market actors that are part of an interaction, and which contribute to both an individual’s utility and to collective action (Gui, 2000). These interactions do not necessarily have to be face-to-face; the nature of interaction and its outcome, however, do depend on the medium of communication.

Kollock and Russell Braziel (2006) argue that the failures of many anonymous rule-based markets is that they ignore building a network of social relationships that help solve information problems along with providing informal insurance. For example, at SP Road, we see how market actors often trust their informal connections more than formal authorities, and are able to leverage their immediate networks helps reduce risk and uncertainty - both perceived and actual - in everyday life.

However, network-based markets are not ideal and have their own set of issues, such as also being implicated in processes of exclusion, especially for market actors who are ‘outsiders’ and don’t have existing social ties at the marketplace. Social networks, by their very nature, are exclusive (Bourdieu, 1977; Portes and Landolt, 1996) and often based in caste, class, gender, and other social identities. For example, at SP Road, we find that the net-

works of vendors are not only community-based but also predominantly male dominated. Personal connections are important to be successful at the marketplace, and this makes it harder for sellers who are not part of this vendor community to join the marketplace. We also see how at SP Road there are very few women buyers because of how male-dominated the marketplace has been for decades.

The organization of a marketplace will depend on the nature of goods being sold and the characteristics of buyers and sellers. For example, we see how for high digital literate buyers, branded goods have far less uncertainty attached to them than unbranded goods and can be bought from anonymous vendors without any perceived risks. In contrast, low digital literate buyers often need to physically see a good and personal interactions to be confident in the market transaction. New marketplaces aiming to be inclusive will have to find a balance between rule-based and network-based organizations, with the designed structure having to resonate with the sociology of community of buyers and sellers.

It is with this regard, that a practice theoretic approach can help in the design of marketplaces. Such an approach looks at marketplaces - whether online or offline - as constellations of practices with spatial, social, cultural, material, and historical dimensions. Key to this approach would be parsing the routinized everyday behaviours that market actors already engage in. However, given the diverse set of interconnected practices that an individual is part of, this can be an overwhelming endeavour. Focusing on existing marketplaces as sites of practice allow the analysis to be bounded by the specific set of routinized behaviours observed in these spaces.

Designing an online marketplace would involve either replicating these practices in new virtual spaces or performatively integrating these virtual spaces into existing market practices. Order or the governance structures (i.e. the institutions and 'the rules of the game') at the marketplace is subsequently produced and reproduced through the performance of these practices, instead of being explicitly defined by the designers. Such an approach stresses that both individual agency and institutions are site-specific and entwined with existing

practices (Arts et al., 2014). The strategies that market actors use to address information problems in the marketplace are thus historical and socially contingent, rather than being the 'rational choice' of individual actors or enforced by external institutions.

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