



Taming the Amazon: The Domestication of Online Shopping in Bangalore, India

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ABSTRACT

Marketplaces are rich sites for studying existing practices surrounding technology adoption, as well as for understanding how the entry of new technologies impact a diversity of social-economic groups. With the high-profile entry of e-commerce companies into the Indian retail scene, this paper seeks to understand the ways in which online shopping integrates into the everyday practices of shoppers. Using semi-structured qualitative interviews with shoppers in marketplaces at Bangalore, India and through the lens of domestication theory, we examine how the relationship between online shopping and shoppers is constructed. Beyond individual agency, this paper describes how institutional, infrastructural, and cultural forces shape the use and non-use of online marketplaces. By specifically studying non-use, we improve our understanding of the shortcomings of existing sites where technologies are encountered and of the potential considerations for future introductions of new ICTs.

CCS CONCEPTS

• **Applied computing** → **Online shopping**; *Sociology*; • **Human-centered computing** → *Empirical studies in HCI*;

KEYWORDS

ICTD, online shopping, e-commerce, marketplaces, domestication theory

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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

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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 smartphone adoption and internet usage. Recently, e-commerce has also become associated with a nation-wide push towards a digital economy and, in the process, becoming intertwined with narratives of ICTD and technology-driven modernity [40]. 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.

In this paper, we use the lens of domestication theory to study why and how online shopping is being incorporated into daily

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

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.

2 BACKGROUND - FROM OFFLINE TO ONLINE MARKETPLACES

The evolution of the retail landscape and its socio-political impact has been well-documented in the Global North, with the trajectory of offline marketplaces intertwined with the processes of urbanization and industrialization. Zukin [61] outlines the evolution of marketplaces: what initially started out as open-air bazaars moved indoors alongside shopping streets specializing in specific trades. As production of consumer goods increased, bigger (often specialized) stores clustered around urban centers along with smaller stores. The entry of department stores and supermarkets 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.

In the Global South, scholars have discussed the inevitability of modern retail stories and the so-called “supermarket revolution” displacing the more fragmented local stores [45]. However, evidence from the ground has shown a complex retail ecosystem, especially in Asia, where both local stores and supermarkets have coexisted and catered to different socio-economic groups [50]. In India, large international retailers have been slow in making inroads in urban cities, and existing institutions, infrastructures, and geography have maintained a retail landscape very different from the West. Dholakia et al. [13] describe the various factors that make India’s retail scene unique. Over the last few decades, the Indian government has protected domestic retailers from foreign competition through policies that require front-end retail stores to be wholly Indian-owned. Thus, while policies of economic liberalization have allowed the import of foreign goods, they continue to be stocked in traditional local stores. The city infrastructure and relative lack of a car-driving culture have also made it harder to have off-city shopping malls as in the United States. Further, the affluence of consumers in urban centers is a relatively new phenomenon - traditional marketplaces and neighborhood *kirana* stores continue to play an integral role in the market participation of most social groups. They have subsequently been able to often out-compete supermarkets and malls, the chaotic streets in stark contrast to the constructed sanitized spaces of shopping malls.

In the last decade, the new shift in the retail landscape has been the growth of online shopping or the electronic buying of goods via the Internet. The rise in Internet connectivity and smartphone use in countries such as India has precipitated market transactions enabled by information technology. However, unlike the United States and Europe, where e-commerce companies could rely on existing infrastructures such as logistics, banking, and a branded

retail ecosystem, in India, they have had to establish these infrastructures from the bottom-up. E-commerce companies have also found ways to circumvent government policies that restrict foreign investment, with the consequence that many big international players (such as Amazon, Walmart, Alibaba, etc) have invested substantial money into building brands that can attract digitally literate Indian shoppers.

There have been relatively few studies on e-commerce in India or the online shopping habits of Indians. Most studies have been conducted in the Global North, with a strong focus on the United States. Datta - one of the few studies looking at e-commerce in the Global South - uses the Technology Acceptance Model to analyze e-commerce adoption in 37 developing countries and finds that it is dependent on social influence and perceptions of social, economic, and strategic usefulness, while also being mediated by the socio-economic environment in the country [10]. With e-commerce companies entering new markets in the Global South, there is a call by researchers to pay more attention to the cultural differences that impact the adoption of e-commerce [12] and to the effects of e-commerce on traditional marketplaces [8].

3 LITERATURE REVIEW: TECHNOLOGY ADOPTION AND USE

Before outlining the various models developed 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 [44] 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.

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 ICTD contexts [3, 32]. According to these models, early adopters engage with new technologies and subsequently communicate about their experiences. 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 [46], 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 [41]. 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 [47] 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 [20]. Further, these models do not often consider non-use as a voluntary and informed decision.

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 [11] 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 [4].

Most of the research explaining e-commerce acceptance by consumers have used the TAM and intersects with research on the adoption of Internet-based services in general. Ingham, et al. [28] 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 [5]. 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 [4] and informal learning [56]. 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 [35], 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.

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 [26]. 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. [52] discusses how 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 [2] to being adapted by users to integrate into the routines and values of everyday life.

Here, we refine Silverstone’s original theory to study 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 [54] 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. [53], 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 [24] 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, we refer to Silverstone and Haddon’s [51] conceptualization of the objectification phase wherein an ICT creates a space in a household - both within existing routines and values.

We thus use the following refinement in our study specifically applied 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?

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 [48] 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 [9].

Wyatt [60] 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. [59] 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 [49] 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.

4 DATA COLLECTION AND ANALYSIS

We conducted 73 semi-structured interviews for this study from 3 marketplaces in Bangalore, India from May 2017 to December 2017. The interviews were conducted in Kannada, Hindi, English, or a mix of these languages depending on the interviewees. We conducted intercept interviews, where we approached shoppers while they were navigating the marketplaces. This allowed the interviews to be quicker and not be disruptive to the 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; those who did agree for an interview invariably declined the offer for compensation.

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

Table 1: Demographic Details of Interviewees

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

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. We used purposive sampling wherein the interviewees used their judgment to find customers to interview until the goal of theoretical saturation [21] was reached. Initially, we chose customers who were 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, the interviewees chose specific locations at the marketplaces that were more likely to be visited by low-income customers. We also conducted 2 informal interviews with employees from e-commerce companies to get their perspective of the trajectory of online shopping and how this was shaping e-commerce strategy.

Our primary interview site was SP Road, the primary marketplace for electronic and ICT goods in the city, where we conducted 43 interviews. The marketplace consists of more than 2,000 shops selling and repairing a spectrum of technology goods and is renowned for its ability to offer competitive prices. 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. Table 1 shows the demographic split of the interviewees.

The study pursued an iterative approach to analyze the interview data using a mixture of inductive and deductive coding. The coding was conducted by the primary researcher, who has carried out ethnographic observations in these marketplaces and had knowledge about the local cultural and social practices. The interview data was first inductively analyzed using standard qualitative coding practices to generate an initial coding scheme. The next round

of coding was more deductive and used theoretical bodies of work such as domestication theory to generate themes that were further analyzed.

5 DOMESTICATION OF ONLINE SHOPPING

5.1 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 [36], while also being the highest spending sector with respect to digital advertising expenses [27]. 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." - 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.

5.2 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. In our interviews, we 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." - RP22F, 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

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

shops and people. You can eat also. Online, a little boring when you compare." - RP22F, 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 [15]. 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

In our interviews, 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 [16]. 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 [31]. 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.

5.3 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.

5.3.1 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 practices have become the visual urban embodiment of globalization [17]. 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.

5.3.2 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. Our 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 [1]. 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.

5.3.3 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

Marketplaces are public spaces that facilitate the "interactions of flows of people, goods, and information" [30]. 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 [8]. 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.

5.4 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.

5.4.1 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.

5.4.2 *Trusting online marketplaces.* In traditional marketplaces, historical social structures allow actors to deal with imperfect information [55] with local contexts shaping solutions to information problems. A major challenge for e-commerce firms is re-establishing

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

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 it 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 confront 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.

5.4.3 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 [58] 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 [19], 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 DISCUSSION

In recent times, international development agencies such as UNCTAD [38] 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 [37] 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 [23] 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" [37] and digital initiatives such as the *Digital India* program are, in effect, helping both domestic and global corporations tap into new consumer markets [22].

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

Our paper thus 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 [40]. 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 [33], and instead considering the role of social and cultural forces in mediating the adoption and use of technologies [6, 29, 43]. Kuriyan et al. [34] 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 [7, 42]. Research on repair and maintenance further emphasize how decisions of adoption are not one-off moments in the life of a technology artifact [25].

Our 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 [51] 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 [39].

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

6.1 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 [49]. 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" [59].

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 [57]. This echoes the criticism leveled at positivist models of technology adoption. There are, however, inherent difficulties in understanding the causes of non-use [14], partly because of the diversity of non-use cases [18]. As this paper 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, in our study we saw 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.

6.2 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 [51] 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 [33] 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 [39]. 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, in our study we saw 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. [8], 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 paper 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 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 practices. 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. The paper 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.

7 CONCLUSION

In this paper we 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.

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