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Gospels of Modernity: Digital Cattle Markets, Urban Religiosity, and Secular Computing in the Global South

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ABSTRACT

This paper joins the growing body of critical HCI work that studies the digitization of the Global South and reports the elements of 'secularization' in it. Based on a year-long ethnography on the contemporary transformations in religious practices in Dhaka, Bangladesh, this paper presents how the emerging "digital" cattle marketplaces subdue various forms of traditional manifestations of urban religiosity during *Eid-ul-Adha*, the second-largest Islamic festival in the city. This paper further depicts how such secularization contributes to diminishing rural-urban linkages, affecting electoral politics, and reducing the tolerance to religious celebrations in a city. Drawing from a rich body of work in critical urban studies, postcolonial computing, and sociology of religions, we explain how such oft-overlooked embedding of secularization in computing affects the religious fabrics in the urban regions of the Global South, and discuss its implication for HCI scholarship in diversity, inclusion, and development.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; **Ethnographic studies**.

KEYWORDS

Digital Marketplace; Modernity; Secular Computing; Urban Design; Spatial Politics

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1 INTRODUCTION

The burgeoning growth of digitization and ubiquitous computing has engendered a sudden escalation in E-commerce and social media-based online marketplaces in Bangladesh [63, 70, 82]. Like many other countries in the Global South, the availability of cheap smartphones, mobile internet and WiFi, the emergence of more straightforward marketplace applications, and the popularity of social media platforms have made selling and buying products and services online a widely prevalent practice in the urban regions of the country [70, 120, 140]. Thus, a large portion of the population is actively participating in this new mode of the digital economy. Thousands of products and services are being published, promoted, and purchased over various online platforms ranging from government-developed websites to personal Facebook pages of the sellers [20, 66, 100]. One of the newest additions of this trend is the digitization of the 'physical' cattle markets (traditionally held in the urban areas during Eid), which has received significant attention in Bangladesh recently. Such transformations often engender many socio-cultural tensions and put the effort of digitizing the countries in the Global South into question. While a rich body of literature in Human-Computer Interaction (HCI), Information and Communication Technology and Development (ICTD), and related fields has focused on different aspects of digital marketplaces [36, 50, 59, 101], very few studies have been conducted in the context of the Global South [42, 104, 131]. Hence, how these digital marketplaces impact various cultural dimensions there, has hardly appeared in HCI literature. In this paper, we address this gap by studying the digitization of cattle markets in Dhaka, Bangladesh, and report its multi-faceted impacts on the social, cultural, and political dimensions of urban Bangladesh.

Urban transformations have long been at the center of interest among social scientists, anthropologists, philosophers, economists, architects, urban planners, and political scientists for their enormous impact on a country's economic and cultural development [62, 87, 96, 116]. A rich body of work in these disciplines discusses how different components of a city, ranging from built infrastructures to political artifacts, play a crucial role in shaping the cultural discourse of a nation [23, 57, 92, 130]. The contemporary literature in urban theory has started focusing on the impact of computing on the transformation of these components, both in their material and conceptual forms [49, 69, 83, 119, 141]. However, those studies seldom address the complex urban contexts of the Global South. While various critical urban theories are asking big questions pertinent to the non-western cities (for instance, *why did modernity's effort in projecting 'secular' imagery on the non-secular cities in the Global South fail?* [58]), such questions have hardly been asked in HCI. Thus, computing tools and techniques developed in the Global North oftentimes overlook the presence of religions as a dominant factor of socio-spatial transformations of the urban life and enforce the standards of Western modernity by providing design "solutions" that are scientifically rational, formal, and secular [128]. How deployments of such culturally insensitive secular computing make a

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city in the global south 'fail' in modern terms, suppresses its potentials to generate a vibrant culture, and marginalizes urban religious communities are still understudied in the mainstream HCI, ICTD, and other related disciplines.

This paper addresses this gap through a year-long ethnography in Dhaka and several rural areas in Bangladesh and exploring a wide range of literature from different branches of urban theories, religion studies, social and political sciences. The ethnographic study includes interviews, focus group discussions, and thorough observations and documentation of various phases of *Eid-ul-Adha*'s rituals ranging from sacrificial animal-raising to distribution of meat on Eid day. This study further includes the recent digitization of many of the phases of these religious rituals in Bangladesh. Based on interviews, participant observation, and theoretical analysis, this work makes a three-fold contribution to HCI scholarship. First, we present here a detailed ethnographic account of urban secularization that is happening in Dhaka and is mediated through the digitization of traditional cattle markets. Second, drawing from a rich body of literature in critical urban theories, we provide necessary theoretical lenses for urban HCI literature to conceptualize the impacts of secular computing tools and techniques on the cities of the Global South. Third, we demonstrate how our findings contribute to informing the HCI scholarship in urban computing and religious design. This paper further discusses how these findings help HCI scholarship broaden its horizon toward inclusion and diversity through research and practices.

2 RELATED WORK

2.1 Urban Design and HCI

We open our literature review by focusing on the existing work in the intersection between Urban Design and HCI. Urban computing, Urban HCI, and similar works constitute prominent avenues in HCI studies that address various aspects of urban design ranging from developing design tools and techniques to addressing many social, cultural, economic attributes of complex urban systems [21, 47, 67, 86, 141]. A strand of work in this area is comprised of efforts in designing and developing software tools to support urban planners, designers, and architects' work of designing. [29, 32, 38, 99, 114, 117, 118]. Many more design tools and platforms (such as AutoCAD, Rhino, ArchiCAD, Revit,ArcGIS, Google Maps, Mapserver, Palladio, etc.) are being developed to enrich the design process starting from survey analysis to design to communicate envisioned design [25, 121, 125, 125]. Involving urban inhabitants to collect data has also gained popularity in many veins of urban design studies [65, 102]. To improve the participation of the public, city authority, and other stakeholders in the design process, cutting-edge technologies such as Augmented Realities, Virtual Realities, 3D printing, etc. are being developed [24, 55, 72]. These technologies also enable urban designers to communicate their progressive design ideas with the audience for further simulation, evaluation, and materialization.

Besides these technical advancements, HCI literature has also focused on the impact of computing over physical spaces and the way people engage themselves with those [93, 99]. On the one hand, many Urban HCI approaches investigate interactive possibilities in urban public spaces, which actively involve the city dwellers with the computational technology-based urban framework [53, 84]. For example, urban transportation, media facades, augmented information, virtual reality, location-based social network, and internet of things (IoT) explore different forms of engagement between public space and urban dwellers [37, 45, 48, 54, 56, 105, 122]. A dominant portion of this body of work focuses on designing and developing computational tools and techniques for faster, safer, cleaner, automated, productive, and sustainable urban life: often wrapped in the package of "smart city" [27, 56, 127]. On the other hand, HCI scholars have developed virtual platforms that study, replicate, or mimic various human aspects of physical public spaces to better understand privacy, surveillance, political activism, and social inclusion [33, 44, 46, 86]. Apart from these, the food delivery apps, online marketplaces, fitness applications, media channels, and many more online computing application-based activities have started to produce and reproduce spaces and redefine urban public places [60].

Although the intersection between urban design and computing has become one of the most popular avenues in HCI, it is mostly defined, developed, and discussed in the context of the Western World. Cities in the Global South are also going through significant transformations, mostly digital. However, this domain is still understudied. The small pool of work that has connected urban issues to HCI mostly focuses on digitally mediated changes in urban residences, work, communication, entertainment, and the politics of marginalization in them. For example, Jackson et al. have reported on various craft-based working strategies at mobile phone repair markets in urban Bangladesh and established connections of local repairing practices to global networks and institutions [77]. Ahmed et al. have gone further to investigate residual mobilities of urban poor and demonstrated how they re-construct their lost social scaffolding by hacking, making, and repairing technical infrastructures [19]. Based on their work in Phnom Penh, Cambodia, Jack et al. have explained the infrastructuring of online marketplaces that embrace technological tools and urban practical limits, cultural practices, and social conventions together [76]. On the contrary, Kumar and Rangaswamy have reported the complex sociotechnical ecosystem of pirated mobile entertainment media in urban India [85]. These and other similar studies have brought several urban socio-cultural-economic tensions around computing technology in the Global South to the fore. However, how religion (being an important socio-cultural factor) is interwoven in many non-secular Global Southern urban spaces, and how computing and digitization often marginalize faith-based urban activities are still remained largely understudied.

2.2 Urban Design, Modernity, and Religion

Now we bring the literature of Urban Modernity, Religion, and Urban Public Space of the Global South to the fore to better understand the embedded complexities of these contexts, where various Western digital interventions are embarking on. While modernity is marked by a set of values, processes, technologies, and the time-period when scientific revolution, industrialization, and capitalism rapidly expanded across the West [128], Urban modernity is characterized by the adoption of modernist ideology in the urban built environment and as a tool to respond to emerging social and

political tensions [1]. Predominantly concentrated on urban development strategies and planning policies engendered in the west, urban modernity is globally understood as a product of secular institutions, practices, and discourses [58]. A significant portion of knowledge in the urban studies developed in the 19th and 20th century read the cities through scientific rationalities and measures a city's performativity through the standards of "industrialized progress." [89, 91, 134]

With the theorization of the Global City in the 1980s, this new paradigm of modern urbanism started to expand beyond the West and influence the spatial, political, and economic readings of modern cities worldwide [116]. These scholarly and design practices reinforced the qualities of western modernity as the standards of a successful, global, modern city [58]. In the late twentieth and early twenty-first centuries, scholars like David Harvey [62], Edward Soja [124], Saskia Sassen [116], et al. mapped the urban spatial responses around global flows of capital, technology, information and pointed toward the failures of such modernist advancement at different scales in an urban setting. Soja [124], Jane Jacobs [78], Fainstein[52], Sandercock [115], and many others shed light on different forms of social inequalities and injustices that were introduced by modern cities. Although it was not at the center of their criticism, the western concept of modernity has also always upheld the idea of secularization, and there has been a predominant secular spirit among the modernist planners or scholars toward understanding a city [31, 58].

While the twentieth-century world witnessed the advent of human rationality and technological progress, this century, by contrast, is experiencing a rise in religious/spiritual values and faith-based communities [31]. The massive globalization [123], intercontinental migrations [142], and forced mobilities of the refugees [98, 109] have started to question different aspects of the modern secular urban planning systems of the West [31]. For the last few decades, the geopolitics of the religious have received a great deal of attention as the cities of different parts of the world are observing a rise in religious nationalism, fundamentalism, and communal violence [58]. Hence, in this era of globalization, religiosity is neither a unique 'feature' of the Global South, nor is there a dichotomy between the North and the South. However, since in the Global South, urban religion and the city coexist from the very beginning, scholars like Robert Orsi have suggested looking at the regional scholarly work from the Global South to understand the necessity of dynamic engagement of religion with the city [106].

Next, we turn to urban spatials to explain why, in the global south, it is difficult to understand urban religion without taking space and spatial politics seriously. Various scholarly works conducted in South Asian and African cities demonstrate several forms of complex yet inevitable engagements among urban religion, spaces, and functions. For instance, AbdouMaliq Simone has examined how the traditional Islamic institution "zawiyyah" helps urban Africans to act effectively within a larger globalized economic domain [123]. Zawiyyah provides space and a trans-local network through which marginalized urban entrepreneurs or businessmen can connect, react to, or resist the globalized urban world. Through examples of urban violence, such as the Godhra Station incident and riot in Ahmedabad in 2002, Yasmeen Arif has reported how rehabilitative religious activities take control over urban space, when 'secular' or state-sponsored efforts fail [28]. Similarly, through her ethnographic work, Ara Wilson has demonstrated how multiple vernacular economic systems sustain in Bangkok's global economic setting as the religious shrines invade and disrupt the mobilities of capital and labor [133]. Parthasarathy has taken this further by exploring the spatial politicization of religion in urban Mumbai during the religious festival Chhat Puja [108]. With similar spirit around religious festivals, Mehrotra et al. explain how, during Kumbh Mela, a kinetic city emerges in India and challenges the very necessity of permanency in defining the urban [96]. Taken together, this line of work clearly shows the urgency of studying spatial manifestations of urban religion since religion cannot be seen as peripheral or even antithetical to the urban modernities and civic futures of cities in the global south, which is gradually embracing various digital interventions.

2.3 HCI and Religion

Next, we turn to the literature of religion in HCI to map the trajectories of research work, which are essential to connect the urban contextual aspects of the Global South with computational advancement. Despite a significant portion of the world's population is associated with different religious beliefs and groups, 'religion and HCI' is comparatively a new area of exploration [113]. The lines of work in HCI, CSCW, and other related areas focus on religion from mostly two major perspectives. The first one focuses on how religions, being a source of many core human values and practices, influence or shape the designs and uses of technologies. Several studies in this spirit have surfaced how technological interventions, from domestic or family life [40, 135, 139] to communal lives [73], are often being assisted, resisted, or improvised by religious values, cultures, norms, and sentiments of the users. In addition, some studies have reported on the uses of techno-spiritual applications through which many religious groups are performing their ritual activities [138]. A new thread of work has been started, where religious value-backed technologies are being promoted for attaining environmental sustainability [113]. The second perspective focuses on ensuring a more equitable and "just" technology by incorporating religious diversity in design. For example, Wyche et al. have explored a design-oriented study in the US and Kenya and argue that it is essential to add voices from developing regions to avoid those artificial distinctions between instrumental and religious ICT use, which are developed by the design discourses around technology for religion [137]. Similarly, Sultana and her colleagues [128] argue to be open to the knowledge, material, and politics involved in local para-religious practices in Bangladesh to promote more inclusive technology designs for health and well-being. Outside of HCI, Campbell et al. have brought relational aspects of new media technologies and religious changes [39] to the fore. She and her colleagues further extended this line of work to explain the evolution of the study of religious communities on the Internet over time and shed light on future research on digital religious studies. Focusing on religious inclusivity and co-existence, Mustafa and her colleagues have worked on Muslim communities from different parts of the world and explored why western originated design methods should be revisited to adapt non-western cultural attributes [103].

The studies mentioned above inform HCI of the need for exploring religious values, socio-cultural-religious norms, active participation of religious groups with technologies, and their evolved religious practices and lifestyles. This work, situated in an urban setting of Bangladesh, essentially represents a tension between tradition and modernity - a story that may have a resonance in many other places, too. This tension situates itself in Bangladesh through a historical trajectory of 'otherness' - while a part of this is formed by the contemporary manifestation of socio-religiosity, it is also comprised of the history of colonization, modernization, NGO-ization, and industrialization. Thus the message of this paper, in spirit, aligns with the postcolonial computing movement in HCI that critically examines the 'misplaced' and 'displaced' values through design [19, 74, 128].

3 RELIGIOUS BACKGROUND OF *EID UL ADHA* AND ITS CELEBRATION IN BANGLADESH

Eid ul Adha is the second biggest festival for the Muslims worldwide. This Eid is also known as the Feast of the Sacrifice, and it marks the end of the annual ritual of Hajj (one of the five pillars of the Islamic belief system) [81]. The historical background of this Eid can be traced back to the time of Ibrahim (Abraham, the common patriarch of Islam, Christianity, Judaism, and other religions). He was instructed by Allah, in his dream, to sacrifice his son Isma'il in the name of Allah. Both father and son were determined to follow Allah's command. As Ibrahim prepared to kill his son, at the very last moment, Allah stopped him and gave him a sheep to sacrifice instead. To commemorate and respect Ibrahim's selfless act of sacrifice, also termed as Qurbani, every year the Muslims of the world celebrate Eid-ul-Adha. On this day, the ritual of Qurbani is obligatory upon every sane adult Muslim male or female, who has wealth in excess to his/her needs[14]. Usually, those who are eligible to pay Zakat [1] are obliged to sacrifice four-legged animal/s, for instance, cow, sheep, goat, camel, llama, etc., in the name of Allah. After the Qurbani, each person must divide his/her portion of meat into three categories of an equal amount [81]. The first 1/3 portion of the meat is usually kept for the person and their family, who gives Qurbani. The second 1/3 portion is allocated for the neighbours and the relatives. The rest of the meat must be distributed among the poorer [2]. This festival, according to the Muslims, aids the flow of food distribution amongst the poor and marginalized population in society [129].

Bangladesh celebrates Eid ul Adha with proper religious gravity and festivity. Each year, throughout the country, millions of sacrifices are made during this festival. In the year 2019, Bangladeshi farmers prepared a stock of 11.8 million animals to be supplied at different permanent and temporary cattle markets around the country [6]. Dhaka, being the capital and the most densely populated city of the country, accommodates the biggest cattle markets, popularly known as *haat*, every year at selected public open spaces. Cattle heads from different districts of the country are transported to the city at least seven days prior to Eid. Thousands of Qurbanis are performed in the morning of the Eid day in the parking lots of apartment buildings or on the open lanes or streets, making the city environmentally hazardous for the next few weeks after Eid. This festival makes newspaper headlines every year as it comes with immense temporary rural to urban migrations, massive traffic congestion, political conflicts during the leasing process of makeshift cattle markets or *haat*s, and environmental disaster due to the open slaughtering of millions of animals on the city streets, and city's poor maintenance infrastructure.

[1] Zakat refers to an Islamic finance term, where an individual has to donate a specific portion of his/her wealth each year to any charitable causes.

4 CATTLE PRODUCTION, MOBILIZATION, AND *HAAT* SCENARIOS IN DHAKA

Cattle production has always been an integral part of the rural lives in Bangladesh since its agricultural farming system largely depends on cattle [30]. The abundance of grazing land, cattle food, favorable climate, etc., help the cattle population grow at a significant rate [79]. Muslim majority population contributes to cattle production by creating a consistent demand for beef consumption [30]. With the massive rural to urban migration started from the late 80s, a demand on meat supply to the cities started to boost cattle raising business in rural farmlands of different capacities [111]. Moreover, substantial yearly demand for cattle heads in the urban areas during Eid made cattle raising one of the most profitable professions in the rural sector. Besides the small to middle-scale cattle farms owned by farmers, a good number of cattle raising industries/ dairy farms (for instance, Meghdoubi Agro Dairy Farm, Aftab Dairy Farm, Bengal Meat, Sadeeq Agro, etc.) has been developed in recent decades, who are actively supplying cattle heads to the city during Eid. Transporting cattle heads (mostly cows and goats) in bulk from the rural areas to Dhaka city during Eid ul Adha is one of the most challenging jobs for the rural farmers and traders or *Byapari*. Dhaka's cattle market receives millions of cattle heads from rural farmlands by road, rail, or water [18].

A month before Eid, Dhaka starts its preparation to celebrate Eid ul Adha by transforming its selective public open spaces into temporary *haats*. Both City Corporations (North and South) of Dhaka put government-owned playgrounds, vacant lands, school fields, etc. on temporary leases as potential *haat* spaces. Leaseholders are responsible for transforming an open piece of public land into a temporary cattle market. The main responsibilities of these leaseholders include: i) marking the boundary of the *haat* with temporary building materials like bamboo and rope, ii) construction of the entry gate to the *haat*, 'hasil ghar' or toll collection centers inside the *haat*, 'doga' or bamboo-made aligned structure to tie the cows with, temporary toilets and washing zones, etc., iii) ensuring basic infrastructural support such as 24 hours water and electricity supply, iv) ensuring highest security (CCTV camera, security guards, volunteers) inside the *haat* since huge amount of 'cash only' transaction happens for 5-7 days, v) employ a large number of people to maintain the *haat* situations such as allocation of space to the cattle sellers, collection of hasil or toll at the counter from the buyers, check the toll receipts of purchases at the gate, etc. To avoid any conflicts inside or outside the *haat*, Dhaka Metropolitan Police also builds temporary camps near the *haat*s and supports the leaseholders' teams to maintain safety, security, and peace. Small stalls for tea and other relevant businesses are also constructed inside or outside the *haat* by paying a daily rent to the leaseholder.

Figure 1: 1. Makeshift cattle market at the Shahjahanpur area in Dhaka, *Eid ul Adha*, 2019 2. Purchased cattle head being taken to buyer's house from *haat* through Dhaka streets 3. Sacrificial animal being taken care of at the parking lot of an urban residential building.

However, the leaseholders' earning mostly comes from the *hasil* or toll (5% on the purchase price) collected from every cattle buyer.

These *haat*s bring together different actors, who participate in different ways to run the *haat*s. The cattle sellers are basically of three types: the *khamari* (a person, who owns a cattle farm in a rural area, takes his cattle to the city market or '*haat*' during Eid to sell), the byapari (a person, who does not have his own farm, buys cattle heads from different farms, bring those to the *haat* to sell), and the farmers (who raise a few cattle heads in their household area, bring those to the *haat* to sell). Khamaris, Byaparis, and the farmers are usually counted as informal enterprises, who are coming from the rural parts of the country for doing their business. Formal enterprises, such as big companies of dairy firms also participate in selling. The buyers are basically affluent Muslims. Apart from the Khamaris, Byaparis, and farmers, there are many informal workers performing different roles in the *haat*. For example, there are "helpers" in the *haat*, who deliver the cattle heads (usually walk the cows) from *haat* to the buyers' addresses. Cattle food sellers, garland sellers, meat-processing utensils sellers, etc. also do their business inside and outside the *haat* boundary. The overall *haat* situation is managed by leaseholder's volunteers, local police, and City Corporation representatives.

5 DIGITIZATION OF CATTLE MARKET

The rapid growth of digitization and ubiquitous computing in Bangladesh has engendered a sudden escalation in e-commerce [71]. Availability of cheap smartphones, affordable internet packages, and the advent of internet services in all 64 districts have played a significant role in popularizing e-commerce in Bangladesh [63]. In 2016, Bangladesh Government initiated the process of taking e-commerce in rural areas by creating digital platforms, where buyers and sellers from any part of the country could buy and sell products using mobile banking facilities [4]. Such rapid digitization of marketplaces is not only happening through formal websites. According to the E-Commerce Association of Bangladesh, there are 8000 e-commerce pages in Facebook alone [5].

Bangladesh, being an agrarian economy, put additional emphasis on the digitization of agricultural markets at the governmental and non-governmental level. In many cases, agricultural sectors entered the digital world through supermarkets' websites. Meat and dairy products gained additional attention among the higher-middle income and high-income urban population, who prefer hassle-free delivery services at home. In 2013 during *Eid ul Adha*, several e-commerce sites such as bikroy.com [11], cellbazar.com [13], amaredesheshop.com [8], etc. added sacrificial animals to their online product list [3]. For the last few years, online cattle markets have gained more attention at different consumer levels as several large meat, and dairy production farmhouses started selling cattle heads online from their firms. Bengal Meat [16], Sadeeq Agro [15], Aura Agro [9], Shuddho Khamar [17], Khamar-e [12], and many other business companies have come up with additional *Qurbani* services such as slaughtering, meat processing, and home delivery of packaged meat of the sacrificial animal.

In 2020, due to the COVID-19 pandemic, the digitization of the cattle markets experienced a sudden boom during *Eid ul Adha* in August. Along with the existing front-end agricultural companies, established digital marketplaces (sheba.xyz, Daraz, eOrder, paoajay.com, etc.), and super shops, several new and small-scale business entrepreneurs started selling cattle heads on different digital platforms ranging from mobile phone applications to Facebook. To limit the spread of COVID-19 from physical cattle markets, the government also encouraged people to buy their sacrificial animals online. Through a governmental website digitalhaat.net, 54 selected farms could sell their cattle heads. Through another website foodfornation.gov.bd [10]. individual farmers could upload images and information about their cattle heads and sell those online.

Both governmental and non-governmental initiatives apparently follow similar models for their marketing purposes. On their websites, they upload images of the cattle heads as products with information including asking price, breed, color, live weight, meat weight, height, number of teeth, age, foods consumed, etc. Some websites add videos, as well. Most of these businesses offer two options for the home deliveries of the bought animals. Buyers can choose between live animals delivered at their preferred location

before the Eid day or processed and packaged meat of slaughtered animals delivered at their home on Eid day or one or two days after the Eid. Most of the services offer an option to talk directly to the customer service over the phone for more information about the cattle head, further assistance in buying one online, or for negotiation over prices. Some entrepreneurs, such as *Khamar-e* [12], offers direct contact with the cattle raiser. Mostly these communications happen over mobile phones, using mobile phone networks, Viber, WhatsApp, and Imo. A buyer has to provide their address or preferred location to collect the live animal or processed meat. Monetary transactions are mostly done either in cash upon delivery methods or via online banking services such as bKash. Many services demand an advance from the buyers for booking sacrificial animals.

For publicity purposes, most of the companies choose Facebook. They upload images and videos of the latest added cattle heads in their inventory, announce promotions and discounts, reply to the comments that potential buyers or sellers leave, upload videos on how to place an order online through their websites or mobile phone applications. These pages also reply to the messages from buyers on Facebook Messenger. Some of the pages appear on Facebook Live to show their inventory as well. Some upload videos of their best products (sacrificial animal) on YouTube. Most of the pages usually stop taking online orders and requests for slaughtering/meat processing services 3-4 days prior to Eid.

6 METHODS

We conducted a year-long ethnography on urban cattle markets in Bangladesh from June 2019 to August 2020. The ethnographer was born and raised in a Muslim family in Dhaka. She is also trained as an Architect and Urban Designer with experience of working on several urban spatial design projects in Bangladesh. As is common in focused ethnographic studies [68], we started with a broad research objective to identify the urban spatial politics around this religious festival in Dhaka, Bangladesh. However, as we proceeded with our study, we found how fast the online cattle markets started to intervene in the traditional systems. Hence, documenting the impact of digitization on the overall cattle market scenario became our study's focus. We conducted our study essentially in two phases. The first phase (from June 2019 to January 2020) concentrated on studying the traditional urban cattle market system. Due to the COVID-19 pandemic, the second phase (February 2020- August 2020) of our study was done remotely over digital media and concentrated on studying the emerging online cattle marketplaces. In the following paragraphs, we report both of the phases in detail.

In the first phase, we concentrated on studying (i) sacrificial animal production in rural Bangladesh, (ii) urban activities at traditional cattle markets in Dhaka city, and (iii) traditional religious performances of the urban dwellers during this religious festival of *Eid ul Adha*. To document sacrificial animal production, mobilization, and marketing, we selected five villages (Talgachi, Garadoho, Purantepri, Mushipur, and Barabil) of Sirajganj District, which were popular for raising cattle heads for Eid. After selecting these villages, the ethnographer reached out to people in her social network to access the farmers' communities in each of these villages. For each of these villages, we had more than one 'gatekeepers' [90]. The gatekeepers would live in those villages for at least ten years, and they were also connected to cattle farms and farmers' communities there. In these villages we interviewed 7 *khamaris*, 12 *byaparis*, and 14 individual farmers (8 men, 6 women). The age of these participants ranged from 22- 50 yrs. Eleven among them never received any formal education. The interviews were semi-structured and were 30-40 minutes long on average. We asked them about their farm's business model, the impacts of digitization of the country on their farm, and their future plans, among others. We also asked the farmers about their cattle-raising processes and their experiences of staying in Dhaka for selling their cattle heads during *Eid ul Adha*. We observed and took note of the cattle-raising spaces and associated infrastructures as well. We then had five focus group discussions with the farmers, political leaders (popularly known as 'Chairman'), and the *byaparis*. In these FGDs, we discussed how they worked together to arrange the "chalan" or supply of cattle heads before Eid, how the Chairmen influenced the overall process, and how convenient mobile phone applications (Imo, Viber, WhatsApp, etc.) were for the farmers, among others. The participants' ages ranged from 25-60 yrs. In total, 19 people participated in these 5 FGDs (4-8 participants in one group). Each FGD was 40 minutes long on average. Although female members of the farmers' families (who were directly involved with the cattle-raising process) participated in the individual interviews, they were not present in the FGDs following the village norms. Both the interviews and FGDs followed the local cultural norms. We kept studying the village farmhouses until our study reached a theoretical saturation [107].

The next stage of the first phase of our study emphasized on Dhaka's traditional cattle markets before the *Eid ul Adha* of 2019. The ethnographer visited eight cattle markets (five in Dhaka South and three in Dhaka North City Corporation areas) during the last 15 days before the Eid day. This part included documentation of spatial, material, and temporal aspects of the *haats*, and observation of the buying, selling, bargaining, and related activities. We spent eight hours on average at each *haat*. We conducted short interviews of 20 cattle buyers, 15 cattle sellers, and 20 informal workers, who were involved in various businesses during the *haat* days. Participants were all male, and their age ranged from 21- 60 yrs. The interviews were 10-15 minutes long on average. As the Eid day approached, the haats became extremely busy. Hence, we got much less time for our interviews. To collect more data, we later contacted 27 of our participants from *haat* via mobile phone after the Eid day and documented their *haat* experiences. The haats were usually extremely male-dominated. All the interviewees at this stage were men. The ethnographer was accompanied by one of her male family members of her own family (to respect the local custom) during her visits to the *haats*.

The last segment of the first phase included documenting the urban dwellers' traditional religious performances during *Eid ul Adha*. Since the ethnographer was born and raised in a Muslim family in Dhaka, she was familiar with the Qurbani rituals and urban engagements with this festival from her childhood. She visited, observed, and documented urban spatial transformations of six residential areas in Dhaka, including Arambag, Shantinagar, Shahjahanpur, Badda, Khilgaon, and Gulshan Niketon. We chose these areas to ensure socio-economic diversities in the study. On Eid day, we documented Qurbani rituals (from slaughtering to meat

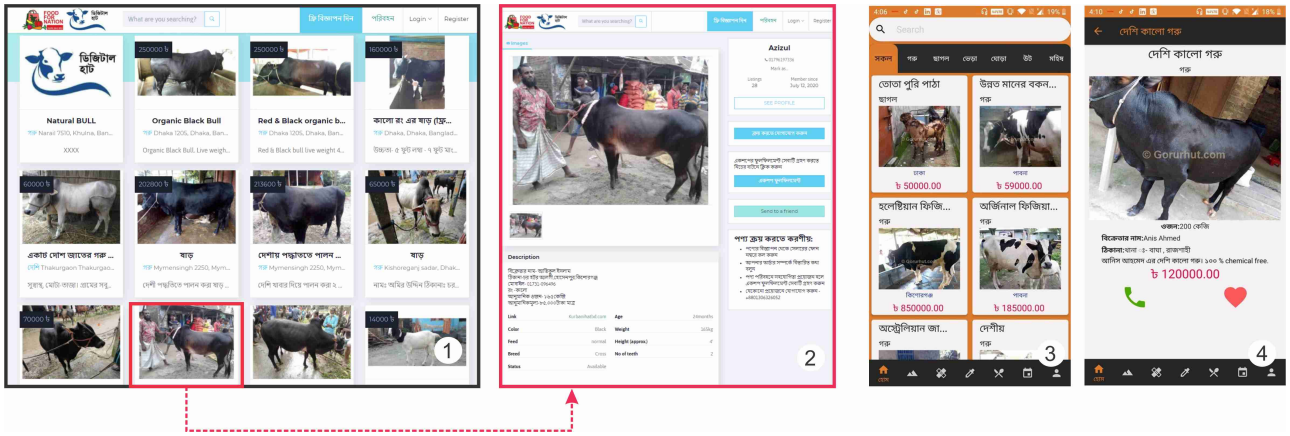

Figure 2: 1. A web page of the government-owned website for online cattle market, showing a portion of available cattle heads from various regions of the country (August, 2020). 2. Price and physical description of a cattle head are provided on the web page by the seller. Contact information and location of the seller are also mentioned. 3. A mobile phone application, developed by a local private company, is showing available cattle heads in their collection. 4. Some limited information about a cow is displayed with an option to call the service center.

distribution) at six residential buildings in Arambag and Shantinagar residential areas. we also conducted short interviews with 1 Imam (leads Muslim worshipers in prayer in the local mosque, 35yrs old, male), 4 meat processors (26-35 yrs old, male, original occupation rickshaw pulling), and 6 needy meat collectors (21-40 yrs old, 2 male, 4 female, beggars) on the Eid day. As the last step of this phase, we conducted FGDs with 15 affluent Muslim families (2-5 adult members in each family, including men and women) from the above-mentioned residential areas. We approached all of them through our social network, and they participated voluntarily to share their experiences with us. We asked about their family traditions around this religious event, their urban engagements at neighborhood and city level during Eid, and the influence of the emerging digital cattle markets on their ritual, among others. We conducted the FGDs after Eid day. The FGDs were 30-40 minutes long on average. In total, we had 20 male (age range 20-70 yrs) and 19 female (age range 22-57 yrs) participants for these family-level FGDs. We kept studying urban Muslim families until our study reached a theoretical saturation [107].

We conducted the second phase of our study (February 2020-August 2020) remotely amid the COVID-19 pandemic. The rules around social distancing, controlled mobilities, and other health regulations gave an impetus to the growing digital *haat* scenario in Bangladesh during Eid-ul-Adha in 2020.Hence, we essentially focused on documenting these digital marketplaces' impacts on urban Dhaka and beyond in the second phase of our study. This phase included (i) analyzing design details of digital *haat* websites (both governmental and non-governmental), (ii) observing and documenting comments, conversations, and debates on Facebook pages that were used as online trading platforms for cattle heads, (iii) conducting 15 semi-structured phone-interviews with online cattle sellers (6, men, 21-45 yrs old, 5 received formal education) and buyers (6 men, 3 women, age ranged from 25 to 53 yrs, working individuals). We approached our participants through our social network. Interviews were 20-30 minutes long and focused on the participants' experience around digital selling/shopping of Qurbani animals. We primarily selected the websites and Facebook pages we studied based on the recommendations of our interview participants. Later, from the comment sections of those Facebook pages, we came to know about more pages and websites, which were selling Qurbani animals during *Eid ul Adha* in 2020 [2]. We kept studying the websites and Facebook pages until our study reached a theoretical saturation [107].

In total, our study produced 141 semi-structured interviews (114 participants, 101 male, 13 female participants, since the market is mostly male-dominated), 20 FGDs (39 male, 19 female participants), 220 hours of observation, more than 300 pages of observational field notes, a detailed analysis of 14 Digital *Haat* websites, and 17 Facebook pages providing various services ranging from cattle selection to meat processing and home delivery. Participation in our study was completely voluntary and unpaid [3] All the interviews and FGDs were conducted in Bangla. The interviews were audio-recorded with the permission of the participants. All the interviews were transcribed and translated by the ethnographer, a fluent speaker of Bangla and English. The anonymized data (interviews, field notes, and FGDs) were then analyzed using open coding [126] and thematic analysis [35].

[2]Visited Websites: Amar Desh E-Shop, Food For Nation-Digital Haat, DigitalHaat.net, Khamar-e, Pmart.com, paoajay.com, Bikroy.com, eorder.com.bd, Daraz, Sheba.xyz, Bangal Meat, Sadeeq Agro, cellbazaar.com, and Shobjibazaar.com
Visited Facebook Pages: Shuddho Khamar, Aura Agro, Khamar-e, Hazaribag Gorur Haat, Gabtoli Gorur Haat, Dhaka Koshai Bari, Saodaghar, Online Gorur Haat, Chashir Haat, Bangladesh Cow Haat, Sadeeq Agro, Gorur Hut, DHAKA GORUR BAZAR, Aftab Nogor Gorur hat, The Cattle Point, Bengal Meat, and Rupsha Agro
[3]According to the culture of Bangladesh, it is considered awkward to offer money to someone for 'talking'.

7 SECULARIZATION OF URBAN DHAKA

Our data reveal a wide variety of ways that demonstrates how the emerging digital cattle market is influencing secularization in a complex urban context like Dhaka, where religion is entangled in almost every socio-cultural aspects of urban life. To better articulate the findings for this section, we group them into three broad categories. Each of these categories points toward different emotional, communal, and spatial facets of this religious festival Eid ul Adha that get marginalized by digital cattle markets.

7.1 Limited Visibility of Religious Festivity:

The emerging digital cattle market contributes to waning out the urban religious festivity during Eid ul Adha. Traditionally, the festival starts in Dhaka city as the rural cattle sellers and cattle heads arrive and start to dominate the cityscape with their presence. Despite the designated markets, many illegal cattle markets start to appear on the roadsides, leftover open spaces in different neighborhoods, or unused spaces under the flyovers. As the Eid day approaches, affluent Muslims buy cattle heads from legal or illegal *haat*s and these religious commodities start spreading from the *haat*s to all the nooks and corners of the city. People start celebrating Eid. Such urban festivities with a backdrop of religiosity start to get impacted as the online digital cattle market emerges. Supplying the cattle heads to the purchaser's house directly from the farms based on their online orders has put forth questions around the necessity of arranging makeshifts cattle markets in Dhaka city's open spaces. Moreover, online cattle markets promise to liberate the urban people from many hassles of pre and post Qurbani rituals, for example, traffic congestion before Eid day(since the rural farmers do not have to come to the city to sell cattle heads), bringing purchased cattle heads from *haat* to home, taking care of those at home till the sacrifice, hiring butchers and meat processors, meat processing, cleaning after the ritual, etc. Many online services have started offering processed meat delivery of the sacrificial animals that customers purchase from these websites. On the one hand, such online-based services offer modern, systematic, and technical "solutions" to many "problems" city dwellers face during this religious festival. On the other hand, these services, unknowingly, limit different forms of festivity and social connections that the city used to embrace at different scales. The following case depicts the traditional urban festive scenarios and how the visibility of such religious value-driven festivities at various urban public spaces have started to get obscured as the online cattle market emerges.

Case 1: Mr. Ahmed (67) and his wife (59) live in the Khilgaon area (under Dhaka South City Corporation) in an apartment building. Every *Eid ul Adha* Mr. Ahmed and his wife share a sacrificial animal (cow) with his son and daughter's families, who live in separate apartments in the same building. Mr. Ahmed goes to one of the nearest *haat*s in his locality- Khilgaon rail-gate *haat*, to purchase cows for Qurbani. He describes the *haat* as an extremely crowded, busy, noisy, muddy, and dirty open space. Although the Dhaka South City Corporation legally defines the *haat* boundary, in most cases, this *haat* starts way beyond the main entrance. The rural sellers, who cannot manage a spot inside the *haat* boundary, try to settle outside near the enormous, bright, and colorful gate toward *haat* entrance. Inside the *haat* boundary, Mr. Ahmed finds hundreds of *khamaris*, *byaparis*, individual farmers, buyers, helpers any many other people actively participating in the market system. Mr. Ahmed says that these makeshift *haat*s are not free from functional flaws. These are not properly designed, developed, or maintained. However, he always enjoys going to a *haat* to buy Qurbani animal by himself as a part of his religious culture. He also explained how the city of Dhaka transforms around these *haat*s during Eid. Mr. Ahmed says,

> "*I usually buy our sacrificial animal one or two days before Eid day, when the streets become more occupied with the cows than the cars. Almost everyone in the city becomes busy with Qurbani animals. Temporary vendors appear on both sides of the streets selling cattle foods, bamboo mats, meat processing tools, decoration items for sacrificial animal, plastic buckets or containers, plastic bags for storing meats, etc. Seasonal helping hands and beggars appear to collect meat from houses. Madrassa (Islamic educational institutions)students go from one door to another and request affluent Muslims to donate the hides of their sacrifices or an equal amount of money for the orphans studying in their Madrassa. All these activities make Eid fun and festive. I love to see how these rituals and festivities blanket the city a few days during Eid.*"—Mr. Ahmed, 67, Retired Banker.

Besides sharing his years-long experience around *haat* and Dhaka's streets, Mr. Ahmed describes how his neighborhood changes during Eid ul Adha as well. He says,

> "*Our neighborhood transforms into an exciting space. Ground floor car parking lots of the buildings in this neighborhood covert into temporary cattle sheds. Children of Dhaka do not get much opportunity to see live animals in this city. My grandchildren and their friends from this neighborhood start taking care of the animals, feed them, play with them. They bond with these animals and become upset as we sacrifice those for Allah to feed the community's poorer members. That is the religious philosophy behind this Qurbani. You sacrifice something close to your heart to help the poorer, helpless people.*"— Mr. Ahmed, 67, Retired Banker.

The massive promotion of digital cattle markets in 2020 motivated Mr. Ahmed's son to buy sacrificial animals online. For the upcoming Eid (2021), Mr. Ahmed's family plans to order their sacrificial animal online from X, a renowned meat company. From X company's website, one can pick an animal (based on the information provided), place an order by following elementary steps, and pay with their credit/debit card or via Bkash (local mobile banking app). Mr. Ahmed's family also plans to receive processed and packed meat at their address on Eid day from X company. Although this is a straightforward option of getting Qurbani meat without dealing with many hassles of this ritual, Mr. Ahmed is not happy with this decision. He says,

> *"If everyone starts receiving meat from online orders, what will happen to my city's traditional festivities during Eid? Gradually rural farmers will stop coming to the city, haats will be abandoned, poor people will not*

> *get any chance to earn some extra money from the haat by providing additional services, neighborhoods will lose their traditional religious vibes during Eid. Eid will not feel like Eid anymore"*— Mr. Ahmed, 67, Retired Banker.

These and many other stories collected in our field study shed light on the ramifications of the emerging online marketplace that limit religious vibes of this festival at different urban spaces ranging from neighborhood to urban streetscapes. Such gradual degradation of religious festivity from a city's public sphere stimulates secularization in Dhaka's urban contexts, which are historically 'non-secular' [75].

7.2 Detaching Religion from Urban Electoral Politics:

Unlike modern Western cities, it is difficult to separate religion from local politics in many South Asian urban contexts [108]. Our study reveals that Dhaka's religious festivities around makeshift cattle markets are also integrated with local politics in a very intriguing way. On the one hand, local politicians find these markets highly useful for massive political publicity to render dominance over a particular urban locality. On the other hand, local voters often evaluate potential leaders' eligibility and political commitment toward their religious sentiments. This section describes how electoral politics get mediated through different functionalities of the *haat*s during the religious festival of *Eid ul Adha* in Dhaka and how the digitization of such marketplaces fails to translate these political dynamics through online platforms.

7.2.1 Leasing Process: The leasing process of the makeshift cattle markets in Dhaka is a complex process that brings electoral politics and religious festivity together. Months before Eid, both city corporations in Dhaka separately publish lists of designated open public spaces for arranging cattle markets of that year. Then they publish cattle market tender notices (blind competitive bidding to award contracts), open the tender boxes, and announce the last date of making an offer for the bidding. Interested individual traders buy tender forms and submit their offers. After evaluation, the City Corporations publicly announce the name of the highest bidder for each of the designated spots. The highest bidder then becomes the temporary leaseholder of a particular open space and is responsible for making proper arrangements to accommodate a cattle *haat* there. As published in the daily newspapers, the bidding process to attain the lease for a cattle market or *haat* is not transparent or free from corruption. In many cases, several potential bidders are systemically barred from participating in the bidding. The local politicians play a crucial role in controlling the bidding process [7]. Newspaper reports assert that almost every leaseholder of Dhaka's *haat*s during the Eid 2019 were either directly involved with the ruling political party or somehow associated with the influential political leaders of that locality. Occupying a *haat* lease during this religious festival works as exposure for those individual tenderers who want to participate in the next political election. Cattle markets, traditionally, are one of the most efficient platforms to demonstrate their power and domination over a particular area at an enormous scale during this festival.

7.2.2 Political Publicity at haat: Next, we turn to the document political publicity scenario in *haat*s. As mentioned in the above paragraphs, *haat*s often work as political power demonstration spots for local political leaders. From the entrance gate to the *haat* to repeating advertisements at loudspeakers— political parties try to make sure that they have received enough attention from their potential voters. One of our participants' description depicts the intensity of political publicity in a *haat* scenario. Mr. Sirajul Islam, a 39 years old government employee, says,

> *"(In 2017) There were giant banners almost everywhere in our area advertising the local haat, haat's location, and the leaseholder's name and image during Eid ul Adha. There was a highly decorative, almost 2-story tall, colorful entry gate leading to the haat. The "hasil" or toll booth was near the entrance, flanked by huge images of two influential local political leaders. One of them was the leaseholder. There were posters and banners here and there with their pictures outside the haat area as well. At night there was decorative lighting to attract more buyers. Working for the leaseholder, the volunteers also did "miking" (announcement made through a microphone and loudspeaker to get the attention of a vast crowd/ people of a neighborhood) throughout our area and nearby areas to attract more people to visit the haat. They announced the leaseholder's name and repeatedly mentioned how dedicated he was in managing the largest haat in the last five years in this area. That miking was not very pleasant. However, they worked very hard and ensured security inside and outside the haat area even at nights."*—Sirajul Islam, 39, male, Government Employee.

The paragraphs above render how local electoral politics get mediated through different functions of the cattle markets during Eid. From the leasing process to growing political popularity- these markets play a crucial role in shaping various political agencies in urban contexts. Our interviews and focus group discussions reveal that urban voters often make their decisions at local elections based on the local political leaders' performance during Eid ul Adha. To what extent are the leaseholders or emerging political leaders respectful toward majority Muslim and minority Hindus' religious sentiments often get surfaced through their overall management of the cattle markets. Moreover, political leaders' spontaneous engagement in this festival often provides the voters with an assurance that these leaders have moral positions backed by religious values. Although the voters are aware of the monetary advantages political parties attain by managing the cattle markets, such assurance often helps them to build trust in the political leaders from their locality.

With the emergence of the online cattle market, these complex and multi-faceted political engagements of the physical *haat* with the city authority, leaseholders, political leaders, and general public start to become peripheral. On the one hand, such a phenomenon can resist different types of corruption, domination, unfair activities, etc. at various administrative and field levels. On the other hand, it disrupts political connections between urban dwellers and their political leaders as the voters lose one of the biggest scopes

to evaluate their leaders' urban engagement, moral position, and strategic performances.

7.3 Marginalization of religious sentiments

Next, we document different forms of marginalization of Muslim religious sentiments with the emergence of digital cattle markets. The central ritual of Qurbani involves religious dedication, honesty, and enthusiasm of the affluent Muslims toward their Creator and their willingness toward helping the poor through sacrificing animals. Traditionally, Bangladeshi Muslims perform this ritual with religious sentiments attached to every activity ranging from cattle head selection from *haat* to distributing meats to the poor. Each of these activities helps Bangladeshi Muslims attain spiritual satisfaction. The following cases demonstrate how such religious sentiment-driven performances often get resisted, neglected, or hampered on digital platforms and generate doubts, distrust, insecurities, and communal disassociation.

7.3.1 Doubts: Our data from interviews and FGDs reveal that many Muslims, who have been sacrificing during Eid ul Adha for a long time, are skeptical about the credibility of online cattle markets from their religious perspectives. We have also followed and studied many online debates in comment sections of several Facebook pages around why buying animals online might not be considered "acceptable" as sacrifices to Allah. The following cases shed some light on this issue.

Case 2: Mr. Abdul Karim (70, retired engineer) is a practicing Muslim, who explained why buying a sacrificial animal online looking at its pictures is problematic from an Islamic perspective. Mr. Karim has been living in Dhaka since 1974. For the last 12 years, he has been sacrificing animals (mostly cows) for his family. Before that, he used to share sacrificial animals with his friends. In 2020, when his daughters expressed their interest in buying sacrificial animals from online cattle markets, Mr. Karim vetoed. He says,

> *"It is forbidden to make sculptures or paint images of a living animal in Islam. Many debates and discussions are happening among Islamic scholars on whether capturing photos by a camera is acceptable in Islam. I do not know the correct answer. But personally, I do not take photos unless it is essential. Now my question is, if I believe in and practice such religious restrictions, how can I buy an animal for Qurbani from looking at its photos on my mobile phone or computer screen? I hardly believe that my Qurbani will be acceptable to Allah if I buy my Qurbani animal from the online marketplace."*
> — Mr. Abdul Karim 70, retired engineer.

Thirteen participants from our study raised similar doubts around performing this holy ritual of selecting sacrificial animals by looking at pictures online (since taking pictures of living creatures is not appreciated in Islam). According to them, Muslims should pick their sacrificial animals by following Islamic protocols described in the next case.

Case 3: Mr. Rahman (62, retired accountant) lives in Shantinagar, one of Dhaka city's most densely populated residential areas. For the past 30 years, he has been performing Qurbani by maintaining religious regulations. Every year he goes to the nearby Kamlapur *haat* to purchase Qurbani animal. According to him, one of the most challenging parts of this ritual is to pick the right animal for the sacrifice that meets his spiritual needs within his financial limits. He informed us about the religious importance of buying a healthy cattle head for Qurbani since its meat will be distributed among the needy. There are explicit religious instructions for picking one. The purchaser needs to count the teeth of an animal to guess its age. The animal needs to be free from any disease or wound, cannot be blind or crippled. The purchaser has to like it from his/her heart since they will sacrifice it in the name of Allah. For Mr. Rahman purchasing a Qurbani animal is not similar to regular shopping; it's a performance and a very religious one. However, the digitization of cattle markets has brought doubts in his mind as well. He says,

> *"... according to Islamic rules, Qurbani animals must be healthy and free from any physical problems. I am concerned about fraud online pages, which may sell sick, crippled, blind animals and send the processed meat to our house. We won't be able to know the actual condition of the animal as pictures can be deceiving. Will Allah accept my Qurbani then?"*— Mr. Rahman, 62, Retired Accountant

These and many other cases reveal a skeptical view toward the appropriateness of such online shopping of Qurbani animals. Their spiritual satisfactions get hindered as doubts arise from their traditional religious perspectives and practices around online cattle marketplaces.

7.3.2 Communal Disassociation: Qurbani plays a significant role in developing religious and community bonds at the neighborhood level, which is hardly replicable in online transactions. One of our participants, Mr. Mosaddek (pseudo name, 40, Banker), shared his experience of Qurbani in his neighborhood with us and explained how his connection with his neighbors became weak as he moved to online purchase system for sacrificial animals.

Case 4: Mr. Mosaddek lives with his family in a rented apartment in the Badda area. With his limited income, he cannot afford a full animal for Qurbani. Hence, he performs this ritual by sharing a cow with six neighboring families from his building and nearby buildings. He says that two male representatives from this group of seven families are responsible for buying the Qurbani animal; others are responsible for figuring out the rest of the processes to successfully perform this ritual. Every year 4-5 animals are sacrificed in the ground floor parking of his building. Although this is an extremely unhygienic way to slaughter animals inside a residential building, tenants (20 families) of his building try to perform the steps of this ritual together with care, tolerance, and respect. Often the same group of butchers or meat processors works for all the slaughtered animals of that building. In that case, Mr. Mosaddek and his neighbors (male representatives from each family) plan beforehand about which cattle head will be slaughtered, processed, and distributed first. At the end of the day, all of them participate in cleaning the parking lot. According to Mr. Mosaddek, celebrating these rituals of Eid ul Adha is one of the most efficient ways for him to bond with his neighbors.

However, during Eid ul Adha in 2020, Mr. Mosaddek's family decided to purchase their cattle head online as their neighbors became interested in online markets as well. From his neighbors, Mr. Mosaddek came to know that one of the online web-based

services was offering a shared sacrifice option. According to that website, the meat of a cattle head would be divided into seven equal portions. A purchaser could buy one or more portions from those seven portions. The processed and packaged meat would be delivered to the purchaser's address on Eid day. This company would also take responsibility for donating the cattle hide, or money equal to its price to an orphanage on behalf of the purchaser. All Mr. Mosaddek had to do was filling up an online form that asked for information about his address, how many equal portions of a cow he wants to purchase (the cost of 1/7th portion of a cow was 15,000 BDT), when he wanted his sacrifice to be made, and if he wanted to watch the slaughtering live from the farm over a video call. Mr. Mosaddek says,

> *"I understand that the whole process of ordering online and getting my share of processed meat delivered at my doorstep in packets is something very convenient. However, it did not feel like Eid ul Adha to me. It was just like receiving groceries that I ordered online. I didn't even know with whom I was sharing my sacrificial animal. I didn't get a chance to bond with my neighbors on Eid day through the rituals. I didn't get a chance to meet my neighbors, Imams, meat processors, or the orphan students of the Madrassa in my locality, who used to come to collect donation or meat on Eid day every year."*- Mr. Mosaddek, 40, Banker.

These and many other stories from our field study demonstrate how online cattle markets are oftentimes affecting community bonding by promoting individualistic services.

The cases mentioned above depict how the emerging online cattle markets have started impacting urban Dhaka's secular properties that get mediated through tens of religious activities at the individual and communal level during Eid ul Adha. These cases also render how this computational intervention, through its tools and techniques, promotes secularization of a non-secular context by limiting religious experiences from many spheres of urban life, ranging from personal religious sentiments of the urban dwellers to demonstrations of festivity at urban public spaces.

8 IMPACTS OF SECULAR COMPUTING BEYOND THE URBAN

Next, we turn to beyond Dhaka scenarios to map the overarching impacts of secular computing on those urban-rural linkages, which are predominantly shaped by traditional non-secular urban conditions in Bangladesh. In the previous section, we described how urban Dhaka is experiencing the marginalization of many non-secular agencies of urban people and space. This section documents stories from rural farmers and workers, demonstrating their dependency on the non-secular urban Dhaka and how their access to the city, direct involvement with the urban economy, infrastructure, culture, and society get compromised as urban secularization starts to happen through emerging online cattle marketplaces.

8.1 Reduced Urban Access and Exposure

Every year, Eid ul Adha's religious festival creates fundamental opportunities for the rural *Khamari*, *byapari*, farmers, and other informal workers to get temporary access to the city and involve directly in the urban economic activities without much obstruction. From transporting the cattle heads to the city to post-Qurbani cleaning-temporarily migrated rural populations actively participate in hundreds of informal economic activities during Eid. Although in many cases Dhaka city's complex domain of informal economy is considered as an obstacle toward formalization and development [26, 110], the city embraces the above-mentioned enormous, temporary informal economic activities during Eid for its religious significance. Such tolerance toward informal economic activities helps the rural temporary migrants explore new business strategies, develop networks and connections, and attain confidence as they deal with the "upper class" urban customers directly. The following case depicts how secular computing, in this case, hampers their unrestricted access and exposure to the city.

Case 5: Mr. Akbar (34, individual farmer) brings 8-10 cows every year to Dhaka from his village in Bogra district (196 km northwest from Dhaka). Although Bogra city arranges large makeshift cattle markets during Eid, Mr. Akbar prefers to come to Dhaka for business exposure. This is the only time of the year he can stay and work on Dhaka city's public land without any threat of being displaced or evicted, meet city people, and can directly involve in business with them. He says,

> *"I studied up to the 7th grade and started working with my father on our cattle farm at a very early age. When I came to Dhaka city for the first time, I was in my 20s and was too nervous around the educated customers of Dhaka's haats. Over the years, I have gained experience around how to handle customers, how to talk to them, how to bargain for a fair price, how to convince them to buy my cows, and how to make connections with the dalals (agents) to get a good location inside the crowded haat, where I can settle down and sell my cows. All of these experiences help me boost my confidence. Moreover, since I do business in Dhaka, my relatives and neighboring villagers respect me, discuss important issues of their lives with me, listen to my city experiences. All these make me feel good. I do not think I can have the same exposure if I start selling my cows online. Dhaka people won't want us in their city anymore if online cattle markets become popular among them."* - Mr. Akbar, 34, individual farmer

To farmers like Mr. Akbar, 'city experience' works as a cultural capital [34] and raises their social status in their villages. On the one hand, they get a scope to learn many dynamic aspects of Dhaka city's urban life; on the other hand, rural farmers and agricultural entrepreneurs can bring their voices to the city through these religious festivals. Most of our rural participants believe that urban tolerance toward them will soon become redundant with the escalating popularity of online cattle markets.

8.2 Reduced visibility in Urban Media:

According to most of our participants, the religious festival *Eid ul Adha* is the only time when urban media concentrate, capture, and even promote the presence of the rural amid the urban. The rural entrepreneurs become visible on print or digital media, make headlines in a newspaper, appear on the TV screen or social media.

Their values, views, and struggles are heard. However, with the emergence of online cattle marketplaces, their access and media visibility have started to get limited. Moreover, the existing design and uses of digital marketplace interfaces often veil their massive presence from the consumer end.

Case 6: Mr. Shohel (47, an individual farmer from Talgachhi village in Sirajganj) has been selling Qurbani animals in Dhaka for the last 20 years. However, from 2020 he has started selling his cows online since his younger brother says that the digital marketplace is the future of this business. Shohel sends the photos and essential information (breed, weight, age, etc.) of his cattle heads via Viber to his brother. His brother posts those photos and information on several online *haat* Facebook pages. Due to his limited digital literacy, Shohel entirely depended on his younger brother for selling cows online. Without even having a "true" conversation with a customer, Shohel sold his cows online during Eid of 2020. He was sitting at his "dawa" (veranda of a rural house) when middlemen from Dhaka came and picked his cows up from his small farm. Shohel is concerned about this type of online shopping, where no one acknowledges his contribution to this holy festival, and he becomes invisible. He says,

> *"I was interviewed by Somoy TV channel reporter in 2017, when I was in Dhaka, selling my cows at Gabtoli cattle market. That was one of the best days of my life. Although I was very nervous in front of the camera, along with the other farmers around me, I could raise some critical issues regarding the market price of the cattle heads and the problems we were facing in the haat and our way to Dhaka. Every year during the haat days, TV and other news media make hundreds of reports on us. If the online markets become regular and gain popularity, we will disappear from the stories of Dhaka city."*— Mr. Shohel, 47, individual farmer

This and many similar stories from the field reveal how the digital marketplaces have started to limit the rural cattle farmers' access to the city and city's media. Although there are some options to raise voices on online social media and marketplaces, limited or no digital literacy restricts them from taking advantage of such technological platforms.

8.3 Devaluation of a religious commodity

The cattle heads raised to sell for Qurbani (sacrifice) attain a religious value as per Islamic tradition. Hence, the sacrificial animals are raised under the farmers' maximum supervision, handled and transported with care, provided with good quality food and medicine (if needed). The religious value of these animals gets transferred from the rural cattle seller to urban Muslim buyer as they interact at urban *haats*. Cattle head buyers continue to take care of their sacrificial animals till the Eid day, which is considered as one of many religious instructions of this ritual. The majority of our rural participants complained that online cattle marketplaces fail to apprehend the religious value of a sacrificial animal and quantifies each animal by some numerical terms, for example, price, live weight, height, and amount of meat can be processed out of it. This phenomenon sidelines the religious significance of a sacrificial animal and converts it into a regular product available in online marketplaces.

Case 7: Mr. Kashem (42) and his wife Salma (pseudo-name, 34) have a small cattle farm, where they raise and prepare 3-4 cows every year to sell at Dhaka's *haat*. They live in Mushipur village in Sirajganj (141 km north-west from Dhaka). Salma is more involved in raising their cows since Kashem does agricultural farming in the lands he inherited from his father. Salma considers the cows as her family members. Her children play with their cows, feed those, give those names. In summer, they set electric fans at the cowshed so that the animals do not suffer from the scorching summer heat. They feed the animals the best cattle food available in their village. They always keep the cows clean and free from disease. Each year during Eid ul Adha, this family goes through a sad time as Kashem takes their cows to Dhaka to sell. Salma says,

> *"It always feels like we are saying goodbye to our family members. We raise these animals with proper care as we know they will be sacrificed in the name of Allah to feed the poor. My husband always says that we will be rewarded in the afterlife for participating in this holy ritual. He also says that we make the real sacrifice by leaving our cows to others for slaughtering. I feel significantly down when my husband takes our cows to Dhaka. When he returns, I always ask him to whom he has sold our cows. I need to know if the urban buyer was kind enough to take good care of my cows in their last few days."* — Salma, 34, female, farmer.

With the emergence of online cattle markets, families like Salma's have little or no scope to know who will sacrifice their cattle heads. In most cases, the farmers sell their cattle heads to big farms or some middlemen, who collect those from their house and deliver those to the buyers' houses in Dhaka. Hence, the farmers fail to transfer their religiosity-backed emotional value associated with Qurbani animals to the urban buyers as the online marketplace interfaces are only interested in collecting information that describes a cattle head's capacity for producing meat.

The paragraphs above demonstrate how various religiosity-backed rural-urban linkages are getting jeopardized by the secular properties that online cattle markets are reinforcing. The cases also bring different forms of marginalization of the rural people to the fore. Keeping traditional *haats* open along with online marketplaces can be perceived as a valid option to maintain such rural-urban linkages. However, most of our rural participants complained, digitization is fueling the growth of formalized, giant meat factories, and it will gradually become difficult for the rural farmers to compete with those at physical *haats* or online.

9 DISCUSSION

In the sections above, we have presented a set of cases that demonstrate how non-secular properties of the urban Dhaka are often fading out by modern computing tools, techniques, and associated practices. We have reported how the visibility of a religious festival at different urban spatial scales gets compromised by the emerging online marketplaces. We have demonstrated how electoral politics is involved in traditional celebration of this festival, and how

voters are now missing their chances to evaluate the political commitments of their leaders over online marketplaces. We further documented how religious sentiments of the faith-based groups are getting suppressed as the online marketplaces fail to render much of the significance of the religious commodities, and quantify them as regular objects. Finally, we have reported how various religiosity-backed rural-urban linkages are also collapsing due to the proliferation of digital marketplaces, as they are reducing access and visibility of the rural in urban spaces, and limiting rural-urban interactions. Our findings generate several important takeaways for HCI that we present in the following paragraphs.

9.1 Designing Digital Marketplaces

Our paper generates important design implications for a more inclusive future digital marketplace. Our study documents how the growing secular design and operations of digital marketplaces often fail to address various religious values, sentiments, and priorities of religious communities, and diminish the socio-cultural significance of a religious commodity by transforming it into a regular, quantifiable, pecuniary online product. Such secular transformation of marketplaces not only devalue the substantial religiosity of a commodity (sacrificial animal, Holy books, praying materials, veils, etc.), but also discourage many religious communities from being actively involved in the digital marketplace businesses [103].

We argue that to make online marketplaces more diverse, inclusive, and sustainable, we must include the values and sentiments from religious groups in the design and development phases. For instance, in this case of online cattle markets, such inclusion should essentially be achieved by incorporating the religious sentiments of all the actors involved in various phases of *Eid ul Adha's* religious ritual (ranging from cattle production to sacrifice). As mentioned in our findings, farmers raising sacrificial animals should be provided with digital facilities that support them to express their spiritual attachment with their animals while making a sale online. Religious sentiments of the buyers should also be incorporated while designing such marketplaces to avoid doubts and spiritual dissatisfactions we documented in our field study. The information needed for a product to sell online (i.e., images, description, review, price, etc.) should be carefully screened and published so that the users' personal beliefs or religious sentiments are not hurt. In other words, the transition, translation, or transformation of a physical marketplace into an online marketplace is an essential mode of this design, but that cannot be done at the expense of the religiosity that these communities hold high. Borrowing from Chandra et al.s' analysis of the digitization of informal marketplaces in the Global South [42], we also suggest that cultural practices (for instance, clientalization, bargaining, and testing) of a physical marketplace should be incorporated in the online market in a meaningful way to make the designs sustainable. Moreover, scholars and practitioners from different religious backgrounds should be involved in designing the framework of digital marketplaces to help defining the materiality of such online platforms. They can provide important suggestions on which products or commodities can be sold online and how, without hampering their religious significance. Such 'religious' transformation is still largely missing in digital marketplace design.

We also argue that the design, development, and deployment of online marketplace need to be analyzed with respect to the seller's and consumer's relative positions in the broader non-secular political contexts, where needed. For instance, social media technologies (Instagram, Facebook pages, Lives, etc.) for promoting and selling commodities online should provide multi-modal options through which sellers can more actively engage with the market system without any fear of being judged or ridiculed. Designs similar to *IVR Junctions* [132], text-free user interfaces [95], and *CGNet Swara* [94] can support the farmers with limited digital literacy to participate actively in the market system. Cutting-edge AR and VR technologies have made significant progress in providing the users with some sort of 'tacit' feeling of an object remotely and developing empathy [22, 61, 64]. Similar technologies could be extended to allow religious communities to interact with the cattle sellers in a more intimate way. In addition, these online marketplaces should allow people to choose and buy religious commodities collectively (instead of its existing mode of 'individual buying'), when needed. Such technologies may help growing communal bonds which these communities value. Moreover, our findings point toward the emergence of a new working group in the process of the digitization of cattle markets— the digital middleman (who collects sacrificial animals from rural areas and delivers to urban buyers' houses or simply help the farmers to post advertisements of their cattle heads online). Proper integration of such services in design and development phases is essential to ensure the market system's overall permanence. Finally, more involvement of local government and political leaders in the online digital space should be ensured as well.

9.2 HCI and Rural-Urban Linkages

Our study also points out the political economy of the rural-urban linkages that traditionally become active during the religious festival of *Eid ul Adha*, but recently have started to get jeopardized by the proliferation of secular computing. As we have discussed earlier in this paper, Eid is the only time in the year, when a large portion of the rural population (actively connected with cattle business or not) attain legal access to the city's land and its resources (for instance, basic infrastructural services like electricity, water, social protection, bank loans, etc.) to associate themselves with the city's financial infrastructure. During this time, Dhaka provides the temporal migrants with the hope of boundless networking and scaling up their small businesses. The rural migrants also bring their religious or political thoughts with them that receive greater political visibility over urban media. These cattle haats, besides its religious functionalities, work as a platform, where these excluded and marginalized *'others'* of the urban can 'gatecrash' into the public consciousness in a community-accepted non-threatening way. This religious festival also provides agencies to the political parties. They push their political ideologies, imaginaries, and a sense of power to the crowd, which later spread out to the rural areas through these temporal migrants, namely cattle farmers.

Our study shows how all these connections between the rural and urban regions start to disappear as online cattle markets emerge. Many established lines of work in HCI and ICTD explore

how digital divides between the rural and the urban are engendered from uneven distributions of digital literacy, affordability, infrastructural support, etc. [19, 41, 80, 97, 112, 136] However, how computational interventions contribute to dividing, disconnecting, or detaching the rural from the urban culturally and politically, is still largely understudied. This paper depicts some ramifications of such computing praxis and argues that conceptualization of the complex rural-urban linkages is essential in HCI and ICTD studies to develop more inclusive, diverse, and 'just' design strategies.

9.3 HCI and the Non-secular Urban

Our study builds on critical urban theories around modernism and secularism to develop a deeper understanding of the relationship between HCI and religious values in an urban context. Our data show how our participants were experiencing a reduction of religious visibility, sensitivity, and performativity in different socio-economic contexts of their urban lives in both the physical and online worlds. One of the popular strands of critical urban theory explains such reduction of religiosity as modernism's limitation to comprehend the complex entanglements of religion in the lives of urban dwellers. Our findings are aligned with this line of critical work by various scholars (inter alia, AbdouMaliq Simone [123], Ara Wilson [133], Hancock [58], and Parthasarathy [108]), who critically address how scientific tools and techniques reinforce a 'simplified' version of urban life that is stripped off its complex religious and political relationships, and suppress the growth of alternative religion-backed modernities in urban contexts, especially in the Global South. While urban scholars are bringing religion to the disciplinary conversations to subjugate modernism's limitations, HCI is still struggling to go beyond implementing the scientific rationalities and modernist assumptions to address the contextual needs of different religious groups [128]. An emerging group of scholars have started shedding light on these limitations of HCI, and providing important design implications to overcome them [73, 103, 113, 128].Our study joins this scholarship, and argues that the existing praxis of urban HCI, urban computing, and related fields seldom address the needs of different religious groups, and religiosity hardly gets mediated through urban spatial, political, and socio-cultural design within HCI. We believe that this is essential to include religiosity-backed urban spatial politics in HCI conversations, which will create novel avenues of research and design for HCI and ICTD scholarship. Several HCI design paradigms including Value Sensitive Design (VSD) and Participatory Design (PD) might be useful to make designs more inclusive of religious values and practices. The contribution of this paper is not exactly about the 'process' of design, but about understanding the nature of modernity that is being extended through the use of digital tools and techniques. Thus, this paper connects HCI literature on urban HCI to a rich thread of work in social science and STS around the criticism of scientific modernity [88], epistemic pluralism in design [51], and the appropriation of material infrastructure in urban areas [43].

10 LIMITATIONS AND FUTURE WORK

Our study took place in Dhaka, the capital of Bangladesh that represents Dhaka's culture around the *haat* activities, which are different in many ways from the other urban areas of the country. This study also does not cover the experiences of other religious groups of the city during *Eid ul Adha*, especially the Hindu Communities. The urban cattle markets are usually extremely male-dominated spaces, and women purchasers are less welcomed in the *haats*. However, our study did not include a gendered lens to analyze urban public space and how digital cattle markets could help women avoid gender-based spatial discrimination. Furthermore, the findings of our study are limited within the participants that we chose through our social network and convenience. Hence, we refrain from any generalization of our findings beyond the studied setting. We rather focus on the strength of such ethnographic studies in the richness of the details and depth of data. By using critical interpretative tools in our analysis, we have presented a deep meaning of the observed practices in our field sites. We hope to expand and deepen our findings in future with an extended engagement with the community.

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