

Dare to Dream, Dare to Livestream: How E-Commerce Livestreaming Empowers Chinese Rural Women

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ABSTRACT

China has witnessed rapid growth in its e-commerce markets and livestreaming communities in recent years. The commercialization of livestreaming has led to the rise of e-commerce livestreamers, among which rural women constitute a substantial portion. To understand the motivations underlying these women's choices to engage in livestreaming activities and probe the extent to which they are empowered by this new form of entrepreneurship, we conducted an interview-based study with rural female livestreamers. We found that these women chose to be livestreamers for practical and self-presentation purposes and they gained a sense of self-empowerment through economic, social, intellectual, psychological, and spiritual dimensions. At the same time, however, they experienced and confronted social stigmas rooted in rural societies and the strategies they used to deal with these biases were vastly different. Our work contributes to the HCI community by providing a nuanced understanding of the motives and lived experiences of rural female livestreamers and offers design implications that could improve the everyday experiences of these livestreamers.

CCS CONCEPTS

• **Human-centered computing** → Human computer interaction (HCI); Empirical studies in HCI.

KEYWORDS

livestreaming, rural computing, feminism, empowerment

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1 INTRODUCTION

Serving as a new form of social media powered by websites and mobile applications, livestreaming enables real-time interactions between livestreamers and viewers. In Europe and North America, livestreaming platforms such as Twitch.tv, YouTube Live, and Facebook Live have flourished with millions of daily active viewers [28]. Although these platforms have been gaining traction in Europe and North America, they have not become as full-featured as livestreaming platforms in China. Most major livestreaming platforms in China, such as Douyin and Kuaishou, have an E-commerce feature that allows viewers to directly buy goods sold by livestreamers without leaving livestreams [31, 45]. This functionality has led to a new form of livestreaming known as *E-commerce livestreaming*.

E-commerce livestreaming occurs whenever livestreamers broadcast different features of the products they sell via livestreams and encourage viewers to purchase them [36]. Nearly all products and daily necessities, such as clothing, food, and jewelry, among others, are sold via E-commerce livestreams. In addition to purchasing, viewers can also interact with the livestreamer to ask questions about their products. Given that E-commerce livestreaming has high interactivity and authenticity, this new form of business has mushroomed in China [20]. During the COVID-19 pandemic, the E-commerce livestreaming industry boomed and reached a market size of 900 billion RMB by the end of 2020 [54].

While E-commerce livestreams have gained prominence in the world, current HCI research has not paid sufficient attention to this phenomenon. The existing work on livestreaming has focused on video gaming [39], E-sports [51], live performances [44], and intangible cultural heritage [43]. However, significant differences can be observed between these types of livestreams and E-commerce livestreaming. For instance, most livestreamers use game or performance livestreaming for fun and social interaction [8, 56], whereas E-commerce livestreamers may have ulterior, economic motives. E-commerce livestreams not only help form the social bonds between viewers and livestreamers, but also initiate financial transactions. In China, for example, being an E-commerce livestreamer has become an enticing full-time profession for the younger generation, particularly young women from rural or under-developed areas, to earn a living [55, 67]. There is thus an urgent need to understand the lived

experiences of these rural female E-commerce livestreamers, so that the HCI community can better support their needs and further empower them with technologies.

Compared with their urban and male counterparts, rural female livestreamers are often in situations where poverty, a lack of resources, and gender inequality still exist. According to statistics released by the China Internet Network Information Centre (CNNIC), the urban-rural digital gap is still significant in China, with rural residents accounting for only 30.4% of the total Internet users by June 2020 [9]. Thus, it is reasonable to assume that individuals in rural areas may still face challenges resulting from limited information, resources, and access to the Internet and other technologies [36, 57, 59, 61]. Women in rural areas are also likely to be even more disadvantaged due to China's gender-prejudiced, male-dominant social structure, e.g., they may lack the power of discourse on social media even if they have access to it [50]. In addition, female livestreamers have also been reported to be subject to social stigma and harassment. For example, the stigmatized term, Nüzhubo (女主播, female livestreamer), is often directly associated with female performers who attract viewership from male viewers with their revealing appearances and implicit solicitation in China [68]. Furthermore, sexual, discriminatory, and internal harassment is more serious for women in online gaming and livestreaming communities [63]. Rural female livestreamers, the most vulnerable combination possible, are thus expected to suffer extra challenges stemming from these social stigmas and harassment. Although the rise of E-commerce livestreaming provides rural women potential opportunities for raising their social and economic status, self-identification, and self-confidence, the specific mechanisms whereby E-commerce livestreaming empowers rural female livestreamers and the strategies they use to cope with social stigmas and daily challenges remain largely unknown and are worth exploring.

To enable the HCI community to understand how to engage more rural women in livestreaming, how to facilitate meaningful interactions between viewers and rural livestreamers, and how to design inclusive and novel livestreaming platforms that support the needs of such under-served communities, the current study thus aims to answer the following research questions:

RQ1: What are the motivations behind rural women who participate in E-commerce livestreaming?

RQ2: What social stigmas and challenges do these livestreamers encounter and how do they combat them?

RQ3: How does E-commerce livestreaming impact the wellbeing of rural female livestreamers?

To this end, an interview-based study was conducted with Chinese rural female livestreamers (N=9). The interviews revealed a model of 'family businesses', which may partially suggest that male chauvinism still exists. By livestreaming together, husbands can keep their wives under their control and close watch. In addition to financial needs, the unique motivations for being E-commerce livestreamers could be characterized as a strong desire for self-presentation. These livestreamers took pride in their rural lifestyle and products, which were more natural and authentic than those in urban areas. Unfortunately, undesirable gender norms were still rife in rural China, i.e., livestreamers were considered to be the ones who created sexual imagery online to attract male viewers. Lastly, the results suggested that the use of E-commerce livestreaming

significantly empowered rural women. Many interviewees agreed that they gained confidence through livestreaming, as they had opportunities to practice how to fluently express their ideas to viewers who may come from urban areas, glibly promote their products while livestreaming, and interact with their viewers or fans from different backgrounds. As livestreamers build economic relations with their viewers and customers, the entrepreneurial dimension inherent in this type of livestreaming has a great impact on their self-worth.

Our work fills an important research gap in HCI by providing fresh insights into how rural women, who are raised and rooted in an Asian society where patriarchal norms prevail, perceive E-commerce livestreaming, their personal experiences and challenges as livestreamers, and the underlying impacts of livestreaming on gender empowerment. Moreover, our work is situated in a unique social and technological context, where the use of technologies in rural and developing areas in China is understudied in HCI. Given that E-commerce livestreaming is an emerging form of social media that is different from other types of livestreaming, the findings about the variety of stigmas encountered by rural women while E-commerce livestreaming can enable designers to address potential issues and improve the user experiences of rural female livestreamers. In a nutshell, this research unpacks the impact of livestreaming on marginalized groups in non-Western contexts.

2 BACKGROUND AND RELATED WORK

We first review prior research on livestreaming practices and E-commerce livestreaming in China, followed by prior research on feminist HCI, rural computing, and how ICTs empower rural females.

2.1 Livestreaming Practices and E-Commerce Livestreaming in China

Livestreaming is a new form of broadcasting video that connects a livestreamer and viewers in real-time [24]. Due to highly interactive features and advances in network technologies, the users of livestreaming platforms, such as Twitch.tv, have rapidly expanded in recent years [10]. This trend is even more significant in China. The emergence of livestreaming in China dates to 2005 when users used YY's online chatrooms for live indoor performative purposes [40]. Most early livestreamers used livestreaming for chatting or sharing purposes. With the popularity of livestreaming, platforms have introduced more functions (e.g., gifting and viewer leaderboards) and begun to integrate with other online services [45]. The integration of E-commerce services with livestreaming has led to the emergence of *E-Commerce Livestreaming*, in which the livestreamer introduces and sells products to online viewers in real-time [18, 58].

Unlike their American or European counterparts, one unique design feature of livestreaming platforms in China, such as Douyin and Kuaishou, is that E-commerce elements are integrated into the platforms, enabling users to directly purchase goods sold by streamers without leaving a livestream [31, 45]. For example, during an E-commerce livestream, viewers can watch a livestreamer introduce local foods and directly purchase them by tapping on product lists shown at the bottom of their screen. Viewers can also

ask the livestreamer questions about the food via the real-time comments that appear on the screen. Given this interactivity, more small business sellers and companies are using livestreaming as a branding channel to sell products. In addition, self-employed people also sell local agriculture products, manufactured clothing, food, etc. It is estimated that China's E-commerce livestreaming market was more than 79.6 billion RMB by 2020 [14]. In 2020, Viya, one of China's most famous E-commerce female livestreamers, sold products worth more than 3.5 billion RMB in one day [20]. The success of Viya attracted more Chinese people, especially young females, to become full-time E-commerce livestreamers [55].

Previous studies on livestreaming in HCI have primarily focused on game livestreaming [39], E-sports livestreaming [51], and tourism livestreaming [13]. For example, Johnson and Woodcock [34] found that the popularity of game livestreaming and the formation of video game livestreaming community on Twitch.tv had significantly changed the game industry, which resulted in more interactive aspects of game design. Zhang et al. [69] showed that tourism livestreaming could attract more viewers to travel. Prior research has typically viewed livestreaming as a place for online social interaction, where livestreamers made new friends and shared their personal lives [62], protected intangible cultural heritage [43], and formed shared communities such as game-streamer groups [47]. Another group of studies offered important insights into livestreamers' and viewers' motivations. Skjuve and Brandtzaeg [56], for example, investigated the motivations of livestreamers on Facebook Live, among which the social need to interact with family and friends, followed by sharing opinions and entertainment, were the most cited reasons for livestreaming. Concerning customer's perspectives, Chen and Lin [8] found the main reasons for watching livestreaming was for fun, to reduce stress, and because the customer enjoyed the charm of the livestreamer. However, these studies may not necessarily reflect E-commerce livestreaming in China. Many young women, especially rural women, chose E-commerce livestreaming as a full-time profession rather than part-time work [42]. To date, the HCI community has not explored the work motivations and lived experiences of these rural E-commerce livestreamers. This work thus provides new insights into how rural women perceive E-commerce livestreaming and why they chose it as a full-time job.

2.2 HCI, Feminism, and Rural Computing

In recent years, many HCI practices and research have sought to incorporate feminist theory. Feminism believes that dominant HCI research and design excludes women's thoughts and participation [3]. Thus, a feminist approach highlights the importance of women's perspectives and experiences in existing analytical frameworks [4]. For example, researchers have utilized qualitative interviews to study female users' demands and sought to design products that met their desires and positively impacted female users' lives [7, 25]. Zimmer and Scheibe [70] focused on the examination of motivational differences between men and women when choosing to be a livestreamer. They found that female livestreamers were more concerned about social interactions than male livestreamers, suggesting that satisfying social needs was a more critical reason for female livestreamers. Similarly, Skjuve and Brandtzaeg [56] suggested that female livestreamers were more likely to engage in

chatting while livestreaming on Facebook Live, while males preferred performance livestreaming. These studies highlighted the importance of gender differences and the female perspective. The current study aims to shed light on more female perspectives by focusing on how women perceive livestreaming, their motivations for becoming a livestreamer, and the stigmas and challenges they experience as female livestreamers.

Another growing area of literature within HCI has focused on rural computing. Rural computing scholars have studied technology use and innovation in rural contexts [27]. Rural communities are less economically developed, far away from central transportation hubs, and less able to access advanced public services than urban communities. Prior work has shown that content in social media created by rural communities often receives significantly less engagement from users [19]. The design of social media often precludes the perspectives of rural areas [27]. Thus, most rural computing literature has examined how technology reduces the digital gap between rural and developed areas. For example, research on telehealth and tele-education programs has found that technology has facilitated rural citizens access to better professional health and educational services provided by urban doctors and teachers [52, 65]. In addition, studies have also documented the critical function of livestreaming on poverty alleviation and the economic boom in rural communities. For example, rural residents have begun to utilize livestreaming to sell their agriculture products and expand their market [42]. Liu et al. [41] found that after the introduction of E-commerce broadcasts in one county in China, the average disposable income of E-commerce rural practitioners was significantly higher than those who did not sell agricultural products via E-commerce livestreaming. Correa and Pavez [12] have also showed that the rise of livestreaming tourism has created new employment opportunities and promoted rural tourist industries. Most of the existing rural computing literature, however, has primarily focused on examining the economic and societal impacts of information and communication technologies (ICTs) on the community and industry level, ignoring their potential value at the individual level, particularly through a gender lens. ICTs are not gender-neutral but reflect the power structure in existing society [22]. Thus, bringing a gendered perspective into HCI research can help us understand women's experiences and how ICTs could be reshaped to narrow gender inequalities.

Both lines of feminism and rural computing research have highlighted the importance of considering the different ways of seeing the world beyond traditional male and urban perspectives. However, few studies have combined these two perspectives. Marginalized groups, such as women in rural areas, may experience more difficulties in the use of technologies that are primarily designed for urban male citizens. Rural women may also have a different view of newly emergent ICTs than their rural male counterparts. This work thus aims to combine both the feminism and rural computing literature to understand how rural females engage in E-commerce livestreaming while also providing design implications that encourage more rural women to engage in the new form of social media.

2.3 Rural Women Empowerment via ICTs

HCI Research has long focused on examining how information and communication technologies (ICTs) empower women. It is commonly believed that compared to men, women, especially in rural areas, are less well-educated, are in an economically weaker position, and lack access to information [50]. Social and cultural constraints, which are often considered as primary reasons for the gender divide, result in substantial digital disparities between men and women [16, 17]. The rise of ICTs provided the possibility to empower rural women and reduce the digital gaps between women and men [2, 35]. The empowerment of women involves helping women better control essential resources, expand political rights, build a social network, and advance their economic status [46]. Many ICT programs offer rural women the possibility to improve their socioeconomic status and overcome the gendered information gap. For example, Kwapong [37] illustrated that information-equipped rural women in Ghana further enhanced their economic status. Jain et al. [33] investigated how expanded ICTs impacted the rural women in one village in India. Their results suggested that improved access to ICTs helped farming women improve their household income and participate in decision-making processes of rural affairs. Similarly, Agu [1] found that the application of ICTs, such as e-mail and electronic networks, facilitated information exchanges between local women and external social groups, leading to increased productivity gains and sales.

Another area of research has focused on how ICTs have enabled rural women to enjoy independence, prestige, and freedom. For example, Hansson et al. [26] found that the establishment of telecentres in Sri Lanka provided local rural women more job opportunities, such as managers and operators. Through these opportunities, rural women actively participated in rural affairs and development, and most importantly, gained respect and trust from local citizens. Arivanandan [2] examined the roles of cell phones and television in empowering rural women in India. They found that these technologies enhanced the self-confidence of rural women, especially young girls, and further enhanced their work opportunities. However, the focus of prior research was on traditional ICTs. Few studies have explored the empowerment impacts of E-commerce livestreaming on rural women. Compared to traditional ICTs such as TV and mobile phones, E-commerce livestreaming has a highly interactive feature that enables livestreamers and viewers to interact in real-time. In addition, livestreamers use livestreaming not only as a social tool but also to initiate economic connections between viewers and livestreamers. These features enable E-commerce livestreaming to have powerful impacts on rural women. Therefore, this research examines how E-commerce livestreaming empowers rural Chinese women, especially their self-presentation, social identity, and personal gratification.

3 METHOD

To understand the practices and motivations of rural female livestreamers and the social and technological challenges they encounter, we observed 25 rural Chinese female livestreamers' livestreams, and conducted a qualitative interview-based study with 9 of these livestreamers who had been livestreaming for at least 4 months. We identified a "female livestreamer" as a female

user on livestreaming platforms who had a personal livestreaming account and self-identified as female in their profile. These observations helped us collect more contextual information about the livestreamers before the interviews, and enabled us to ask the livestreamers more focused and deeper questions regarding their motivations and practices. The 25 rural female livestreamers involved in this study were from Taobao, Toutiao, and Douyin. These three platforms are representative, because Taobao is the largest E-commerce platform with livestreaming features in China, while Toutiao and Douyin have gained popularity in recent years. The analysis of these livestreams provided a window through which to understand livestreamers' livestreaming strategies and the diversity of their content. The study protocol was approved by our institutional review board (IRB).

3.1 Observing Rural Female Livestreamers' Livestreams

To gain deeper insights into the rural female livestreamer community, we first observed livestreams in the "村播" (rural livestreaming) category on Taobao. The livestreams in this category were classified into several subcategories according to locations and provinces, such as "云贵川滇" (Yunnan, Guizhou, and Sichuan), "江浙鲁徽" (Jiangsu, Zhejiang, Shandong, and Anhui) and "东北大地" (Northeastern China). In total, 25 rural female livestreamers were observed. To diversify the observed livestreamers' locations, we intentionally chose livestreams from different subcategories, including 5 from Yunnan, 3 from Jilin, 2 from Sichuan, 2 from Hubei, 2 from Henan, 2 from Guizhou, 2 from Shandong, and others from Guangxi, Xinjiang, Inner Mongolia and Anhui. We also tried to include livestreamers with different numbers of followers, ranging from 2k to 50k followers.

Once identified, we joined each livestream and observed the livestreams and viewers' comments during the livestreams for between 30 and 60 minutes. During the observation process, we focused primarily on:

- i) The products they sold and the locations where they livestreamed so that we could find diverse content and formats.
- ii) How the livestreamer interacted with their viewers and what comments viewers posted during the livestream. Typical comments that viewers posted include questions about sold products and chit-chat with the livestreamer, such as '*your house is beautiful*' and '*where are your family members*'. This information helped the research team understand how the livestreamers present themselves.
- iii) How the content indicated their personal information such as marriage status or family members, which could enable the research team to come up with more customized interview questions. We also observed how people in the livestreamers' local community reacted to the livestreamers and their livestream, which could indicate whether the livestreamers faced social stigmas or challenges.

We also took screenshots of representative moments during the livestreams to further facilitate analysis. Because many livestreamers also sold their products via online stores on Taobao, we also reviewed the products sold in their stores, including the products

Table 1: Summary of Participants

ID	Age	Platforms in Use	Years Livestreaming	# of Followers	Location
P1	29	Taobao	2	49k	Shanxi
P2	35	Taobao	3	18k	Guangxi
P3	Not disclosed	Taobao	1	3k	Shanxi
P4	38	Taobao	4	15k	Qinghai
P5	Not disclosed	Taobao	Not disclosed	1.9k	Yunnan
P6	Not disclosed	Douyin	4 months	5k	Hubei
P7	29	Douyin & Toutiao	4	375k	Jilin
P8	30	Douyin & Toutiao	4	84k	Henan
P9	34	Douyin & Toutiao	1	3.3k	Hubei

they were selling and the comments their customers left. During this observation process, we did not interact with the livestreamer. However, when the livestreamer began to chat with their audience, we would join in and ask questions like “why are you doing the job?” to gather potentially useful data.

3.2 Interviews with Rural Female Livestreamers

Nine participants were recruited through purposeful sampling (Table 1). Participants were on average 32.5 years old ($SD=3.4$) and had an average of 61.6k followers ($SD=113,799.6$). Initially, we sent direct private messages to active rural female livestreamers’ personal accounts on Taobao, Toutiao, or Douyin to invite them for an interview. We sent 42 invitations in total and 9 livestreamers agreed to participate in an interview. Some livestreamers did not respond to our messages, while some other were skeptical about the study purpose and declined our invitations. As a result, we were not able to involve more participants in the interviews. The interviewed livestreamers were not directly paid for their time, however, as they preferred, we purchased the products they sold through livestreaming, because this could help them gain more viewership. The prices of the products were between CNY ¥29.90 and ¥99. With the livestreamers’ consent, we made phone calls or video calls via WeChat to conduct the remote, online interviews.

The interviews were conducted from July to August 2021. The interviews were semi-structured and lasted between thirty to fifty minutes. The interview questions included the participants’ usage of, and motivations for participating in livestreaming, the challenges they encountered, and what impact they thought livestreaming had on them and their family. We recorded the audio of the interviews with the participants’ consent, and later transcribed it for analysis after personally identifiable information was removed from the transcripts.

3.3 Data Analysis

The transcripts of the interviews, the transcripts of the video clips of the livestreams that were observed, and the notes taken by the observer of the livestreams were analyzed using an open coding method [11]. The two native Chinese speakers, who were paper authors, coded the first 10% of the interview transcripts and met to gain consensus on their codes. Disagreements about the codes were reconciled by discussions amongst group members in the

research team. The first author, who was female, coded the remaining data and met with the second coder to reach an agreement. Then, the research team discussed all the codes and find higher level themes in the data. Examples of higher-level themes included “*motivations*”, “*family*”, “*labor*”, etc. The data was further analyzed by looking at screenshots of representative moments during the observed livestreams. The codes for the screenshots mostly described the content of the livestream, e.g., “*rural landscape*”, “*farm work*”, etc.

4 FINDINGS

The analysis of the data revealed special livestreaming content, unique motivations, and social stigmas and other challenges encountered in rural women’s E-commerce livestreaming. E-commerce livestreaming has empowered rural Chinese women in different dimensions, including by providing financial benefits, extending their social circles and horizons, and via personal development.

4.1 Motivations for Livestreaming

Multiple reasons were given as to why rural women chose E-commerce livestreaming as their career. They saw the opportunities within E-commerce livestreaming and wanted to increase their income through livestreaming, they wanted to have a job, they wanted to engage more on livestreaming platforms, they wanted to catch up with the trend of livestreaming, and they wanted to socialize with other people and get aspirations. These reasons are like those found with other forms of livestreaming [45]. We also found several unique motivations specific to these livestreamers’ social contexts.

4.1.1 Caring For Family. Four of the interviewees chose to change their career paths to livestreaming after pregnancy. For example, P3 was once a migrant worker in a seaside city but chose to come back to her hometown because of her pregnancy. For her, livestreaming became a perfect career to make a living, i.e., “*I had to make a living at home, and I learned E-commerce livestreaming from a friend. With his help, I started livestreaming*” (P3). The same situation applied to P8, “*Both my husband and I were migrant workers in the city, but after my pregnancy, I couldn’t continue my work, so I came back home*”. This livestreamer came back to her hometown after her pregnancy, where livestreaming is a popular profession among young people. She started her E-commerce business together with her husband.

The left-behind children in rural areas have long been a social problem in China, especially for those migrant workers who leave their families for higher salaries. Thus, the flexible working time afforded by livestreaming was preferred by many interviewees because they could work and take care of their children at the same time at home.

Compared with being migrant workers in big cities, being livestreamers prevented many women from being separated from their children and other relatives, thus enabling them to assume family responsibilities. P7 expressed her appreciation for family gatherings after becoming a livestreamer, i.e., *“I could only visit my parents a few times a year when I was a migrant worker, but after I came back home and took the job, I could stay with my family every day. Without the job, I would barely have chances to visit my parents.”*

4.1.2 Promoting Local Communities. In many rural areas in China, the primary industry (e.g., farming) is still a dominant part of the local economy. Rural families' incomes are highly dependent on the weather and market. Many products sold locally lack larger markets and sometimes suffer from poor sales. Due to the proliferation of livestreaming platforms in China, some rural female livestreamers started livestreaming to increase their income and promote their local community. P1, for example, decided to become a livestreamer after seeing an overstocking of local peaches.

“At that time, I watched my parents selling peaches for fifty cents and they couldn't even make it to sell them all. Then I saw that people in our village couldn't sell their peaches, even at the price of a few cents. They have been busy for a year without any income. I thought that livestreaming can help sell my own products and help the people in our village” (P1).

In certain circumstances, these livestreamers were motivated by *“speaking for my hometown”*. P8 explained that the reason she started livestreaming was that *“I saw people on the Internet always discredit North-eastern China, and I wanted to tell people it's not true”*. Therefore, she began to make videos of her own family and the village she lived in on Toutiao. She then started her E-commerce business after many of her fans told her that they wanted to buy the local products she used and ate in her livestreams.

P5, who was of Yi ethnicity in Yunnan, was a nurse at a local hospital before becoming a livestreamer who sold wild honey. She felt that the limited literacy of local people made it hard for them to catch up with the internet or other technologies, e.g., *“Local people here are not so good at internet, and the operation of online shops requires business mind”*. Due to this, many local people could not sell their products online. She claimed that many E-commerce livestreamers in Yunnan were from other more developed areas and were selling *“fake wild honey”*. Feeling an urgent need to counter the fake sellers and clear up misunderstandings, she was motivated to sell genuine local products and to tell true local stories to viewers, i.e., *“I want to show that this is Yi people's true life”*. She even wore traditional Yi's costumes when livestreaming. Some well-known influencers, such as Yunnan Xiaohua, in addition to selling her family grown products, also worked with corporations and media to promote local products through livestreaming for more remote and underdeveloped areas. However, such cases were not common for livestreamers with fewer followers.

4.2 Streaming Content and Formats

The analysis of the livestreamed videos identified the diverse content these rural female livestreamers livestreamed, which was beyond just selling goods. The interviews further identified special modes in which the livestreamers operate their business, e.g., family business or agent corporation business.

4.2.1 Market or Bazaar Livestreaming. Rural morning markets or bazaars are common in some rural areas in China. Three of the 25 observed livestreamers had livestreamed in the market, showing various agricultural products to viewers and helping viewers buy the products. During the livestreams, the livestreamers provided a first-person view of the market and products so viewers would feel as if they were shopping in the market and highlighted that the products being sold were of high quality. The role of these livestreamers was more like a purchasing agent because they did not directly produce the products.

4.2.2 Orchard or Farm Livestreaming. Rural livestreamers who owned a family planting business usually choose to livestream in their orchards or farms. Seven observed livestreamers livestreamed this way and typically sold products in situ, such as fruits, vegetables, livestock, and poultry. They livestreamed how they selected or collected products to show the freshness and fineness to viewers. Such livestreams usually last for over 5 hours, during which the livestreamers read viewers' comments and answered questions, introduced products, and talked about local life.

4.2.3 Livestreaming in the Wild. Five of the 25 observed livestreamers livestreamed in the wild. In this type of livestream, livestreamers usually demonstrated how they picked or collected products in the wild, such as collecting honey from honeycombs in the mountains, picking Cordyceps on the ground, or fishing in natural waters, to highlight how natural and high-quality the products they sell are. It was also common for these livestreamers to show local natural scenery to viewers, as they usually went deep into the mountains or the wild.

4.2.4 Livestreaming Indoors. Sixteen observed livestreamers livestreamed indoors. Several livestreamers sold processed agricultural products or dried products such as deer antlers or ginseng. They often livestreamed at home or in local shops, sometimes cooking with the products in front of the camera. Other indoor livestreamers sold clothes or traditional handmade or crafted products. They livestreamed the process of crafting these products to their viewers. It was also common for them to show their family life such as interactions with their children.

4.2.5 Family Business. Family business was a unique form of E-commerce livestreaming that was identified in the data. Four out of 9 interviewees chose to partner with their husbands or relatives as part of their livestreaming career. The typical division was that wives served as livestreamers and husbands or other relatives oversaw the background operation. The primary reason for this was that operating and managing online stores was hard for one person to handle alone and transporting and packaging products required intensive manual labor. For example, P2, who was single, noted that she *“sometimes felt exhausted”* from the labor required to prepare

products. Adopting a family business mode made it easy for interviewees to increase their confidence to start their livestreaming career and handle challenges, e.g., “*I think I can barely do anything. It all thanks to my husband. He used to learn advertising design and he knows a lot.*” (P7). As a comparison, P9’s husband was also a livestreamer, but P9 owned her individual livestreaming account and business separate from her husband. They sold different products – her husband sold agricultural products and she sold clothes. When asked how she learned to livestream, she answered, “*I was all on my own. At first my husband could teach me some of the skills because he started the career earlier than me, but he didn’t know much either. Then I learned all by myself little by little.*” She was satisfied with her achievements, as her channel had gained thousands of followers.

4.2.6 Agent Corporation Business. The limited knowledge of technology and livestreaming skills of rural female users could explain the emergence of agent corporation livestreaming. During such livestreams, the livestreamer collaborated with other experienced, or more literate, partners. These partners taught them the basic knowledge and techniques of livestreaming and helped them with the operation of their online stores, acting like a livestreamers’ business agent. Sometimes the agent was in full control of the livestreamer’s business, their livestreaming account, and the content of their livestreams. The livestreamer was like an actor who was directed by the agent.

4.3 Self-Presentation through Livestreaming

The interviews further provided insights into how these female livestreamers presented themselves for business purposes and catered to their viewers’ preferences. They regarded authenticity as key to engaging viewers and they constructed their authenticity in various ways, centering around the “rurality” and “rawness” of their life.

4.3.1 Understanding Viewers’ Interests and Preferences. The female rural livestreamers that were interviewed noted that their viewers were mostly attracted by their countryside lifestyle. Four out of 9 livestreamers mentioned that they had numerous viewers from urban or more developed areas. P8 was aware that their rural life was not only attractive to rural communities but also to city dwellers, which serves as a key advantage, e.g., “*we want to show the most genuine life of North-eastern China to our audiences*”. She often livestreamed during family gatherings or local festivals to show her lifestyle and meaningful moments.

4.3.2 Authenticity as a Business Strategy. Livestreamers displayed a type of “rawness” in their self-presentation via livestreaming. They did not customize their livestreaming content intentionally to create deceitful images to catch the eyes of viewers. Instead, they tried to present “*the most authentic*” self to the audiences. P5 livestreamed in her village because “*it is my true life*”. What she did was simply presenting her everyday rural life.

The tensions between authenticity and “merchant” identities still existed because the main purpose of the livestreaming was to sell products. The interviewed livestreamers believed that the solution to this was to present themselves as being more genuine, because “*the more authentic and credible we are, the more they like our*

products” (P1). Through observations of their livestreams, we found that the livestreamers did not use advanced auxiliary shooting equipment or techniques, which is to be expected because this technology requires certain levels of technology literacy. Instead, their livestreams involved them holding the cameras on their mobile phones with their hand, showing their rawness and authenticity.

4.3.3 Constructing Authenticity. From the interviews and the analysis of the videos, these rural female livestreamers constructed authenticity mainly through showcasing local traditions, their ordinary life, and living spaces and landscapes. Showcasing local customs and traditional lifestyle to viewers was a common way for these livestreamers to present themselves and construct their authenticity. This is partly because urban viewers may relate folk customs and traditions to rurality, and they may be curious about this kind of “rawness”. P7 noted,

“If some traditional folk customs or costumes are not presented in this kind of videos, many people, especially some people living in big cities, may not know it well. I feel that many people are yearning for this kind of rural life in the countryside.”

By showing their ordinary life in front of the camera, these livestreamers can also present a more genuine portraits, thereby engaging more viewers. The lifestyle of these livestreamers also resonated with urban viewers who expected to have a similar lifestyle. P7’s viewers told her that they loved her videos, because “*they like the way my family spend time together, and the happiness in my family life is what they expect to have in their own life.*”

Furthermore, livestreamers showed their living spaces and landscapes to the viewers to increase their authenticity. They walked around their neighbourhood and showed local scenery. They also talked with their neighbours in front of the camera, showing local social interactions. Their viewers were sometimes curious and asked who was appearing in the livestream, what the plant was in the livestreamers’ backyard, or other homely topics. By answering the viewers’ questions, their authenticity was further reinforced.

4.4 Social Stigmas and Challenges

Rural female livestreamers faced greater psychological pressures when entering their career. These pressures mainly came from community prejudices against their identity and the profession. These livestreamers developed different strategies to mitigate these stigmas, including seeking endorsements from local authorities and livestreaming with their family. However, male chauvinism seemed to still influence these livestreamers.

4.4.1 Stigmas from Rural and Gender Identity. The rural communities where some interviewees lived were somewhat doubtful about their profession as a livestreamer, which was related to the self-shaming of their rural identity. Rural people believed that the livestreaming business still belonged to the “outside world” and that they might be laughed at on platforms like Douyin. For example, P6 noted, “*When I first started livestreaming, people in my village commented [me] ironically. They all felt that nobody would watch a rural person’s livestream. So, it was very hard for me at the beginning.*”

Our interviewees also faced prejudices related to their gender identity. On platforms like Douyin and Kuaishou, some female livestreamers unconsciously conformed to idealized and sexualized female bodies to attract viewers [68]. These practices highlighted sexual attractiveness and contributed to the negative stereotype of female livestreamers, especially within rural communities. Furthermore, with traditional social norms in some rural communities, it is improper for a woman to present too much of herself to the public, making livestreaming an inappropriate practice for some interviewees within their local community.

Due to the stereotypes of livestreaming within rural communities, female livestreamers were sometimes stigmatized for using sexual attraction to solicit viewers. For example, P4 noted that in the village where she resided, “only one out of ten people has heard of Taobao” and many of the villagers’ imaginations of female livestreamers came from “strip livestreamers” on Kuaishou. Gossip about her husband began to spread widely in the village when she first started livestreaming, e.g., “[P4’s husband name]’s wife is facing the smart phone all the time. She must be hooking up with boys online”. Such stigmas can be a significant deterrent for these livestreamers. These situations may vary in different regions because people in different areas may have different cultural and social norms and thus different levels of conservatism. Interviewees from regions where people were more open to and familiar with livestreaming often received more support from their family and relatives.

4.4.2 Strategies to Mitigate Stigmas. P4 was troubled and traumatized when she heard about such gossip. She decided to turn to her local government for an endorsement to prove that she was not livestreaming for sexual purposes. She noted that,

“In our town, we trust the government, and we always turn to the government if anything bad happens. I ran to the Development and Reform Bureau, and then I said, I don’t need any other help except a certificate that I didn’t hook up with men on Taobao. I just want you to write on the paper that [P4’s name]’s livestreaming is formal, and I feel safe if I have the government seal on it.” (P4)

However, some officials did not know Taobao at the time, which made her upset, e.g., “the first thing the director said was ‘What is Taobao?’. I suddenly felt like if I did something wrong” (P4). Without local government support and endorsement, the rumors made her stop livestreaming for a while and she was even diagnosed as having mental health issues, e.g.,

“They would say that my husband is a kept man because his wife’s career seems more successful than his, and I couldn’t bear it. I went to a hospital and the doctor said that I had depression symptoms.”

What made this livestreamer come back to her livestreaming career was that a newly appointed local official heard about her livestreaming career and expressed his appreciation and respect for her entrepreneurship. He encouraged her to participate in livestreaming to promote the local landscape and to sell more local products. The way these livestreamers sought to mitigate these stigmas indicates that endorsements from the local authority can

help, especially in areas where the government is respected and trusted by the community.

4.4.3 Male Chauvinism Embedded in Family Livestreaming. Other livestreamers chose to livestream together with their husbands or relatives, which possibly alleviated the stigmas they faced. By livestreaming with their family and showing their happy family life, these livestreamers could present themselves as being loyal to their family, thus reducing prejudices from their local communities. These livestreamers were mostly dependent on their husband’s or relative’s technical skills. P7 even noted that “I would never livestream alone. My husband will always be present when I livestream”. Although these livestreamers did not explicitly comment on issues related to this, such comments implicitly point to the *male chauvinism* that is deeply rooted in rural society. Although these rural female livestreamers can freely become livestreamers if they wish, they still have limited freedoms in terms of choosing how, when, and with whom they livestream. What they do during livestreams is under surveillance.

4.5 The Empowerment of Rural Women

These livestreamers’ experiences further demonstrated how livestreaming empowered rural female women. Due to their livestreaming, these women were more involved at work, increasing their income and gaining spiritual support in their everyday lives as housewives. By building relationships with viewers and customers, they also expanded their living circles and received social support from online communities. They further increased their self-identity and literacy through livestreaming.

4.5.1 Involvement at Work. Parenting has a traditional division and stereotype in rural families. Most of the time, the mother is expected to take care of children and leave their full-time job, if possible. Many women are thus forced to return to their families after pregnancy or childbirth in rural society in China. Four of the livestreamers reported that their livestreaming careers had a profound impact on them as young mothers. They all quit their jobs after getting married or pregnant, yet the anxiety of not being financially independent lingered in their minds, e.g., “I think it’s crucial for Baoma (baby’s mother) like me to have my own source of income as a rural woman” (P6). They chose to become an e-commerce livestreamer because the profession’s flexibility provided them opportunities to balance work and parenthood and created possibilities for other life and career choices, e.g., P7 noted,

“With this job [as a livestreamer], it is relatively free to manage your time at home. Many young mothers would like to join in the career such as content creators of short videos or livestreaming. Because for young mothers, if they only raise their children at home without having a career, they can’t make money and would sometimes be anxious about it.”

Being involved in livestreaming also saved some of the livestreamers from the boredom of a housewife’s life. P8 noted that, for her, having a job was important and necessary, because “you will get really bored if you can only stay at home and only interact with your families every day”. Despite the hard work that it took to multitask raising children and running a business, she

insisted on being a livestreamer. The changes that happened to them after starting their livestreaming profession could also be very aspirational and provided new motivations in life. P9 chose to become a livestreamer after 7 years of being a housewife, i.e., “*I am 29 and I am so young so I don’t want to waste my time at home*”. Her livestreaming job brought her a brand-new life,

“In the past 7 years I have been taking care of my children at home. It’s a matter of standing by 24 hours a day, and it’s sometimes very annoying. But I feel like I suddenly found a sense of belonging since I started the job. I am suddenly energetic. Your goal is very dazed when you just look after your children every day, but the goal becomes clear when you have a career.”

Compared with other professions, E-commerce livestreaming promotes female entrepreneurship, forms a sense of self-agency for rural women, and further realizes their potential. P9 highlighted how compared with typical jobs suitable for women in the area, such as kindergarten teacher, “*the benefit of being a livestreamer is that you can say that you are a boss. If you do it yourself, it is very fulfilling and it also realizes the value of your own life. [Other jobs] are just that you are employed by others, you won’t try so hard*”.

However, there are still challenges for these rural mothers. Similar to observations in prior work about rural e-commerce women [67], livestreaming did not free these women from the burdens of motherhood and sometimes pushed them to work overtime. Two interviewees noted that they had to livestream late at night because they had a lot of housework to do,

“I livestream at daytime, and I take care of the baby at night. Only after coaxing my child to sleep can I have time to check my messages and other stuff at work” (P7). P6 sacrificed her sleeping time for the livestreaming business, e.g., “*I sleep for only a couple of hours every day for my business, and sometimes I feel really tired.*”

4.5.2 The Expansion of One’s Living Circle. E-commerce livestreamers build commercial relationships with their customers. Due to customers’ active engagement and interaction with a livestreamer, the relationship between livestreamers and customers is more likely to become a close and private friendship. Livestreamers can meet people from all over the world on livestreaming platforms, greatly expanding their living circles, strengthening their social relationships, and enriching their social support.

P4 had established a very close relationship with her viewers. She did not know how to livestream at first so her viewers taught her while she was livestreaming. Some of her viewers even built connections with her via WeChat, and others even came to visit her in person. She reported that she was pleased that she had made so many friends via livestreaming. She also interacted a lot with her fans from urban areas to gain inspirations. For example, she received comments from fans, saying, “*We are in Beijing! We did xxx today.*” or “*It’s too hot here in Hangzhou! The temperature is 38-40 Celsius!*” She asked, “*what is Celsius?*” and her fans answered, “*we are saying that the weather here is hot enough to fry an egg on the ground.*” She passionately described how “*I am imagining how pleasant it would be in such hot weather, because it’s too cold in my hometown.*”

P6 also shared her stories with fans. She noted from her fans’ user profile that most were middle-aged and elderly people with an average age of 50. One of her fans came from Beijing, i.e., “*a wealthy 65-year-old aunt who lives in Hutong likes watching my videos very much and said that she would get uncomfortable if she doesn’t watch my videos for a day.*” She also mentioned a younger fan, a lady who worked at a foreign company, i.e., “*because she viewed my livestream and liked me, she bought my products*”. For women living in rural areas, it is not easy to contact people in urban areas in China. Livestreaming can thus potentially expand their social circles and bridge the gap between urban and rural areas.

4.5.3 Personal Development. Many interviewees agreed that they gained confidence through livestreaming, as they had to fluently express and promote their products and learn to interact and chat with their audience. Their confidence came from changes in lifestyle and self-behavior, which further improved their mental feelings, e.g., “*At first I feel awkward in front of the camera, but then after practice and learning, I gained experience and could talk and chat with the audiences naturally*” (P1). Although rural female livestreamers had to devote their time to such intimate labor [6], they generally perceived such intimate labor positively and embraced opportunities to interact with people outside their close-tie relationships.

P7 expressed her feelings of becoming more ‘exquisite’, as she believed that livestreamers should behave neatly in front of the camera. As a result, she learned to dress up and put on makeup, i.e., “*The job will make you more and more confident and motivated. If you only do your parenting job at home, you will complain a lot*”. The flexibility inherent in the profession also enabled these livestreamers to keep improving themselves in their spare time, e.g., “*because of the profession’s flexibility, I want to take advantage of it and do some other stuff*” (P7). This livestreamer even studied when she was not livestreaming and received a teacher certification.

Livestreaming can also increase livestreamers’ knowledge or literacy. P4, who was an ethnic minority and commonly spoke a minority language, learned Mandarin (i.e., the official language of China) through constant interactions with people of other ethnicities who speak Mandarin during her livestreams. As she noted, “*my fans will teach me simple words to help me better express myself during the livestreams*”. She was not able to speak Mandarin when she first started livestreaming, but she could speak Mandarin fluently after livestreaming for several months. She also gained knowledge about many places by interacting with her fans via livestreaming, i.e., “*my fans are also my teachers*”.

5 DISCUSSION

These results provide nuanced understandings of the daily practices of rural female livestreamers, how livestreaming empowers them, and the challenges they encountered while livestreaming. The observations and findings compliment prior research in ICT4D and HCI4D, which highlighted the roles of family and other stakeholders within local communities on rural women’s technology access, adoption, and autonomy in underdeveloped or under-resourced regions in the Global South [23, 32], while highlighting the unique social contexts in rural China. We now reflect on the social stigmas about livestreaming rooted in rural communities, the roles family plays in these rural livestreamers’ use of technology, the

satisfaction of their self-presentation needs via livestreaming, and livestreaming as a career for females in rural communities at large. We further offer several design implications to make livestreaming platforms more inclusive to rural or under-resourced communities, especially for females.

5.1 Social Stigmas Related to Livestreaming within Rural Communities

Social stigmas from local communities could be a significant barrier for rural Chinese women to participate in livestreaming and other social media. Setting our sights to the Global South, similar stigmas have also been reported in prior HCI work, e.g., in rural India, text messaging was considered as a tool of communication to continue an extra-marital affair [61]. Compared to text messaging, the interactive and visual nature of livestreaming may make it more stigmatized, which has been demonstrated by P4's experiences. Even though P4 had a lot of support from online communities, i.e., her fans, she lost support from her local community because it was "othering" online livestreaming users. A tension emerged between social bonds in the cyberspace and the physical space. Prior HCI research has shown that creating a digital safe space (e.g., Facebook groups) for women who share the same stigma can enable them to share their personal experiences and gain peer support [49, 66]. However, in our study, although interviewees may have gained enough online support from fans, they might still be discouraged if the stigmas remained in the local community. For our interviewees, support from the cyberspace might be insufficient and not strong enough to deal with and counter social stigmas. To support rural women like P4, we need to carefully design both 'online' empowerment and local, offline support systems, which need to fit in with the patriarchy social structure in rural and under-resourced areas.

We also witnessed that local government or other organizations may play an important role in countering such social stigma by promoting the positive impression of livestreaming and its economic and social benefits to local communities, just as P4 noted. However, this requires a lot of street-level bureaucratic efforts, activities, and collaborations amongst various stakeholders, because social stigmas may be deeply rooted in the gendered inequity of power relationships, which needs more supporting governance mechanisms to counter the power inequity, both offline and online.

Prior research on livestreaming reported that the real-time interactions and anonymity of viewers makes it hard for livestreamers to deal with Internet harassment and trolls [63]. Livestreamers are often vulnerable to harassers, and platforms' support for the governance of harassment are often insufficient [5, 63]. However, such harassment was seldom reported by the livestreamers in our study. This may be because these livestreamers mostly attract viewers who are interested in their content and who share similar ideologies with them, because they are early in their career. However, as they may be subject to harassment and trolls when they become more popular, we leave this for future exploration.

5.2 A Family's Role in Rural Female Livestreaming

The results also highlight that the support from one's family plays an important role for these livestreamers to choose and continue

this career. This echoes findings of prior HCI research on the roles that family members play in women's technology access and adoption in developing regions and the complex dynamics that surround technology engagement and the inclusion of under-served women [23, 32, 60]. However, prior research has focused on the use of digital devices or text and image-based social media, probably because livestreaming is not yet accessible in these regions. Our results provide a nuanced understanding of family roles during rural females' engagement in livestreaming, situated in the unique social and cultural context in China [45]. For one, the family must be immune to the social stigmas and stresses from local communities that are relatively conservative to livestreaming. Only under this scenario will rural women feel more assured and less concerned that their family would be negatively impacted if they choose to become livestreamers. The family also plays an important role in a livestreamer's social and emotional support. For example, the results indicate that many livestreamers are not completely independent when they become livestreamers. Some do not believe they can independently do all the work involved in livestreaming. This is primarily because they are not tech-savvy and depend on their husband for technical assistance. They also need to rely on their family's resources and social capital to succeed, especially those who livestream and sell local products to viewers. Although these female livestreamers are empowered and have a seemingly promising job to do, many of them remain highly dependent on their husbands and families.

Furthermore, we also witnessed how many rural female livestreamers are still confined by their family's moral boundaries and even subject to de-facto surveillance and male chauvinism. Because these rural livestreamers live with their family and spend most of their time with their family members, they must carefully craft their online self-image to satisfy their family's or husband's expectations. For example, they often show the "happy" and "harmonious" family lives instead of less pleasant moments. They also avoid presenting themselves as being "sexy" or "alluring" during their livestreams. Such self-censorship could help them stay within their family's boundary and avoid bringing a bad reputations to their family within their local community. Although not directly or explicitly reflected in the interviews, livestreaming with family members, especially husbands, can be a form of family surveillance to reinforce the family's moral boundaries and agency. When livestreaming with family members, livestreamers must be more careful and measured about what to do and what to say in their livestreams. In some circumstances, family members can even directly influence or interfere with the livestreaming content and interactions.

While it is encouraging that rural female livestreamers are emerging and empowered in China, the deep-rooted and widespread gender stereotypes and social inequalities are far from being resolved and the role of family further complicates the matter. A family may support livestreaming because it brings economic benefits and promising careers, however it still controls or constrains the self-presentation of female livestreamers to varying degrees.

5.3 Rural Female Livestreamers' Self-Presentation via Livestreaming and Rural Re-enchantment

Prior work has showed that people from rural China tend to present a “fantasized” self to close-ties or strangers on social media. For example, many rural Chinese young women share pictures of having a wedding like a princess on their QZone [64], a personal blogging platform by Tencent. This is often rooted from the pursuit of “*mianzi*” (face), “*one’s own sense of dignity and reputation in a community*” [30]. The imagination and aspiration from sharing and consuming such content detaches rural people from their “tedious” offline situation and helps construct a new “ideal” online world [48].

Interestingly, “fantasized” or “fancy” lives were almost never present in the livestreams of our interviewees. They regard “authenticity” and “realness” to be the golden standard of their self-presentation, which is similar to many content creators on social media [15]. However, this is different from female fashion bloggers who intentionally moderate their self-image, especially representations of “glam life”, to make themselves seem closer to ordinary people [15], or Chinese outdoor livestreamers who produce scripted performances and narratives to attract viewership [44]. The strategies rural female livestreamers use to attract viewers are much more straightforward. They often intentionally show the “rawness” of their everyday life, the people, the food, the surroundings, and other seeming moments of candor, during their livestreams. Such strategies are effective at engaging not only rural communities, but also urban users, which might be explained by the trend of rural *re-enchantment* on social media in China [38]. On social media in China, rural areas are “reembraced as an imagined utopia”, especially for those urban users who are bored with their cramped lifestyles and the hustle and bustle of the city [38]. Such enchanting depictions of rurality seem to have therapeutic effects that appeal to viewers’ emotional needs and generate “nostalgic longings” within viewers [38].

However, while these results demonstrate that these rural female livestreamers are successful in gaining popularity even from urban livestreaming viewers, we do not believe these livestreamers’ achievements should be read as wholly optimistic accounts of bridging the rural-urban divide. Similar to prior research about the popularity of rural short videos [38], the presentation of rurality by these livestreamers has to stay at the surface level to make it easy to consume so that a larger audience can be attracted. As a result, the livestreams tend to be positive and visually pleasant to meet viewers’ emotional needs. Although livestreamers mostly share real lives, urban viewers see carefully curated slices of these rural livestreamers’ lives. Viewers may find livestreamed rural life appealing, engaging, and desirable, however, their distance to real rural life and culture is not bridged.

5.4 Livestreaming as a Career for Rural Communities

Livestreaming empowers rural female women to be more involved in work and have a career that strikes a nice balance between economic and domestic needs. However, we also found that this type of career is still far from well-established and needs further

improvement to be able to truly empower these traditionally under-represented communities. In addition to the time and other efforts involved in preparing and delivering content, these female livestreamers have to deal with *emotional labor* [29] (to express positive emotions to viewers no matter how they feel) and *intimate labor* [6] (to manage self-impression for *mianzi* and to sustain family ties). Furthermore, the flexibility of livestreaming also translates to an always-on, a 24/7 workstyle, thus blurring the boundary between their private and professional lives. This tends to aggravate, rather than eliminate, these female livestreamers’ abilities to maintain a good work-life balance, like gig work [21].

We also witnessed a lack of support from other stakeholders. Unlike most urban livestreamers who have agencies and support teams [45], the interviewed rural female livestreamers rely almost solely on how tech-savvy their family members are when coping with technical issues or analytical needs. It is also noteworthy that these rural female livestreamers have not formed local livestreamer communities to provide social and peer support to each other. This might relate to the (hidden) social stigma the local communities have towards livestreaming.

5.5 Implications for Design

Livestreaming platforms could thus become more inclusive to a traditionally marginalized group, i.e., rural women, by considering the role of family, taking rawness into account when measuring engagement, and providing better career support for livestreamers who are poorly supported at the institutional level.

5.5.1 Supporting Family Modes of Livestreaming. Current livestreaming user interfaces are designed for an individual livestreamer, however, for rural female livestreamers who might be less tech-savvy, their use of livestreaming interfaces is deeply influenced by the skillsets and preferences of their husbands or other family members. Their husbands may even appear in their livestreams and interact with viewers. When designing livestreamers’ tools and interfaces, we should thus consider the dynamics of all these participants and enable them to collaborate and interact with each other more smoothly and efficiently while livestreaming. For example, livestreaming interfaces should support users in livestreaming with two (or even more) mobile devices, one for video recording and audience interaction, and the other for more advanced processing and analytical tasks that can be operated by more tech-savvy family members.

5.5.2 Rawness as an Engagement Metric. Most livestreaming platforms encourage high production values and visual aesthetics because these are important factors to gain attraction. Many popular livestreams use video filters to make visual effects more appealing and such livestreams are often promoted by livestreaming platforms with increased visibility. However, rural livestreams that emphasize “authenticity” and “rawness” often become neglected by livestreaming platforms. To better support the content created by rural communities, platforms should consider other metrics to measure engagement such as the “rawness” of the video. Furthermore, livestreaming platforms should not only promote livestreams with “positive” images of rural lives, but also not-so-positive images

to enable urban viewers to truly understand rurality, which could potentially further bridge the urban-rural divide.

5.5.3 Career Support for Rural Livestreamers. Prior work in HCI has discussed the dilemma of empowering rural women, as “empowerment” may be against their personal wills or even endanger them [60]. Because of this, it has been advocated that design principles should empower rural females with minimal resources within the structures of their society, without damaging their bonds with family members and their neighborhood [60]. Similarly, our results highlighted that when faced with social stigmas, rural female livestreamers would go to local officials for endorsement. Many of the interviewees also expressed their willingness to keep harmony with her family members and community. Therefore, we argue that the best support for rural female livestreamers should be directly from local communities and more local stakeholders should be involved. For example, local governments can host more events such as workshops to enable more conservative people to understand the power and benefits of livestreaming, so that they could become more open to such careers and mitigate their long-held social stigmas, similar to practices proposed in prior work [53]. Local communities should also form livestreamer clubs in which like-minded individuals can get together, share their experiences, and provide social support to each other. Non-profit agencies that aim to support rural livestreamers can also be launched to provide resources to rural livestreamers, such as courses to train their livestreaming skills and disseminate basic technical knowledge.

5.6 Limitations and Reflections

This work has several limitations. First, because the response rate did not meet our expectations, the number of interviewed livestreamers was small and we cannot paint a more detailed and complete picture of all the rural female livestreamers’ status in China. This may also have limited us from gathering information about some uncommon but vital issues, such as online harassment. Second, the remote interviews made it difficult for our interviewees to open up to us, potentially restricting us from digging deeper into their personal issues. Third, the lack of field observations reduced the information we could gather when investigating social stigmas within local communities because we could not observe social relationships in real life. With this being said, the analysis had reached saturation and the results can speak for the interviewed and observed livestreamers. We believe that future research should increase the pool of participants and conduct field studies to further investigate rural livestreamers’ experiences.

6 CONCLUSION

This study on rural female e-commerce livestreamers reveals rural women as ‘invisible users’ on livestreaming platforms and how they are empowered in this process. Through a qualitative analysis of interview and observational data, we pinpointed their motivations as a seemingly conflicting combination of actively seeking self-independence and taking better care of their family both financially and timewise. More notably, these rural female livestreamers are vulnerable to various social stigmas and their counterstrategies – such as bringing their husbands into their operation – further illustrated the gender inequality ingrained in the existing social

structure of rural China. In short, our depiction of rural female livestreamers revealed the potential that livestreaming could have on rural women empowerment in the long haul.

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