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Research Article

Learning to weave through a digital app: Women's empowerment in Artisan Villages of Nepal

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Abstract
This article aims to understand how and to what extent Fair Trade initiatives empower women workers through what we call 'digital localization', namely through the provision of digitally enabled trainings that support localization of production and consequent improvement of workers' livelihoods. While digitalization processes are often considered as disconnected 'by default' by the communities in which they take place, here we propose instead that digitalization and localization are interconnected and complementary processes for the purpose of women's empowerment in Fair Trade supply chains. In order to address these questions, we present the case study of 'Artisan Villages' an ongoing project launched by the organization Label STEP Nepal to provide Nepalese workers with decent and dignified local jobs as hand-knotted carpet weavers. The project is implementing not only digitalization of learning and monitoring but also localization and decentralization of production. We collected 12 women weavers' biographies and interviewed six women weavers and master weavers involved in the programme. Results showed that our participants indicated

three main benefits generated by the programme: i) *the acquisition of new locally relevant skills*; ii) *the opportunity to secure local employment and generate stable incomes*; iii) *increased confidence and improved time management*. The contribution of this paper lies in the acknowledgement that 'digital' and 'local' are not mutually exclusive dimensions, and that processes of digitalization and localization, far from being separate, can foster and reinforce each other, through positive loops with impactful outcomes for women workers' livelihoods.

Keywords
women's empowerment; Fair Trade markets; digital literacy; localization

Introduction

This article aims to understand how and to what extent Fair Trade initiatives empower women workers through what we call 'digital localization', namely through the provision of digitally enabled training that supports localization of production and consequent improvement of workers' livelihood. Recent scholarship on women empowerment in marginalized and disadvantaged communities has often underscored the importance of digital literacy, access to online platforms and digital training as a key tool for achieving personal and economic emancipation (Dhanamalar, Preethi & Yuvashree, 2020; Gupta, 2019; Kulkarni & Ghosh, 2021; Singh, Alok & Banerjee, 2023; Tchamyou, Diop, Asongu & Nnanna, 2023). However, research has also stressed that, in order to be effective, online training and digital tools need to be relevant to local contexts, as well as co-created between beneficiaries, local NGOs and local experts (Gupta, 2021; Tang, 2022). Despite this, digitalization processes are often considered disconnected 'by default' by the communities in which they take place (Discetti & Anderson, 2022). We propose instead that digitalization and localization are interconnected and complementary processes for the purpose of women's empowerment in Fair Trade supply chains, and they mutually reinforce each other. As such, an examination of the intertwining of these processes is needed to understand fully how processes of women's empowerment are taking place in Fair Trade initiatives both online and in local communities. Based on this, the present study addresses the following research question: how do localized digital training and tools support women's empowerment in the context of Fair Trade initiatives?

In order to address this question, we present the case study of 'Artisan Villages' an ongoing project launched by the organization Label STEP Nepal in cooperation with the UK aid Skills for Employment Programme (UKaid SEP) in November 2019 (2019–2021 pilot phase and 2022–2023 scale-up phase). The project aims to provide Nepalese workers with decent and dignified local jobs as hand-knotted carpet weavers, one of the main handicrafts and key exports of the Nepalese economy, based on traditional, artisanal, complex and artistic methods of weaving. The project delivers on its objectives through the development of a system of localized training and capacity-building workshops, the establishment of local infrastructures for weaving and the

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digitalization of learning and monitoring progress. The present study is based on the project as a case study, supported by 12 women's biographies and six qualitative in-depth interviews with women weavers and master weavers trained and employed through the project.

The contribution of this article lies in the acknowledgement that 'digital' and 'local' are not mutually exclusive dimensions, and that processes of digitalization and localization, far from being separate, can foster and reinforce each other, through positive loops with impactful outcomes for women workers' livelihoods. The article is structured as follows: first, we introduce academic literature on women's empowerment within Fair Trade supply chains, as well as outline key contributions on localization and digitalization of production as pathways for workers' empowerment. Second, we set the context of the Nepalese carpet industry and we introduce the project 'Artisan Villages'. Following this, we describe our methodology and present our findings to conclude with managerial and policy recommendations.

'Digital Localization' as a Pathway to Women's Empowerment

Women's empowerment is one of the key themes of the literature on Fair Trade global supply chains. This body of research deals with the ways in which Fair Trade markets and organizations improve the working conditions, wages, livelihoods, equal opportunities, decision-making and general well-being of women workers involved in producing Fair Trade products. Several studies adopt a case study approach, analysing women's experiences on the ground to understand how Fair Trade principles translate into specific empowerment outcomes depending on different commodities, production dynamics and sectors – see for example coffee production (Civera et al., 2019; Pineda, Piniero & Ramírez, 2019; Sirdey & Lallau, 2020), cocoa cooperatives (Doherty, 2018), flower plantations (Raynolds, 2021), and handicrafts and textiles (Ange, Ballet, Carimentrand & Marius, 2019). This literature is often underpinned by power theories, acknowledging that Fair Trade supply chains are embedded in the power dynamics that characterize global supply chains and that every effort to improve workers' conditions must inevitably face issues of power. Fair Trade initiatives are found to support 'power to', namely the ability of women to act and generate positive change, 'power with', namely the ability to act in concert, generate collective action and solidarity partnerships, and 'power within', namely the ability to harness personal and collective power for the purposes of liberation and equal opportunities (Ange et al., 2019; Discetti, Anderson & Gardner, 2020; Partzsch, 2017; Sirdey and Lallau, 2020).

Gender equality is a fundamental principle of Fair Trade supply chains. Women are in fact disproportionately represented in low-paid and vulnerable positions in supply chains and Fair Trade promotes social justice by creating avenues for women to access better-paying jobs, leadership positions, and training opportunities. Specifically, Fair Trade initiatives support women workers through access to alliances with external actors, including NGOs,

training and marketing organizations (Sirdley & Lallau, 2020); support for maternal welfare, including maternity leave and childcare support (Raynolds, 2021); active participation in decision-making processes in their communities (Doherty, 2018) including self-help and mutual help groups, strengthening collective bargaining power and advocating for equality of opportunities (Ange et al., 2019); and ultimately achievement of personal power, financial independence, recognition, and respect in their families and communities (Sirdley & Lallau, 2020; Raynolds, 2021; Ange et al., 2019).

Digital literacy plays a key role in the processes of women's empowerment worldwide and is one of the main indicators of women's vulnerability, together with safety, health, education and economic prosperity (Tchamyou et al., 2023). Digital technologies support women's empowerment in marginalized contexts and economies, especially in rural regions, in multiple ways. Interdisciplinary literature has identified several areas of women empowerment benefitting from Information and Communication Technologies (ICT), such as political participation, self-expression and collective experience sharing (Gupta, 2019); enhancement of financial autonomy, including access and usage of digital financial services (Kulkarni & Ghosh, 2021) and access to digital and platform economies (Dhanamalar et al., 2020); support of women entrepreneurship, including market access and development of network of collaborators in in the informal economy (Singh et al., 2023); and challenging gender stereotyping, cultural barriers and patriarchal culture (Suwana & Lily, 2017).

A particularly important aspect of digitalization is the ability of ICTs to provide access to training and educational opportunities, with cascading and spill-over effects for financial autonomy and personal well-being, especially for women from marginalized and disadvantaged backgrounds (Shirazi, 2012; Chatterjee, Gupta & Upadhyay, 2020; Dhanamalar et al., 2020). Access to online courses and e-learning platforms in fact constitutes a major factor in women's empowerment programmes (Golzard, 2020; Tang, 2022). However, digital educational opportunities need to be localized to be effective, namely tailored to local needs, identities and cultural contexts, in order to provide women with locally relevant skills and resources; particularly relevant is the theme of co-creation of knowledge and educational resources between the organizations developing and delivering the contents and its beneficiaries: literature has stressed the importance of co-creation of contents and active participation of the community in the development of the training programmes, namely 'complementary efforts' (Tang, 2022). Effective localization for women empowerment in fact entails collaboration with local community members and local NGOs and experts (Gupta, 2021), making sure that the training programmes are adapted to local needs and sensitive to local culture and meanings.

This suggests that digitalization and localization are interconnected and complementary processes for the purpose of women's empowerment in Fair Trade supply chains, and they mutually reinforce each other. We thus propose that an examination of the intertwining of these processes is needed to understand fully how processes of women's empowerment are taking place in Fair Trade initiatives both online and in local communities.

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Research Context: The Nepalese Carpet Industry

The origins of the handmade carpet industry in Nepal can be traced back to the early 1960s, when the Swiss Development Agency introduced carpet weaving as a vocational and livelihood programme for Tibetans seeking refuge in Nepal (Nepal Carpet Manufacturers & Exporters Association, 2023). Over time, the sector grew to become a vital contributor to the national economy, known for its main exports – custom-designed rugs. Nepal today holds the position of global leader in handmade carpet production and hand-knotted carpets, which ranks second in all Nepalese exports overseas (Trade and Export Promotion Center, 2022), generating over USD 80 million annually in foreign exchange earnings in 2021/22 (Trade and Export Promotion Center, 2022). In the last few decades, the industry has strengthened its reputation as a high-end producer and Nepal is a recognized centre for contemporary carpet designs and high-end craftsmanship (SEEP Nepal, 2023).

However, despite the importance of this sector within the national and global economy, its production is characterized by endemic challenges, which trace back to the political unrest and economic instability in the years of the civil war in the 1990s, when large manufacturing plants closed, and production shifted to a fragmented constellation of small workshops (ibid.). This change in production and distribution structure, in turn, resulted in deteriorating working conditions for artisans and workers, creating unstable wages and livelihood challenges (ibid.). Carpet weavers today face several systemic hardships. First, most weavers do not receive formal training or mentorship and mainly learn from peers and co-workers, while new recruits often have no technical knowledge of product and quality requirements; this leads to higher exposure to exploitative wages and working conditions, as well as low productivity and efficiency. Second, benefits of trade are disproportionately distributed, with those on the lower rung of the supply chain living on the margins. Additionally, despite the high value placed on this artisan craft on global markets, carpet weaving within Kathmandu Valley is seen as a stigmatized activity, perceived as undignified work, and is mostly taken up by minority groups and communities, who very often have poor socio-economic and educational backgrounds (Label STEP Nepal, 2018).

Artisan Villages: Overview of the Project

In 2019, Label STEP, in cooperation with the UKaid Skills for Employment Programme (UKaid SEP) launched the initiative 'Artisans Villages Revitalizing Nepal's Carpet Industry', a pilot project with the purpose of establishing Artisan Villages in rural Nepal. The project aims to improve the livelihood and working conditions of current artisans and weavers, achieved through skilling programmes, training, and certification, with a particular focus on women. Additionally, the project aims to support and strengthen the availability of skilled weavers towards the sustainability and growth of the artisans and entrepreneurs associated with the sector, thus ensuring the future development of Nepal's carpet industry. The pilot phase of the project covered the timeframe

from September 2019 to August 2021, while the scale-up phase of the project was from June 2022 to December 2023. The two main strategic pillars of the project are localization and training – we will explain the two dimensions in depth below.

Localization. The Nepali handmade carpets sector is predominantly Kathmandu-based. Throughout its history, Kathmandu has served as the creative hub for the handmade carpet industry, employing over 100,000 weavers and workers from all over Nepal. However, a multitude of factors, such as high costs of raw materials and production, inadequately equipped production facilities in Kathmandu – particularly brought by the city's booming real estate market – skilled labour shortages due to international labour migration, and poor attractiveness of weavers jobs, have increased the associated risks to the sector in the Nepali economy. The 'Artisan Villages' project aims at *decentralizing* production away from the capital city, and *re-localizing* production to rural areas with surplus labour, thus tapping into the unused potential of the workforce in rural areas, composed mainly of women and disadvantaged adults, through creating decent and dignified jobs in the very areas where these communities are based. The project was designed with the purpose of constructing a safe, reliable and long-lasting network of local jobs for weavers in rural areas, bringing weaving to the communities they call home. By establishing artisan and weaving facilities, and providing infrastructure, training and market access, this project aims to empower local artisans and preserve traditional carpet-making skills, ensuring the industry's long-term viability. Localization of production is also supported through funding and investment. Initially, Kathmandu-based carpet exporters were the major co-investors in the project, but during the implementation phase, the local home-based carpet producers were found to be motivated and confident to co-invest in the project (Label STEP Nepal, 2023). Decentralization, however, is not possible without solid training programmes, which empower communities through learning the craft. This is thus the second pillar of the project.

Training. Capacity-building, training and skilling interventions are at the core of the 'Artisan Villages' project. The project was designed to bring about several training and skilling outputs, described in detail below.

- *Training of master weavers*. In collaboration with several industry stakeholders, STEP planned to train world-class weavers and prepare them to work in high-end carpet industries catering to the needs of global markets. In order to train weavers with the skills and competency to weave hand-knotted carpets of international quality, local master weavers were trained by the International Trainer and supported with job placement and self-employment, which was then followed by a thorough implementation of a vocational training programme – see Figure 1.

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Figure 1. Pictures of the master weavers and weavers interviewed captured at work with the WMA app (used with participants' permission).

(*Continued*)

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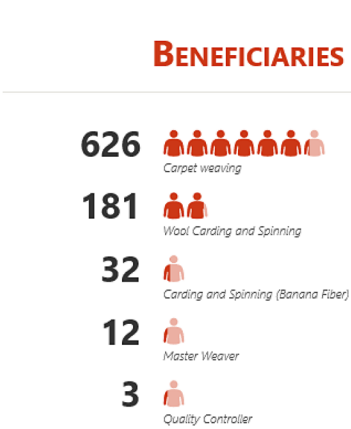

Source: Label STEP Nepal, 2023

- *Training of weavers*. The project aimed to train and employ 550 weavers during the pilot phase and over 1,000 weavers and workers during the scale-up phase. The results at the time of writing is over 700 weavers. Currently, 91% of the weavers enrolled in the programme are women.
- *Establishment of local weaving facilities*. In collaboration with the consortium partners, STEP established 12 weaving workshops based on the traditional origin of the Nepalese weaving community in the Sarlahi district. Weaving facilities are designed and organized to produce high-end rugs for international markets while keeping in compliance with Label STEP's strictly audited Fair Trade standards – these are mainly related to working conditions: light (at least 90 lux), spacing (at least four square feet per weaver), ventilation (fans and windows), toilets (separate toilets for men and women, one toilet per ten weavers), and new unit construction (based on STEP construction guidelines). The basic guidelines on unit construction were developed by Label STEP (Label STEP Nepal, 2023) and Label STEP is carrying out the audits. Orientation programmes were organized in each of the workshops to acquaint the local manufacturers and stakeholders with the STEP Fair Trade standards. Additionally, gender equality dimensions were considered, and guidance and support on the set-up of crèche and childcare facilities were provided, as many young mothers are enrolled as weavers. STEP continues to carry out Fair Trade standards audits on a regular basis to ensure that the workshops maintain compliance with the standards, thus creating the best possible environment for weavers and workers.
- *Training curriculum and manual*. A comprehensive manual with details on the weaving process, tools, and product quality, including the importance of Fair Trade standards, was developed by STEP with inputs from an international quality and endorsed by the

Nepalese Carpet Manufacturers and Exporters Association (NCMEA) for adoption by wider industry stakeholders.

- *Local ownership and capacity-building*. To ensure the continuity, expansion, and sustainability of the Artisan Villages Project beyond its implementation phases, it was thought necessary to equip local producers and entrepreneurs with the necessary skills, resources, and market access. Local producers (most often ex-weavers or ex-masters) are the suppliers and sub-contractors who manage the units and oversee the production in Artisan Villages based on the orders they get from Kathmandu-based exporters and manufacturers. Therefore, the project is providing local producers (especially women and the youth) with business and production management training, including marketing. To acquaint local producers in Sarlahi with the state-of-the-art tools in designing and marketing, a training on the Galaincha Software was organized in collaboration with a local software company. At the time of writing, three events (two in Sarlahi and one in Kathmandu) of Galaincha Software training were organized for nine participants (five from Sarlahi and four from Kathmandu). Any interested candidate, preferably women, who had completed a high school diploma, had basic computer literacy skills and was interested in learning graphic designing skills, was provided opportunity to enrol in this training. 'Alternative Technology', the technical partner of Label STEP, carried out the trainings, which totalled 28 hours in duration. Additionally, STEP coordinated the visits of international designers who interacted with the weavers in order to help them understand international market needs – a series of sessions were organized for weavers to understand their profession as a dignified and artistic.
- *Awareness programmes*. Complementary to these efforts, STEP also undertook awareness programmes related to Fair Trade and responsible production. Empowerment programmes covered topics such as Fair Trade standards, Physical Exploitation and Sexual Abuse (PESA), health and safety, financial management training and information (saving, investment, and financial literacy). Disseminating such information through STEP ensured weavers and workers accessed and benefitted from necessary support services (financial, socio-psychological) at the local level and minimized the need to travel to Kathmandu. It was also noted that a good working environment resulted in better motivation and work ethics, renewing their perception of weavers and weaving.
- *The 'Weaver Management Application'*. All the efforts above were supported by the development of a 'Weaver Management Application' (WMA), a mobile-based application used to capture key data and information related to the workshops and weavers. The purpose of the app WMA is twofold: first, the app monitors

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enrolment, progress, and training of weavers, assessing weavers' skills through both quantitative and qualitative factors; second, it facilitates communication between weavers in rural areas and manufacturers, exporters, and buyers (mostly based in Kathmandu), providing manufacturers with timely information on the production status of handmade custom design rugs. App-based functions were developed for progress and performance monitoring, as well as for quality control measures, leading to a systematic approach to skilling and training weavers, and to remote-based monitoring of their progress. The app was developed mainly in consultation with the international quality controller and industry stakeholders (mainly manufacturers). However, during the app rollout, feedback from trainees, weavers, and master weavers was considered to identify gaps and assess what features and improvements should be made for more efficient usage or data input (see Table 1 for details).

Table 1. Digital information collected through the Weaver Management Application

Dashboard section	Enrolment details	Progress monitoring
Workshop information	• Name • Location and capacity • Looms (size, numbers) • Exporter name • Area • Weavers' and master weavers' names	• Status of physical facilities • Total numbers of yarn colours and net weight (in kg) dispatched on start date • Yarns availability status
Weaver information	• Personal details • Profile details • Skill and training information • Enrolment date • Photo and brief bio	• Last reporting date • Progress (rod, cutting) • Standard weaving progress per day for each quality • Actual weaving progress per day for each quality • Daily working hours • Total training days • Last evaluation date • Learning attitude • Weaving speed • Design • Remarks and Recommendations
Order information	• Order details information • Start date, end date • Graph/ Design	• Progress update • Quality related data

At the time of writing, most weavers are registered in the WMA app, totalling approximately 500 weavers; their progress is monitored regularly, and their performance is tracked and linked to the certification. The WMA app and the related database are important tools to monitor and evaluate the weaver's progress, skills and competencies, thus facilitating production management in a remote setting. The master weavers, manufacturers/exporters based in Kathmandu, and Label STEP have access to information regarding weavers (performance, personal details, and order information) in the app.

Materials and Methods

This study is based on a multi-method approach, including two datasets: weavers' biographies and in-depth interviews with weavers. Data was collected as follows:

- *Weavers' biographies*. Twelve women weavers' biographies were collected to understand the life stories, backgrounds and experiences of the women weavers participating in the programme. The biographical method is an in-depth interpretive methodology often used in feminist studies, based on individual narratives related to participants' own personal history, with the purpose of including women's voices and experiences in academic research, especially when researching women in marginalized communities (Popadiuk, 2004). Label STEP collected these biographies through annotated dialogues with trained weavers. Consent to use workers' biographies for research purposes was sought and obtained. Details of weavers' biographies are summarized in Table 2.
- *In-depth interviews*. Six in-depth interviews were conducted with women programme participants. Specifically, we conducted three in-depth interviews with master weavers and three interviews with weavers in August 2023. The interviews were conducted and transcribed in Nepali and successively translated into English. Table 3 includes the interviewees' details. The interview protocol included questions on the training programme, its management, and its effectiveness; it also included specific questions on the WMA app, its benefits, its challenges, and its impact on the weavers' training programme and their livelihoods.

These datasets are enriched by the first-hand understanding and knowledge of the project of the first author, currently engaged as a Project Director, who is responsible for designing, developing and overseeing the implementation of the project.

The weavers' biographies and in-depth interviews were analyzed through a six-step thematic analysis, involving (1) familiarization with data, (2) creation of codes, (3) theme development, (4) theme review, (5) theme definition and (6) findings writing up (Braun & Clarke, 2006). All participants involved in this study gave their consent to their data and stories to be used for research

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Table 2. Weavers' biography details

Name	Age	Gender	Marital status and n. children	Training notes
Besh	35	Female	Married, 1	She received three months of training from RT Ghalaichha Udhyog; successively, she has been weaving carpets for the past year, and as of present is responsible for supervising new carpet weavers.
Laxmi G.	26	Female	Not married	She had taken a three-month carpet weaver training in RT Galaincha.
Bal	22	Female	Married, 2	Following carpet weaver training, she works as a weaver for Bagmati Galaincha in Sarlahi.
Buddhi	39	Female	Married, 3	She received six months of carpet weaver training in the NP Rugs Unit in Dabari, Sarlahi. She is working in the unit.
Kumari	33	Female	Married, 4	She received a three-month carpet weaver training from RT Galaincha. Currently working as a home-based weaver.
Tika	22	Female	Married, 1	She received six months of carpet weaver training in the NP Rugs Unit in Dabari, Sarlahi. She is working in the unit as well as helping in the weaving unit supervision.
Laxmi M.	24	Female	Married, 1	She received the three-month training from RT Galaicha Udhyog; She is currently working in RT Galaicha Udhyog.
Pasang	27	Female	Married, 3	She received three months of training from RT Galaicha Udhyog; she has been working as a weaver for three years.
Ranju	30	Female	Widow	She received a six-month training organized by Label STEP and Prerana in the Malagwa Unit and currently working in the unit for the last 10 months.

(Continued)

Name	Age	Gender	Marital status and n. children	Training notes
Sajana	24	Female	Married, 1	She received three months of training from Anugraha Galaincha Udhyog; she has been working as a weaver for three years.
Manjali	20	Female	Single	She received three months of training in the NP Rugs unit in Dabari. She has been weaving for the last three years.
Punam	28	Female	Widow, 1	She received six months of training from Label STEP and Prerana in the Malagwa Unit and has been working in this unit for the last 10 months.

Table 3. Women master weavers and weavers interviewed

Name	Age	Gender	Marital status and n. children	Training notes
Bimala	35	Female	Married, 1	She received 11 days of **master weaver** training from an international quality controller; successively, she has been training and supervising master weavers in Artisan Villages. She has two weaving units (with 70 weavers) and she is working as a manufacturer. She has over four years of experience as a master weaver.
Suryamaya	41	Female	Married, 3	She received 11-day **master weaver** training from Bimala, as well as refresher training from an international quality controller. She is training and supervising weavers in Artisan Villages. She has over four years of experience as a master weaver. She is also setting up a weaving unit of her own.

(Continued)

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Name	Age	Gender	Marital status and n. children	Training notes
Maiya	37	Female	Married, 3	She received 11-day **master weaver** training from the international quality controller and supervises the weavers in RT Galaincha. She has over two years of experience as a master weaver. She took her master weaver training in 2019 but due to health issues had to discontinue in between. She re-joined as a master in RT Gahaincha in 2023.
Aarati	21	Female	Not married	She is a **new weaver**. She took a six-month carpet weaving training in Anugraha Galaincha, Malangwa. She is currently weaving in the same unit. It has been one year since she took the training and started weaving. She has completed her high school (Grade 12). She is a competent weaver.
Anajana	20	Female	Not married	She is a **new weaver**. She took six-month carpet weaving training in Anugraha Galaincha, Malangwa. She is currently weaving in the same unit. It has been one year since she took training and started weaving. She has completed her high school (Grade 12). She is a competent weaver.
Geeta	26	Female	Married, 2	She is a **new weaver**. She took four months of carpet weaving training in the Sohadwa Weaving Unit. She is currently weaving in the same unit. It has been six months since she took training and started weaving.

purposes. Participants also gave explicit consent to their pictures being included in the present article.

Findings

Master weavers and weavers skill training

As mentioned above, the Artisan Villages programme entails both master weaver and weaver training. The master weaver training is 11 days in duration,

followed by appointment (by STEP and individual partners/investors) in the Artisan Villages to train new weavers, as well as upskill and enhance the weaving skills of the existing weavers to produce finer quality carpets. Weaver training instead is six months in duration and was introduced mainly to new weavers in the Artisan Villages representing marginalized communities who had never been exposed to carpet weaving. Master Weaver and Weaver training vary in that master weavers are trained in different skills development, such as supervision, quality control, skill enhancement, and WMA app management, while weavers are trained in the weaving skills for designing and producing carpets.

All the master weavers interviewed for this study have been engaged in the Artisan Villages for four years, following the master weaver training, received regular refresher training by Label STEP, and were also trained on the WMA app. The new weavers interviewed, instead, all received four to six months of weaving training, followed by a placement, and started weaving orders in the last six months; at the time of writing, most have been associated with the Artisan Villages for at least one year. The data showed that our participants reported three main benefits generated by the programme and the employment of the WMA application: i) *the acquisition of new locally relevant skills*; ii) *the opportunity to secure local employment and generate stable incomes*; iii) *increased confidence and improved time management*. We will describe these three themes below.

Digital tools to generate locally relevant skills

All our respondents reported the acquisition of locally relevant skills as one of the main benefits of the training programme. Both weavers and master weavers indicated that through the programme, supported by the WMA application, they acquired a range of skills, both technical (related to the craft of weaving) and business, including marketing, sales, and quality control. Importantly, the acquisition of locally relevant skills contributed to social and economic empowerment, but also to an enhanced sense of personal agency. An emblematic example is that of Laxmi G., one of the women and PWD interviewed as part of our biography data collection. As a woman living with a disability in a rural community, her opportunities for training and economic empowerment were minimal if not absent. Throughout her life, she faced constant discrimination and stigmatization. Through her engagement in the programme, though, she reported having a newfound sense of personal agency, and the opportunity to learn weaving skills led her to receive an income that would have otherwise been very difficult to achieve. Master weavers too reported how the acquisition of skills led to a sense of achievement and excelling in the artisanal sector.

> Master weaver training helped to enhance my technical knowledge and skills in assessing and ensuring the quality of hand-knotted carpets. I also learned that one needs to have patience and passion for the craft of hand-knotted carpet weaving along with the right set of technical skills in order to excel in the sector.
>
> (Bimala, master weaver)

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The acquisition of skills was not limited to technical and business knowledge, but it also expanded into the establishment of local business networks, developed through the referrals of Label STEP. The master weavers indicated that the training expanded their job opportunities and strengthened their network of clients and manufacturers:

> With the training that I received, I became clear on the technicalities that defined the quality of rugs, and as a result this has helped to boost my confidence level, my supervisory skills, salesmanship and marketing abilities. All these have greatly benefitted me personally as well as my profession … Among other benefits, I have improved outreach and network with the clients as well as weavers. I have new clients through the referrals made through STEP as well as an improved network with the weaver community in Artisan Villages.
>
> (Bimala, master weaver)

A key aspect emerging from the interviews with master weavers was the importance of the role of the international quality controller deployed by STEP. Interviewees reported the experience of being trained through the international quality controller as empowering and generating positive outcomes for confidence and motivation. In the words of the two master weavers Suryamaya and Bimala:

> I will always remember the ten essential criteria of quality control that I learned from Rainer, as it is key to ensuring the quality in weaving any rug. The opportunity that I had to learn from a foreign quality controller was empowering for me. The master weaver training has helped to build my self-confidence level as well as opened a myriad of opportunities.
>
> (Suryamaya, master weaver)

> Training from an international quality controller helped to hone my quality control skills. I learned key aspects relating to maintaining the quality of the carpet. Label STEP's training has helped to improve my experience in carpet weaving and quality control. Through a referral that I got from STEP I was able to have part-time employment with an international client and this was a good exposure for me.
>
> (Bimala, master weaver)

The acquisition of skills and progress in the training was supported by the use of the WMA application. Each master weaver enrolled in the programme received training on the application and a tablet to use the application. Following this, each master weaver is responsible for updating data regarding their workshop on a daily basis, including orders' progress (specific loom, start date, expected order completion date, knot count, size and photos of the carpet progress) and individual weavers' appraisals against skills training. The data inputting is based on a local focal point assigned by Label STEP to facilitate data entry in different weaving units in Artisan Villages. This allows a real-time update not only on the order progress, number of hours worked, and quality control information such as

cutting and straightness, but also on the learning progress of each individual weaver. Both master weavers and weavers reported feelings of anxiety and uncertainty about using the app after the training, often due to low levels of literacy, including digital literacy, and low confidence in their digital skills. However, after the initial uncertainty, with time they acquired familiarity with the tool, to the point of considering it a great source of support in their work to maintain proper records of the order and the trainees' progress and to provide feedback for app improvement:

> I record [on the app] the size of the carpet and loom, length and breadth of carpet, names of the weavers weaving on a specific loom. I also record the quality of weaving, straightness, tightness, cutting (good, ok, bad), and daily progress in weaving'.
>
> (Maiya, master weaver)

> I suggested including a feature to record data on raw materials consumption and usage; this will help to keep track of the yarn consumption, and also alert weavers on waste minimization.
>
> (Bimala, master weaver)

Importantly, the intuitiveness of the app functions and features enabled master weavers and weavers with no formal education and low literacy to implement systematic evaluation of training and order progress. For example, Suryamaya, a master weaver with over four years of experience in the programme, welcomed the introduction of the application as it enabled her to overcome her literacy barriers and easily record the progress of orders and training, which would have been much more difficult through traditional note keeping and writing:

> It is very useful to monitor and record the data through the app, as I don't know how to read and write. It is like learning to use the mobile [phone], with practice it is easier to use. Once the order is created along with the names of weavers, it is very easy to record the progress. It makes things easier, especially for me, as I face difficulty to write.
>
> (Suryamaya, 41, master weaver)

As Suryamaya continued, consistency of usage was key in establishing and maintaining confidence in the tool:

> I update and save the progress on the app. I enter the cm-square woven and working hours of the weavers for the looms that I observe. I enter when the specific order started, and from which date it started, I also enter data on quality such as cutting, straightness, is it good, bad, average, etc. I started using the app in Bagmati Galaicha, in Jogitol, last year. I used it for two to three months, and there was a gap of one year and then I used it in Malangwa for two or three months and recently in another unit in Sohadwa. I believe that continuity in usage is the most important thing as we master the skill through continuous usage; I believe that through continued use of the app we will be able to maximize its use.
>
> (Suryamaya, master weaver)

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Furthermore, all interviewed master weavers were affirmative about the usefulness of the app for the training, as it provided essential data on the weaving progress through daily data feed and the order progress, so generating the possibility to keep the contractors and manufacturers up to date regarding each order progress. They also linked the mastery of the digital tool to their supervisory ability and skills, and were aware of the potential of the app in supporting their career growth and opportunities:

> I feel that the app is helpful in reporting to my manager in terms of how the weaving orders and weavers are progressing. I had observed one of my co-workers use the app in the past, I had assisted her in getting the required information by observing looms during that time, and I was inspired and motivated to do so. I want to get further training so that I can use the app with confidence. Having the required skill set to use the app properly would also help me in my work as a supervisor. If I am able to record the weaver's progress in a regular way and in real-time, I will be able to manage production well, see how a specific weaver has made progress in weaving and also feel good about myself for being able to train others well in the unit.
>
> (Maiya, 37, master weaver)

Additionally, the findings highlight the potential for the development of supervisory skills as one benefit of the training, and this occasionally led to promotion and development opportunities for the weavers involved, as in the case of Anjana Kumari Yadav, who graduated from weaver to assistant master weaver:

> Six months of training in carpet weaving coupled with training on app use have significantly changed my life. I got the opportunity to be an assistant supervisor in a new weaving unit, in another village, where I would be training completely new artisans, like me … I was not sure if I would be able to pursue this opportunity, as I had to get my parents' permission. Travelling to a new village for work, especially for a girl in my community is often restricted; however, my parents gave consent, and I am happy that this has enabled me to earn and support my family. I could even contribute financially to my sister's wedding and I feel glad about it.
>
> (Anjana Kumari Yadav, assistant master weaver)

The generation of local employment

The ability of the training programme to generate local employment and thus ensure a stable income for workers was the second key theme emerging from the interviews. All our participants reported economic independence as the key outcome of the training, linked to the opportunity to find a job in their community. In the words of Anajana, a new weaver in Anugraha Galaincha, Malangwa:

> I got to learn how to weave the busy design carpet and that is what I liked the most. I like to weave carpets with designs … The most important thing

> is that I was unemployed and through skill training I got employment. I can demonstrate my weaving skill and earn wherever I go.
>
> (Anajana, weaver)

Similarly, Geeta, a new weaver of the programme reported:

> The carpet weaving work is good once you have learned the skill, the earning amount is decent when you work regularly, I like this work as it is easy and enables me to earn and support my family.
>
> (Geeta, weaver)

All the interviewees reported being employed following the training completion, confirming the programme's impact on employability, but also having a better income, confidence level, and motivation. The interviews suggested that one of the key outcomes of the master weaver training was the entrepreneurial and leadership outcomes of the participants, who developed a high propensity to be self-employed and or run their own production unit, generating further income for the family. For example, two master weavers reported significant benefits from the training— especially in assuring the quality production in one's own production unit: following the master weaver training, Bimala was self-employed and owned two weaving units, each employing 35–40 weavers. Similarly, Suryamaya, at the time of writing, was in the process of setting up her own weaving unit, having had the opportunity to work as a trainer and quality controller for most training in Artisan Villages.

A key aspect of the generation of employment was the local dimension of work, as opposed to the generation of work in the capital Kathmandu, or in more urban communities in the rest of the country. A key example is represented by the biography of Manjali, a young weaver involved in the project for three years at the time of writing. Manjali's mother was the first of her family to be involved in the project, receiving the weaver's training and starting to work in a weaving unit in Dabari. Following her mother's example, Manjali and her sister also received the skills training and started working in the same unit. Thanks to Manjali's and her mother's salary, the whole family stayed in the local community and abandoned their original project to migrate in search of employment; their salary provided for the family also during the COVID-19 pandemic, proving to be an incredibly important economic asset for their family. All our other participants articulated their empowerment in relation to the economic opportunity the training created in their local communities. As Maiya reported:

> The training has helped a lot in finding jobs locally. In Kathmandu, our job place was not stable, we used to change the workshop frequently from one factory to another due to various issues, and it was difficult with the kids, we had to carry them to different workplaces along as well as change the schools so that it's closer to the workshop. It's different here in the village, there is more stability, and one can stay close to home … I make NPR 13,000 as a master supervisor as well as 6–7,000 additional through weaving … that's my additional work, the loom that I am currently working on has

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> been there for two months, and once it is completed I get 13–14,000. Working on an order, besides as a master, helps to generate additional income for my family. I always encourage new weavers and say that weaving is a good job, as it helps to earn and contribute to the family income. I convinced my fellow trainees to learn and not to be afraid, as I also learned the same way but under difficult circumstances in a city. I tell them to let me know if they face any difficulty so that I can teach and explain to them repeatedly as needed until they understand. There are currently 32 weavers in the unit that I supervise.
>
> (Maiya, master weaver)

With similar reflections on the interplay between work abroad and local employment generated at the village level, Suryamaya and Bimala reported:

> Training has helped to create employment at the village level. I do not have agricultural land, I returned from a foreign land to come back to my home village and wanted to stay back in the village even if I had to do odd jobs, but with the training programme, we are able to find employment locally and one that is more regular. I could work as a trainer and supervisor as well as weave in my free time for additional income generation.
>
> (Suryamaya, master weaver)

> Employment generation at the local level for the weavers and workers is the key aspect that I liked about the project. Based on the training that I received, I could monitor the quality of rugs in a better way and ensure production of the best quality rugs in my own weaving unit.
>
> (Bimala, master weaver)

This shows the effectiveness of the project strategy to decentralize the weaving industry in rural areas, through workshop establishment and creation, and through Fair Trade standard settings to ensure decent working conditions and secure livelihoods for workers in their local communities. Artisan Villages initially started as the convening of Kathmandu-based manufacturers to expand investments in skilling and industry set-up at the local level, extended to locally based manufacturers and returnee migrants as they stepped up as interested investors recognizing the potential of the workshops. This has led to multiple small-scale local producers taking part in the project, often with women leading the way and opening up their own workshops and weaving units, as in the examples reported above.

Increased confidence and improved time management

All master weavers and weavers reported improved levels of confidence as a result of the training received. Particularly, the training helped to boost the confidence level of master weavers with low literacy levels to take up the role of a quality controller. With improved skill sets, they reported their ability to take up further challenges in life, as reported by Suryamaya and Maiya:

> The master weaver training has helped to boost my self-confidence level. I have not had the privilege to get an education however with the training,

> I believe that I have secured the relevant skill set of a supervisor and quality controller and can train others in weaving and ensure they weave quality carpets. I feel confident to take up challenges.
>
> (Suryamaya, master weaver)

> Yes, training has helped to build my confidence level. I feel that learning about the carpet weaving and being able to respond to any questions relating to it (without being nervous or unsure) when asked by someone is empowering as I feel good about it.
>
> (Maiya Pariyar, master weaver)

An emblematic example is that of Geeta, a new weaver trained in the Sohadwa Weaving Unit. Geeta was living with her husband's family and due to care responsibilities and lack of training and employment, she was confined to her household. This caused her to feel she did not have the ability to speak up for herself and to make her voice heard. Following the training and the subsequent employment, she became instead more confident in her role in her family and local community, and acquired a newfound sense of agency:

> Training has helped to increase my confidence level and self-esteem. Being a daughter-in-law, I was confined mostly to household chores. Also, there were no economic opportunities in our community. Learning the carpet weaving skill and being able to earn by working in a new weaving facility in Sohadwa has enhanced my confidence and voice. Earlier, I could not speak, now with the skill as well as my own earnings, I can speak and feel that I can face others. I am able to contribute to the household income and feel happy about it.
>
> (Geeta, weaver)

However, the interviews showed that as a result of the programme, employment also generated stress due to the reduced time for caring responsibilities and increased time pressures. Our participants reported challenges due to balancing home and work commitments; nonetheless, the ability to contribute economically to the household income overrode concerns about increased responsibilities and workload, as reported by Suryamaya:

> I am managing well, even though I have to travel long distances as a trainer; I wake up early at 5 am, manage my household responsibilities as well as farm work, send my kid to school and leave at 10 am for the workshop. The training programme has helped to improve my economic conditions. My family and I are able to cope well, and not dependent on anyone. We are able to provide good education to our children.
>
> (Suryamaya, 41, master weaver)

We also probed whether the use of the app constituted extra time pressure for master weavers and weavers, with the requirement to input data daily and monitor progress weekly. None of the interviewees considered using the app as an additional burden on their workload. As mentioned in the above section, they saw the benefits of using the app in terms of reporting progress and

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learning new skills useful for their career progression. In the words of Maiya, an experienced master weaver:

> I don't think that the app will increase the workload or it is difficult to use and update information. I think learning from this app has benefitted my job, and me especially, to execute my duties more responsibly. I also believe that learning from this app will help me with promotion. To get future referrals for any other opportunities as a master weaver. I feel that having this app on my mobile will be most useful.
>
> (Maiya, master weaver)

Interviewees also reported increased workflow efficiency through the use of an app, especially regarding managing order progress or delays. In the words of Aarati, a weaver on the programme:

> I update how much a weaver can weave in one day, how many hours and how many centimetres. I also add observations on straightness, and cutting, if it needs improvement (I do the data update for individual weavers regularly). I can observe the quality and enter the data accordingly … I do not think that filling in the app is a waste of time. It takes around 5 minutes per loom to update the information every day. The app helps to provide order progress reports including on quality, speed and weaver performance. If the order is on track or delayed is also available once the data are updated regularly.
>
> (Aarati, weaver)

The programme has the goal to empower women through training and craft skills and the app has the purpose of maximizing the efficiency of production to support Artisan Villages being competitive on the market, thus ensuring decent income and livelihoods to workers. However, it is important to recognize that digital tools and applications have the potential to enable tighter management and facilitate a faster pace of work, as reported by Aarati, 21, a new weaver currently working in Anugraha Galaincha, Malangwa:

> The [app] update helps to improve progress, such as if someone is weaving slowly, then by looking at their progress, we can ask them to weave faster, and thereby help in the putting the order on track.
>
> (Aarati, Weaver, Anugraha Galiancha Udhyog)

It is thus important to calibrate the benefits digital tools generate for workers, such as learning, information, and better time management, with the possible disadvantages, namely faster pace of work and increased supervision.

Discussion and Conclusions

This study addressed the following research question: how do localized digital training and tools support women's empowerment in the context of Fair Trade initiatives? Our findings highlighted three key dimensions of women empowerment unlocked through digital tools: i) *the acquisition of new locally relevant skills*; ii) *the opportunity to secure local employment and generate stable incomes*; iii) *increased confidence and improved time management*.

First, the study demonstrated that the development of skills and literacy, including digital literacy, has the highest impact when is grounded in the local community and includes the provision of locally relevant skills. While we might think of technical training and digital skills as transversal skills, including, for example, information, communication, collaboration, critical thinking, creativity, and problem-solving (Van Laar, Van Deursen, Van Dijk & de Haan, 2020), our study demonstrated that locally relevant digital skills, such as skills specific to a local craft or sector, were the most empowering for our participants. The Artisan Villages training programme had the purpose of teaching participants skills relevant to the local business ecosystem and, in this way, ensuring their participation in the local economy. Additionally, our findings showed that learning about the workers' management app enabled master weavers with low literacy skills to still perform monitoring, quality control, and reporting: this shows the high potential of digital tools to empower women from disadvantaged backgrounds. Future research could look into the further applications of this dimension of 'digital localization' beyond the opportunities for training evidenced in this study.

Connected to this, a second dimension of empowerment stressed by our participants was the creation of local employment. The Artisan Village approach was in fact based on a decentralization of production processes and implementation of Fair Trade standards to ensure good working conditions and decent income. The localized and local-centric dimension is in fact critical to the success of the Artisan Villages Project, along with the holistic and ecosystem approach to business development. While the project initially started with the establishment and the co-location of weaving units, with time, it focused on the co-location of the entire value chain, including financing and manufacturing, taking an ecosystem approach to industry activities. This enabled the creation of local jobs and the provision of stable income to the most marginalized members of the local communities, especially women. Additionally, the fact that both master weavers and weavers are from the same background and communities translates into better connection, solidarity, and empathy between local producers and manufacturers on one side, and workers on the other: sharing the same background incentivizes local producers and manufacturers to invest the local community's welfare, including community development needs, in line with Fair Trade principles. In this way, the empowerment of women workers, which is a core Fair Trade issue and goal, is better achieved through encouraging and enabling the involvement of local producers and their cooperatives in training and capacity-building programmes.

Lastly, our findings highlighted a trade-off between women's economic empowerment and additional caring responsibilities; it also highlighted an interplay between the advantages of the digital app in terms of efficiency, and the increased potential for workers' surveillance and control. Research has stressed the risk that digital tools and applications enable tighter management and work surveillance (Aloisi & Gramano, 2019; Newlands, 2021; Aloisi & De Stefano, 2022); it is thus important that digital tools are geared towards

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workers' empowerment and well-being, and empowerment, rather than surveillance and excessive supervision (Newlands, 2021; Aloisi & De Stefano, 2022). In Artisan Villages, this is taken into account in two ways: i) data on workers' performance is confidential and only used by master weavers for training purposes, namely for empowering and upskilling less experienced workers; ii) information on best-performing weavers is used to inspire and encourage others, mainly to help shape the narrative of weaving as an artistic and dignified skill.

Our findings expand the literature on women's empowerment, especially on the local dimensions of digitalization. The major learning from the project was that by providing the local community, especially women, with the necessary knowledge and skills, along with the capital to scale up, access to finance, and access to local business networks, it is possible to decentralize the artisanal rugs making process to the rural areas of Nepal. This approach has enabled scalability and sustainability of the project toward fulfilling the vision of the Artisan Villages in Sarlahi, namely the provision of decent and dignified jobs in local rural communities based on traditional and artistic local crafts.

As this is a running project, currently new improvements and interventions are being developed based on the learnings from the first phases of the implementation, especially regarding the WMA application. Based on the positive impact of this technology, Label STEP is expanding its infrastructure to support other stages of production beyond the weaving stage, including pre- and post-weaving phases in carpet manufacturing, and dyeing and washing units are currently being set up in Artisan Villages. It was in fact learned that to sustain the decentralization and lower the cost of production, other stages of the carpet supply chain such as wool carding, spinning, balling, dyeing, weaving, washing, and finishing need to be localized. The cost-effectiveness of the production of carpets in Sarlahi comes with localization of the entire making process. It would also attract further exporters, and further enhance livelihoods of women and their families by expanding job opportunities in the local communities.

Policy and practice recommendations

Building local capacities in collaboration with multiple actors. As our findings show, it is necessary to invest in building locally relevant skills and capacities. This is in fact linked to ensuring women's integration within the local market ecosystem and establishing and maintaining successful market linkages. Sustainable business model innovation is being recognized by recent research as key to building local business ecosystems (Snihur & Bocken, 2022). This casts light on the necessity to co-create training and learning programmes with different stakeholders, in collaboration with industry representatives and associations, to make sure that the contents and tools of the training are relevant to its intended beneficiaries (Tang, 2022). Particularly important is the

participation of local authorities, critical to the institutionalization of industry-led skilling and employment programmes, as well as to the improvement of local societal perception of weaving. As this craft is seen as a marginalized and stigmatized practice, the involvement of local authorities is essential to shifting societal perception of weaving as a high-value skill.

A holistic approach to the value chain. In order to fully integrate women in the local business sector, a holistic approach to the value chain is needed. This means that purpose-driven buyers and market actors need to be brought in, to support the weaving workshops from planning, establishment, management, and operation, to international trade. This can be achieved through continuous dialogue with local and international buyers, to secure support as well as create synergies and harmonize efforts of the Fair Trade business coalition. Women's empowerment through skilling and market access is only as effective as their products are being successfully placed on national and international markets. For this reason, active market linkages should be sought, to achieve exposure on the international market. Additionally, Fair Trade standards are better guaranteed through the involvement of purpose-driven buyers and market actors.

Women's rights and due diligence. The Artisan Villages Project is timely in the context of mandatory human rights due diligence (HRDD) on corporate responsibility being implemented in Europe and other countries (European Commission, 2022). The Artisan Villages Project upholds the key pillars of the United Nations Guiding Principles on Business and Human Rights (UN, 2011) encompassing corporate responsibility to respect human rights, especially for women. Investing in a project able to implement human rights-focused due diligence, with a specific focus on women's rights, is necessary as institutions move to mandatory approaches to due diligence. Although not all HRDD criteria are currently covered by the app monitoring process, the future development plan will link the app with the Label STEP audit web-based application that is used to monitor the Fair Trade compliance criteria on wages, working conditions, health and safety, freedom of association, collective bargaining, working hours, non-discrimination and harassment, and environmentally sound production, to further link digitalization and training to the key HRDD criteria.

Limitations of the study

The data collection for this research was carried out while the project funding was active, namely when the app development, skills training, and app pilot testing were ongoing. Undertaking this research following the project completion would have enabled further data collection at the impact level, such as how actively and efficiently the app is being used, the longer-term implications of the app on women's skilling and empowerment, and good practices and learnings.

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A follow-up research study would be interesting in this regard. Second, language barriers and the need for translation constituted another limitation, as most interviewees spoke different local languages and dialects. This required interviews to be translated into English. Local translators and interpreters were deployed in most cases to ensure interview questions were clearly explained and clear and complete responses were secured from the respondents.

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References

Aloisi, A. & De Stefano, V. (2022). Essential jobs, remote work and digital surveillance: Addressing the COVID-19 pandemic panopticon. *International Labour Review*, 161(2), 289–314.

Aloisi, A. & Gramano, E. (2019). Artificial intelligence is watching you at work: Digital surveillance, employee monitoring, and regulatory issues in the EU context. *Comp. Lab. L. & Pol'y J.*, 41, 95.

Ange, P., Ballet, J., Carimentrand, A. & Marius, K. (2019). Changing women's lives? Empowerment and aspirations of fair trade workers in South India. *Journal of Global Ethics*, 15(1), 32–44.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in Psychology*, 3(2), 77–101.

Chatterjee, S., Gupta, S.D. & Upadhyay, P. (2020). Technology adoption and entrepreneurial orientation for rural women: Evidence from India. *Technological Forecasting and Social Change*, 160, 120236.

Civera, C., De Colle, S. & Casalegno, C. (2019). Stakeholder engagement through empowerment: The case of coffee farmers. *Business Ethics: A European Review*, 28(2), 156–174.

Dhanamalar, M., Preethi, S. & Yuvashree, S. (2020). Impact of digitization on women's empowerment: A study of rural and urban regions in India. *Journal of International Women's Studies*, 21(5), 107–112.

Discetti, R., Anderson, M. & Gardner, A. (2020). Campaign spaces for sustainable development: a power analysis of the Fairtrade Town campaign in the UK. *Food Chain*, 9(1), 8–28.

Discetti, R. & Anderson, M. (2022). Hybrid consumer activism in Fairtrade Towns: exploring digital consumer activism through spatiality. *Consumption Markets & Culture*, 26(4), 280–297.

Doherty, B. (2018). Gender equality and women's empowerment through fair trade social enterprise: Case of Divine Chocolate and Kuapa Kokoo. In *Entrepreneurship and the sustainable development goals* (Vol. 8, pp. 151–163). Bradford: Emerald Publishing Limited.

European Commission (2022). *Directive on corporate sustainability due diligence*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1145

Golzard, V. (2020). Economic empowerment of Iranian women through the internet. *Gender in Management: An International Journal*, 35(1), 1–18.

Government of Nepal (2023), *Hand knotted woolen carpet of Nepal*. Available at http://www.tepc.gov.np/major_products/full_content/hand-knotted-woolen-carpet-of-nepal#:~:text=The%20export%20of%20Nepalese%20Carpet,of%20the%20total%20carpet%20export

Gupta, A. (2019). Towards participatory democracy: Can digitalisation help women in India? *Indian Journal of Public Administration*, 65(4), 897–915.

Gupta, M. (2021). Role of NGOs in women empowerment: Case studies from Uttarakhand, India. *Journal of Enterprising Communities: People and Places in the Global Economy*, 15(1), 26–41.

Kulkarni, L. & Ghosh, A. (2021). Gender disparity in the digitalization of financial services: challenges and promises for women's financial inclusion in India. *Gender, Technology and Development*, 25(2), 233–250.

Label STEP Nepal (2018). Partner project completion report.

Label STEP Nepal (2023). Partner project completion report.

Newlands, G. (2021). Algorithmic surveillance in the gig economy: The organization of work through Lefebvrian conceived space. *Organization Studies*, 42(5), 719–737.

Nepal Carpet Manufacturers & Exporters Association, (2023). *History of carpet weaving*. Available at: https://nepalcarpet.org.np/history-of-carpet-weaving

Partzsch, L. (2017). 'Power with' and 'power to' in environmental politics and the transition to sustainability. *Environmental Politics*, 26(2), 193–211.

Pineda, J. A., Piniero, M. & Ramírez, A. (2019). Coffee production and women's empowerment in Colombia. *Human Organization*, 78(1), 64–74.

Popadiuk, N. (2004). The feminist biographical method in psychological research. *The Qualitative Report*, 9(3), 392–412.

Raynolds, L.T. (2021). Gender equity, labor rights, and women's empowerment: Lessons from Fairtrade certification in Ecuador flower plantations. *Agriculture and Human Values*, 38(3), 657–675.

SEEP Nepal (2023). *Boosting sustainability of the Nepali carpet industry and creating self-employment opportunities for returnee migrants*, Available at https://www.seepnepal.com/knowledge-hub/insights-and-impacts/boosting-sustainability-of-the-nepali-carpet-industry-and-creating-self-employment-opportunities-for-returnee-migrants/

Shirazi, F. (2012). Information and communication technology and women empowerment in Iran. *Telematics and Informatics*, 29(1), 45–55.

DOI:10.13169/jfairtrade.5.1.0073

Singh, S., Alok, S. & Banerjee, S. (2023). Qualitative exploration of enabler, purpose, and benefits of digitalisation in the informal sector: Understanding the role of bricolage among women entrepreneurs. *SEDME (Small Enterprises Development, Management & Extension Journal)*, 50(3).

Sirdey, N. & Lallau, B. (2020). How do producer organisations enhance farmers' empowerment in the context of fair trade certification? *Oxford Development Studies*, 48(2), 166–180.

Snihur, Y. & Bocken, N. (2022). A call for action: The impact of business model innovation on business ecosystems, society and planet. *Long Range Planning*, 55(6), 102–182.

Suwana, F. & Lily (2017). Empowering Indonesian women through building digital media literacy. *Kasetsart Journal of Social Sciences*, 38(3), 212–217.

Tang, C.S. (2022). Innovative technology and operations for alleviating poverty through women's economic empowerment. *Production and Operations Management*, 31(1), 32–45.

Tchamyou, V. S., Diop, S., Asongu, S. A. & Nnanna, J., (2023), January. African Women Vulnerability Index: Focus on Rural Women. In *Forum for Social Economics* (pp. 1–19). London: Routledge.

Trade and Export Promotion Center (2022). *Export directory*. Available at http://www.tepc.gov.np/

Van Laar, E., Van Deursen, A. J., Van Dijk, J. A. & de Haan, J. (2020). Determinants of 21st-century skills and 21st-century digital skills for workers: A systematic literature review. *Sage Open*, 10(1), 2158244019900176.

United Nations (UN) (2011), *Guiding principles on business and human rights*. Available at: https://www.ohchr.org/sites/default/files/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf

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